



UNION GEODESIQUE ET GEOPHYSIQUE INTERNATIONALE  
INTERNATIONAL UNION OF GEODESY AND GEOPHYSICS

**XXVI General Assembly**  
**22 June - 2 July 2015**  
**PRAGUE, CZECH REPUBLIC**

**COMPTES RENDUS**

**IUGG XXVI GENERAL ASSEMBLY**  
**22 June – 2 July 2015, Prague, Czech Republic**

**TABLE OF CONTENTS**

PART I PROCEEDINGS OF THE GENERAL ASSEMBLY .....	5
Officers of the Union, Associations, and Commissions for 2011-2015.....	6
IUGG 2015 Local Organizing Committee.....	9
Report of the Chair of the Local Organizing Committee Vladimir Cermak.....	11
Report of the Chair of the Scientific Program Committee Eduard Petrovsky .....	14
List of Lectures and Symposia Held at the XXVI General Assembly of the International Union of Geodesy and Geophysics .....	22
XXVI IUGG General Assembly Opening Ceremony.....	29
Programme.....	29
Address by Vladimir Cermak, Chair of the Local Organizing Committee of the XXVI IUGG General Assembly .....	30
Address by Jan Marek, Representative of the Czech Government.....	31
Address by Jan Safanda, Representative of the Czech Academy of Sciences.....	32
Address by Jiri Bičák, President of the Learned Society of the Czech Republic .....	33
Address by Yuan T. Lee, Past President of the International Council for Science and the Academia Sinica, and Nobel Prize Laureate.....	34
Address by Eduard Petrovsky, Chair of the Scientific Program Committee of the XXVI IUGG General Assembly .....	36
Address by Alik Ismail-Zadeh, Secretary General of IUGG .....	37
Welcome by Harsh Gupta, President of IUGG.....	40
Minutes of the Council Meetings.....	41
Minutes of the First Session.....	41
Minutes of the Second Session .....	47
Minutes of the Third Session .....	52
Officers of IUGG and the Union Associations for 2015-2019 .....	57
Bureau of the Union.....	57
Executive Committee of the Union.....	57
Finance Committee of the Union.....	57
Secretaries General of the International Associations .....	57
Resolutions Adopted at the XXVI General Assembly by the Union - 29 June 2015 .....	58
Résolutions Adoptées à la XXVI Assemblée Générale par l'Union – 29 Juin 2015 .....	63
Resolutions Adopted at the XXVI General Assembly by the IUGG Associations .....	68
XXVI IUGG General Assembly Closing Ceremony .....	72
Programme.....	72

Remembrance of Colleagues deceased since the XXV IUGG General Assembly.....	73
Report of the IUGG Secretary General Alik Ismail-Zadeh .....	74
Report of the IUGG Treasurer Aksel W. Hansen .....	76
Reading of the Resolutions of the Union Adopted at the XXVI General Assembly .....	77
Final Remarks by Harsh Gupta, Outgoing IUGG President.....	78
Closing Remarks by Michael Sideris, Incoming IUGG President.....	80
Administrative Reports .....	81
Quadrennial Report of the President.....	81
Quadrennial Report of the Vice-President .....	86
Quadrennial Report of the Secretary General .....	89
Quadrennial Report of the Treasurer .....	99
Quadrennial Reports of the Associations.....	109
Quadrennial Report of the International Association of Cryospheric Sciences.....	109
Quadrennial Report of the International Association of Geodesy .....	113
Quadrennial Report of the International Association of Geomagnetism and Aeronomy .....	118
Quadrennial Report of the International Association of Hydrological Sciences .....	120
Quadrennial Report of the International Association of Meteorology and Atmospheric Sciences .....	122
Quadrennial Report of the International Association for the Physical Sciences of the Oceans.....	125
Quadrennial Report of the International Association of Seismology and Physics of the Earth's Interior .....	129
Quadrennial Report of the International Association of Volcanology and Chemistry of the Earth's Interior.....	134
Quadrennial Reports of the Union Commissions.....	138
Quadrennial Report of the IUGG Commission on Climate and Environmental Change .....	138
Quadrennial Report of the IUGG Commission on Mathematical Geophysics .....	145
Quadrennial Report of the IUGG Commission on Geophysical Risk and Sustainability.....	147
Quadrennial Report of the IUGG Commission on the Study of the Earth's Deep Interior .....	149
Quadrennial Report of the IUGG Commission on Data and Information .....	152
Quadrennial Report of the IUGG Working Group on History .....	155
Quadrennial Report of the International Lithosphere Program.....	157
PART II STATUTES AND BY-LAWS OF THE UNION AND THE ASSOCIATIONS.....	162
Statutes and By-Laws of the Union .....	163
Statutes.....	163
By-Laws.....	167
Statuts et Règlements de l'Union.....	174

Statuts.....	174
Réglements.....	179
Statutes and By-Laws of the Associations.....	186
Statutes and By-Laws of the International Association of Cryospheric Sciences .....	186
Statutes and By-Laws of the International Association of Geodesy.....	192
Statutes and By-Laws of the International Association of Geomagnetism and Aeronomy.....	209
Statutes and By-Laws of the International Association of Hydrological Sciences.....	219
Statutes and By-Laws of the International Association of Meteorology and Atmospheric Sciences .....	228
Statutes and By-Laws of the International Association for the Physical Sciences of the Oceans ..	245
Statutes and By-Laws of the International Association of Seismology and Physics of the Earth's Interior.....	250
Statutes and By-Laws of the International Association of Volcanology and chemistry of the Earth's Interior.....	254
 PART III ASSEMBLY STATISTICS .....	 261
Assembly Registration by Country.....	262
Assembly Registration by Association .....	263
List of Registrants.....	264

# **PART I**

## **PROCEEDINGS OF THE GENERAL ASSEMBLY**

## OFFICERS OF THE UNION, ASSOCIATIONS, AND COMMISSIONS FOR 2011-2015

### Bureau of the Union

<i>President:</i>	Harsh Gupta	INDIA
<i>Vice-President:</i>	Michael Sideris	CANADA
<i>Secretary General:</i>	Alik Ismail-Zadeh	RUSSIA/GERMANY
<i>Treasurer:</i>	Aksel W. Hansen	DENMARK
<i>Members:</i>	Isabelle Ansorge	SOUTH AFRICA
	Pierre Hubert	FRANCE
	Kenji Satake	JAPAN

### Executive Committee of the Union

According to Article 10 of the Statutes of IUGG the Executive Committee consists of:

- the Bureau (see above),
- the Retiring President of the Union, Tom Beer (AUSTRALIA)
- the Presidents of the International Associations:

<i>IACS:</i>	Ian Allison (2011-2013)	AUSTRALIA
	Charles Fierz (2013-2015)	SWITZERLAND
<i>IAG:</i>	Chris Rizos	AUSTRALIA
<i>IAGA:</i>	Kathryn Whaler	UNITED KINGDOM
<i>IAHS:</i>	Gordon Young (2011-2013)	CANADA
	Hubert Savenije (2013-2015)	NETHERLANDS
<i>IAMAS:</i>	Athena Coustenis	FRANCE
<i>IAPSO:</i>	Evgeny Morozov	RUSSIA
<i>IASPEI:</i>	Domenico Giardini	SWITZERLAND
<i>IAVCEI:</i>	Ray Cas	AUSTRALIA

### Finance Committee of the Union

<i>Chair:</i>	David Collins	UNITED KINGDOM
<i>Members:</i>	Zoltan Hajnal	CANADA
	Jan Krynski	POLAND
	David Rhoades	NEW ZEALAND

### Secretaries General of the International Associations

<i>IACS</i>	Andrew Macintosh	NEW ZEALAND
<i>IAG:</i>	Hermann Drewes	GERMANY
<i>IAGA:</i>	Mioara Manda	FRANCE
<i>IAHS:</i>	Christophe Cudennec	FRANCE
<i>IAMAS:</i>	Hans Volkert	GERMANY
<i>IAPSO:</i>	Johan Rodhe	SWEDEN
<i>IASPEI:</i>	Peter Suhadolc	ITALY
<i>IAVCEI:</i>	Joan Martí	SPAIN

### Union Commissions

#### Union Commission on Climatic and Environmental Change (CCEC):

[www.ccec-iugg.org](http://www.ccec-iugg.org)

<i>Chair:</i>	Tom Beer	AUSTRALIA
<i>Vice-Chair:</i>	Jianping Li	CHINA
<i>Secretary-Treasurer:</i>	Keith Alverson	USA/KENYA

**Union Commission on Data and Information (UCDI):**

www.iugg-ucdi.org

<i>Chair:</i>	Peter Fox	USA
<i>Vice-Chair:</i>	Charles Barton	AUSTRALIA
<i>Secretary:</i>	Adelina Geyer Traver	SPAIN

**Union Commission on Geophysical Risk and Sustainability (GRC):**

www.iugg-georisk.org

<i>Chair:</i>	Kuniyoshi Takeuchi	JAPAN
<i>Vice-Chairs:</i>	Vladimir Kossobokov	RUSSIA
	John LaBrecque	USA
<i>Secretary:</i>	Diana Greenslade	AUSTRALIA
<i>Treasurer:</i>	Paula Dunbar	USA

**Union Commission on Mathematical Geophysics (CMG):**

<i>Chair:</i>	Yehuda Ben-Zion	USA
<i>Vice-Chairs:</i>	Einat Aharonov	ISRAEL
	Claudia Pasquero	ITALY
<i>Secretary:</i>	Ilya Zaliapin	USA

**Union Commission on the Study of the Earth's Deep Interior (SEDI):**

www.sedigroup.org

<i>Chair:</i>	Satoru Tanaka	JAPAN
<i>Vice-Chair:</i>	Jonathan Aurnou	USA
<i>Secretary:</i>	Mike Bergman	USA

**IUGG Working Group on History (WGH):**

<i>Chair:</i>	Edward Cliver	USA
<i>Vice-Chair:</i>	Hans Volkert	GERMANY

**Inter-Unions Commission**

**Inter-Union Commission on the Lithosphere: The International Lithosphere program**

www.scl-ilp.org

<i>President:</i>	Sierd Cloetingh	NETHERLANDS
<i>Secretary General:</i>	Magdalena Scheck-Wenderoth	GERMANY
<i>Bureau Members:</i>	IUGG: David Jackson	USA
	IUGG: Kalanchand C. Sain	INDIA
	IUGS: Roland Oberhänsli	GERMANY
	IUGS: Jean-Paul Cadet	FRANCE
	IUGS and IUGG: Alan Green	SWITZERLAND
<i>Chair of National Members:</i>	Victoria L. Pease	SWEDEN
<i>Executive Secretary:</i>	Alexander Rudloff	GERMANY

**IUGG Liaison Officers with Intergovernmental Organizations**

<i>Cartographic Office of the United Nations:</i>	Luiz Fortes	BRAZIL
<i>Consultative Committee for Time and Frequency (CCTF):</i>	Claude Boucher	FRANCE
<i>Group on Earth Observations (GEO):</i>	Alik Ismail-Zadeh	GERMANY/RUSSIA
<i>International Civil Aviation Organization (ICAO):</i>	William I. Rose	USA
	Marianne Guffanti	USA
<i>Pan-American Institute of Geography and History (PAIGH):</i>	Hermann Drewes	GERMANY

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Officers of the Union, Associations, and Commissions for 2011-2015

<i>United Nations Educational, Scientific and Cultural Organization (UNESCO):</i>	Christophe Cudennec	FRANCE
<i>International Hydrological Programme (IHP):</i>	Stefania Sparnocchia	ITALY
<i>International Oceanographic Commission (IOC):</i>	Arthur Askew	SWITZERLAND
<i>World Meteorological Organization (WMO):</i>	Hans Volkert Arnau Folch	GERMANY SPAIN
<i>Partner Advisory Committee (PAC) of the Global Framework for Climate Services (GFCS):</i>	Arthur Askew	SWITZERLAND

### **IUGG Representatives on ICSU Committees and ICSU Regional Offices**

<i>Committee on Data for Science and Technology (CODATA):</i>	Alexei Gvishiani	RUSSIA
<i>Committee on Space Research (COSPAR):</i>	Eric Donovan	CANADA
<i>Programme on Integrated Research on Disaster Risk (IRDR)</i>	Kuniyoshi Takeuchi	JAPAN
<i>Scientific Committee on Antarctic Research (SCAR):</i>	Ian Allison	AUSTRALIA
<i>Scientific Committee on Oceanic Research (SCOR):</i>	Athena Coustenis Eugene Morozov	FRANCE RUSSIA
<i>Scientific Committee on Solar-Terrestrial Physics (SCOSTEP):</i>	Vladimir Kuznetsov	RUSSIA
<i>World Climate Research Programme (WCRP):</i>	Tom Beer	AUSTRALIA
<i>World Data System (WDS)</i>	Ruth E. Neilan	USA
<i>Regional Office for Africa (ROA):</i>	Isabelle Ansoerge Ali Tealeb	SOUTH AFRICA EGYPT
<i>Regional Office for Asia &amp; the Pacific (ROAP):</i>	Sri Widiyantoro Sukanta Roy	INDONESIA INDIA
<i>Regional Office for Latin America and the Caribbean (ROLAC):</i>	Jaime U. Fucugauchi	MEXICO

### **IUGG Secretariat**

GFZ German Research Centre for Geosciences  
Telegrafenberg A17  
14473 Potsdam  
GERMANY

<i>Assistant Secretaries General:</i>	Simone Oswald (2011-2012)	GERMANY
	Franz Kuglitsch (2012-2015)	GERMANY



## IUGG 2015 LOCAL ORGANIZING COMMITTEE

Chair:	Dr. Vladimir CERMAK Academy of Sciences of the Czech Republic CZECH REPUBLIC T: 420 267103385 <a href="mailto:cermak@ig.cas.cz">cermak@ig.cas.cz</a>
Deputy Chair:	Dr. Peter HOLOTA Research Institute of Geodesy, Topography & Cartography CZECH REPUBLIC T: 420 32364935 <a href="mailto:petr.holota@pecny.cz">petr.holota@pecny.cz</a>
Secretary & Scientific Program Committee Chair:	Dr. Eduard PETROVSKY Academy of Sciences of the Czech Republic CZECH REPUBLIC T: 420 267103333 <a href="mailto:edp@ig.cas.cz">edp@ig.cas.cz</a>
Deputy Secretary:	Dr. Jan SIMKANIN Academy of Sciences of the Czech Republic CZECH REPUBLIC T: 420 267103342 <a href="mailto:jano@ig.cas.cz">jano@ig.cas.cz</a>
Treasurer:	Dr. Marta TUCKOVA Academy of Sciences of the Czech Republic CZECH REPUBLIC T: 420 267103089 <a href="mailto:tuckova@ig.cas.cz">tuckova@ig.cas.cz</a>
Exhibition & Sponsoring:	Ms. Iva PELANOVA C-IN, s.r.o. CZECH REPUBLIC T: 420 724545505 T: 420 261174301 <a href="mailto:iva.pelanova@c-in.eu">iva.pelanova@c-in.eu</a>
Scientific Field Trips:	Dr. Vladislav BABUSKA Academy of Sciences of the Czech Republic CZECH REPUBLIC T: 420 267103049 <a href="mailto:babuska@ig.cas.cz">babuska@ig.cas.cz</a>  Dr. Vladislav RAPPRICH Czech Geological Survey CZECH REPUBLIC T: 420 257089490 <a href="mailto:vladislav.rapprich@geology.cz">vladislav.rapprich@geology.cz</a>
Media, Computer & Community Liaison:	Ms. Marcela SVAMBERKOVA Academy of Sciences of the Czech Republic CZECH REPUBLIC T: 420 267103363 <a href="mailto:mk@ig.cas.cz">mk@ig.cas.cz</a>  Dr. Jaroslava PLOMEROVA Academy of Sciences of the Czech Republic

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Report of the Chair of the Local Organizing Committee

CZECH REPUBLIC

T: 420 267103391

[jpl@ig.cas.cz](mailto:jpl@ig.cas.cz)

IUGG Liaison:

Dr. Vladimír CERMAK (see above)

Professional Conference Organizer:

C-IN, s.r.o.

CZECH REPUBLIC

T: 420 261174301

[info@c-in.eu](mailto:info@c-in.eu)

C-IN Representatives:

Mr. Petr MARHOUL (General Manager)

Mr. Tomas MAXA (Director of Operations)

Mr. Pavel SUSAK (Sales and Marketing)

Ms. Monika FIALOVA (Operations, Project manager,  
accommodation)

Mr. Lukas MARECEK (Operations, Project manager  
- GA logistics)

Mr. Martin VALTER (Operations - ICT Dept.,  
Scientific Program, Webpage)

Ms. Anna HRABETOVA (Operations Dept.,  
Scientific Program coordination)

Ms. Iva PELANOVA (Operations, Sponsoring and  
Exhibition)

Ms. Andrea AMBROZOVA (Operations, Registration  
supervision)

Mr. Tomas NEJEDLY (Operations, Registration,  
Accommodation and Grants)

Ms. Eva PETROVA (Operations, Excursions  
logistics)

Ms. Tereza ZVOLSKA (Operations, Registration and  
Visa handling)

## **REPORT OF THE CHAIR OF THE LOCAL ORGANIZING COMMITTEE**

### **VLADIMIR CERMAK**

#### **Introduction**

The idea to bring the XXVIth IUGG General Assembly to Prague was born in mid-summer 2010 as the response to the routine IUGG Secretary announcement that the bids for the next venue of the IUGG 2015 Assembly are to be submitted. Czech National Committee for Geodesy and Geophysics took the necessary initiative, completed all information and complementary materials, secured the official Czech invitation and presented the invitation during the XXVth IUGG General Assembly in Melbourne in 2011. It was a real encouragement when our bid gained the support in a memorable contest with five other world cities. We realized that having such congress in Prague would not only provide a unique opportunity for Czech geoscientists to present their results on an international forum but also to introduce the City of Prague as an exceptionally suitable place able to host colleagues from all over the world. We could be proud of the fact that Prague became the only city to have the honor to host the IUGG assembly for the second time. It was in 1927 when Prague hosted the IIIrd IUGG General Assembly. During these 88 years which went by, the Czech Republic experienced a complex and not always a fortunate history. Anyhow, the country gets well from its recent uneasy past and Prague, the capital of the country, has been flourishing in the last two decades and became an affordable destination for people from the whole world.

In Melbourne I promised that we prepare a good meeting, and I hope the promise was fulfilled. In the name of the Czech Local Organizing Committee I am extremely pleased that the XXVIth General Assembly of the International Union of Geodesy and Geophysics held in Prague from June 22 to July 2, 2015 was a success. To prepare a congress for several thousand participants was definitely not an easy task, and especially the last couple of months were very hectic. However, I am glad to acknowledge that in general all preparations went relatively smoothly and fortunately we void any real problem. This may be attributed to an enthusiastic involvement and exemplary cooperation of all LOC members. The support of the director of the Institute of Geophysics Pavel Hejda was important; the Institute generously covered all formal activities of the LOC members. The organization of the conference could not have happened without the highly professional help of the C-In company, a professional conference organizer, contracted by the LOC to assist with the realization of the general assembly. Also the cooperation with the IUGG Secretariat, Alik Ismail-Zadeh and Franz Kuglitch, was constructively beneficial and pleasant. Special thanks go to Eduard Petrovsky, who as the chairman of the Science Program Committee, did a wonderful job and set up a superb scientific program of the whole congress. It is obvious that he could not get by without the essential assistance of the secretaries of all the eight IUGG Associations as well as of the corresponding Czech representatives in the individual associations.

We had been concerned about the readiness of the venue of the conference, the building of the Prague Congress Centre, constructed in the eighties, for its today's out of date design and technical facilities, however the PCC rendered a worthy service and its conference activities under the management of the C-In company more than enough fulfilled their task. The acoustics of the major conference hall and the unique view from the face windows, providing a panoramic view of the Prague Castle together with the historical downtown center, were superb.

The PCC located at the walking distance of about fifteen minutes from the Prague downtown area, the near-by station of the underground metro line together with the free of charge public transportation passes provided to all participants facilitated the stay in Prague for all participants and made it a pleasant experience.

Prague, with its unique collection of historical monuments dominated by the Prague castle, Old Town and Lesser Town districts, Charles Bridge and many others, definitely impressed those who visited Prague for the first time and delighted those who had actually come before.

The in-home catering company Zatisi, known as the best in the Czech Republic, was absolutely perfect. The free beer refreshment served during the poster sessions was highly appreciated.

The scientific program ran absolutely smoothly, regardless of a minor electronic gap in one of the first program blocks.

The carefully selected topics chosen for nine Union lectures represented a respectable overview of the scientific scope and a broad range of the IUGG activities realized through its eight associations. The presentation delivered by Nobel Prize winner Y.T.Lee on “Transformation of human society for sustainable future” highlighted this selection.

The exhibitions were well received; their integration with the coffee breaks and poster display area was very successful.

All workshops, as well as field guided trips and guided tours ran successfully.

The Opening and Closing ceremonies were very successful. Many thanks to Ales Spicak for inviting the music ensemble Clarinet Factory, the quartet of three clarinets and a bass clarinet, who during the Opening Ceremony performed a modern music variety of several genres and experiments of classical and jazz music, electronic music and ethno. The delegate enjoyed this performance and their feedback was extremely positive.

The conference standard registration fee of 540 Euro, together with corresponding registrations for all other types, were appreciably lower than conference fees of several previous IUGG assemblies. An extra amount of 125 000 Euro, set aside from the conference budget, assigned to support early career scientists and colleagues from the developing countries greatly helped to increase the number of travel grants. And finally, the persisting advantage of Prague, as the city of high quality services with still cheaper and competitive prices, definitely rejuvenated the average age of a common IUGG congress participant. Even when no statistics of this kind exists, this reality was easily observable.

We have to confess that from the very beginning of the conference planning, the LOC had unfortunately underestimated the important role of media. This failure probably contributed to the surprising indifference of the Czech media concerning the importance of this event. In the second half of the conference we managed to rectify the interest of the Czech TV and of some newspapers and several interviews were realized.

The fact of the acquisition of the XXVIth IUGG General Assembly to Prague was highly appreciated in 2012 by the mayor of Prague MUDr. Bohuslav Svoboda, as a prominent contribution for the development of the congress tourism. The participants of the congress were welcomed by the representatives of the Deputy Prime Minister of the Government of the Czech Republic responsible for Science, Research and Innovation, of the Academy of Sciences of the Czech Republic and of the Czech Learned Society.

### **Acknowledgement and Thanks**

It has been my pleasure to work with all LOC members and I want to thank to them for their constructive, helpful and unselfish approach to all duties which occurred during the whole four years congress preparation. Special thanks belong to Eduard Petrovsky, who wonderfully managed the uneasy role as the Chair of the Science Program Committee.

Petr Holota as the Deputy Chair may sometimes remained in a shadow, but he always appeared when necessary, able to take action and help. Both Vladislav Babuska and Vladislav Rapprich prepared a unique field excursion program covering visits to scientific institutions, scientific trips to the geologically most interesting areas within the country and in its close neighborhood, as well as the guided tours to many interesting places of the country. Marta Tuckova and Marcela Svamberkova helped in distributing the grants.

Extremely good contacts have developed from the very beginning between the LOC and the C-In company, the professional conference organizer. Here I want to thank not only to Petr Marhoul, C-In General Manager, Tomas Maxa, Director of Operations and Pavel Susak, Project Development Manager, but also to their many colleagues. Among them to Anna Hrabetova, for her cooperation in the preparation of the scientific program, abstract submission process and mediating contacts with the invited speakers, to Iva Pelanova for arranging poster and exhibition display, ICT specialist Martin Valter for ensuring the conference computer background and developing the IUGG 2015 web pages, to Tomas Nejedly for organizing the grant system and taking care of the financial management, to Eva Petrova for preparing the excursion program, to Tereza Zvolkska for supervising on sometimes complicated visa and travel problems of some participants. Very special thanks go to Monica

Valterova and Lukas Marecek who as project managers brought the whole conference to its successful end and with whom we developed a friendly and smoothly running cooperation.

The conference would not have run so smoothly without the help of many anonymous volunteers, who were invaluable in doing many small things that the professional staff would not have been able to attend to. The volunteers were all either the University students or postgraduate fellows from the Academy Institutions, who in return for their help as volunteers, were given complimentary registration fees as delegates and were able to participate in part of the scientific program. Thanks go to Tomas Halenka and Tomas Fischer for their excellent management of this program.

### **Summary**

Overall, the LOC and myself are pleased with how thriving the XXVI IUGG General Assembly was, justifying all the hard work involved. Even when we had hoped that the number of participants could reach the recording level of 5000+, the reached final number of 4230 registered delegates, including exhibitors, who attended the assembly, is not a bad result when taking into account certain reverberations of the slowly finishing global financial crisis which certainly limited the travel means of many potential applicants.

In general, the whole XXVIth IUGG General Assembly, its organization, arrangement and scientific merits were very successful and the LOC received many sincere compliments.

## **REPORT OF THE CHAIR OF THE SCIENTIFIC PROGRAM COMMITTEE EDUARD PETROVSKY**

### **1. Foundation and Composition**

The Scientific Programme Committee (SPC) began work in September 2013. It was composed of the Secretaries General (SsG) of the eight Associations, Secretary General (SG) of IUGG and the President of IUGG. Eduard Petrovský, senior researcher of the Institute of Geophysics CAS in Prague, was appointed as Chair of the Committee. The membership was:

- Harsh Gupta, President of the Union,
- Alik Ismail-Zadeh, SG of the Union,
- Andrew Mackintosh, SG of the International Association of Cryospheric Sciences (IACS),
- Hermann Drewes, SG of the International Association of Geodesy (IAG),
- Mioara Manda, SG of the International Association of Geomagnetism and Aeronomy (IAGA),
- Christophe Cudennec, SG of the International Association of Hydrological Sciences (IAHS),
- Hans Volkert, SG of the International Association of Meteorology and Atmospheric Sciences (IAMAS),
- Johan Rodhe, SG of the International Association for the Physical Sciences of the Oceans (IAPSO),
- Peter Suhadolc, SG of the International Association of Seismology and Physics of the Earth's Interior (IASPEI),
- Joan Marti, SG of the International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI), and
- Franz Kuglitsch (Executive Secretary/Assistant Secretary General of the Union, not-voting member).

At several occasions, the SPC was joined by Adelina Geyer Traver (IAVCEI Membership and Webmaster), Charles Fierz (President of IACS) and Johannes Schweitzer (IASPEI Assistant Secretary General).

LOC at the very beginning identified one Czech scientist, matching each of the individual Associations, who acted as the liaison person. This Local Scientific Committee (LSC) met several times face-to-face or discussed necessary issues prior the meeting of the SPC.

### **2. Meetings**

After initial correspondence by e-mails, the SPC met face-to-face for the first time on 24 September 2013 (21 months to Assembly start) in the Assembly venue in Prague. Presidents of the Associations, Chair of the LOC Vladimír Čermák, and the liaison persons of individual Associations took part at this meeting as well. During this meeting, the initial science programme ideas and expectations from each Association were discussed, the venue of the Assembly was visited and number, size and layout of lecture rooms was reviewed. Basic roadmap was established, which was followed, with some modifications, in the future. As regards the scientific programme, coding of the symposia was adopted, Union symposia were reviewed and approved, and first draft of Joint Inter-Association symposia was discussed. A decision was accepted to limit the scientific programme of the Assembly to 9 days, including each day of the central weekend, and a draft of the timetable for the Assembly scientific meetings was established. This timetable was followed over the full planning phase and worked very well during the Assembly.

The second face-to-face meeting of the SPC was held during EGU at the Institute of Geodesy and Geophysics, Technical University Vienna, Austria, on 27 April 2014 (14 months to Assembly start). At this meeting, Union symposia (titles, leading convenors and descriptions) were revised and list of

Joint Inter-Association symposia was modified and approved. The modifications reflected similar character of some of the proposed symposia, which were merged, and the leading Association and convenor were agreed upon. Next, sponsorship for certain number of speakers at the Union symposia was discussed, information about the Union Lectures was presented, and possibilities to organize Association ceremonies and plenaries were debated. Publishing the contributions to some of the IAHS symposia was discussed and the abstracts submission procedure was modified accordingly.

The third face-to-face meeting of the SPC was held on 24 February 2015 (4 months to Assembly start) in the Assembly venue in Prague. At this meeting, programme of the Joint symposia was adjusted; some of the Joint symposia, which did not attract sufficient number of submissions, were merged or changed to poster presentations only. Final timetable of the Joint symposia was approved. Lecture rooms and time allocation for the programme of individual Associations was discussed and approved. Finally, all the proposed symposia were checked for possible overlap of subjects. Timing of business meetings was discussed.

In the meantime, three teleconferences were held on 5 March, 2 April and 27 April 2014. During these teleconferences, various important issues were discussed. Finally, intense e-mail communication on daily basis contributed significantly to the scientific programme preparation.

### **3. Defining the Symposia**

At the first face-to-face meeting of the SPC, the general design of the scientific programme was adopted, that would include:

- Nine Plenary Speakers, one each recommended by the Associations and the Union to the IUGG President who made the final invitations.
- 11 Union Symposia identified as being of wide interest to all. Oral presentations would be by invitation only; poster presentations would be allowed upon the decision of the convenors. These Union Symposia would be supported by symposia proposed by several Associations (Joint Inter-Association Symposia) and by symposia specific to different Associations (Association Symposia).
- Joint Inter-Association symposia put forward by two or more Associations. Scientists who might become leading convenors and supporting co-convenors were identified. These Symposia would include solicited speakers and selected oral presentations from a Call for Abstracts. Poster presentations would also be called for.
- Association symposia and workshops of more specialised interest to an individual Association.
- 2-3 Open Panel Discussions, during which topics of high interest would be discussed by 4-6 recognized experts.

It was agreed that:

- symposia would consist of session of 90 minutes;
- the minimum size of a symposium should be 2 sessions (symposia with less submissions should be either merged with similar symposia, or the presentations should be presented as posters);
- workshops would represent more informal structure according to the habits of individual Associations;
- time slot allocated to each oral presentation would be 15 minutes (including discussion);
- invited speakers at the Union symposia will get two slots (30 minutes);
- solicited speakers at the Joint and/or Association symposia may get one or two slots, depending on the decision of the convenors;
- poster and oral presentations would have equal significance.

A coding convention, evolved from previous IUGG General Assemblies, was adopted and proved to work well:

U	Union	IUGG
J	Joint Inter-Association	2 or more Associations
C	Cryospheric	IACS
G	Geodesy	IAG
A	Aeronomy and Geomagnetism	IAGA
H	Hydrology	IAHS
M	Meteorology	IAMAS
P	Oceanography	IAPSO
S	Seismology	IASPEI
V	Volcanology	IAVCEI

When followed by an assigned number, this code was used to identify symposia and workshops, as for example V07 - IAVCEI symposium number 07. Joint Symposia were identified as for example, JM01 - Joint symposium number 01 led by IAMAS. JHW03 was Joint workshop number 03 led by IAHS.

Recognised scientists and all with strong interests put forward proposals and volunteered as leading convenors through their corresponding Associations. Discussions between the leading convenors, SsG and others brought forward co-convenors and identified cross-Association linkages. A working version of the scientific programme was put up on a closed Web page and Secretaries General oversaw the development of the symposia and acted accordingly in order to refine the programme. Finally, the full programme of symposia and workshops was published on the IUGG2015 Web site on 16 October 2014, minor modifications to the description of symposia/workshops were done also afterwards as requested. The last change was done during the Assembly, when an ad-hoc symposium devoted to the recent major Nepal earthquake was added to the programme.

#### 4. Scientific Programme Structure

The outline structure of the Scientific Programme, both by Assembly day and by Association (Figs 1 and 2), was established at the first face-to-face meeting of the SPC was held to throughout the planning process. It was agreed that the scientific programme will run for 9 days from Tuesday, 23 June 2015, until Wednesday, 1 July 2015. Two morning sessions, including Union lectures on 24, 26 and 29 June (Wednesday, Friday and Monday), were followed by an afternoon programme, combining two oral sessions, separated by 90-minutes long coffee break combined with first poster session, and followed by a second, evening poster session with complimentary beer served.

It was agreed at the first meeting of the SPC that the Union SG will be in charge of the organization of the Union Lectures and Union Symposia (along with the Chair of the SPC), Chair of the SPC will coordinate the preparation of the Joint symposia (in coordination with the SsG of the Associations), and SsG of the Associations will organize their Association programme. This distribution of tasks and responsibilities worked well and enabled enough autonomy to the individual SsG of the Associations, while sufficient overview and coordination was kept by the Chair of the SPC.

Union and Joint symposia were held during the whole period of the Assembly. This appeared to work well and the Associations were able to schedule their programme with more time blocks available. The scientific programme was published continuously, as individual parts were ready. The complete programme of presentations was published on 22 May 2015, along with a possibility to create personal programme and with guidelines for oral and poster presentations. Presenting authors of each oral presentation were supposed to upload the files of their presentation(s) at least one day in advance, either on-site (in the Speaker's Preview Room) or remotely via Web uploader.



	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu
8:30-10:00	AM1 Sessions										
	Coffee Break										
10:30-12:00	AM2	Union L.	AM2	Union L.	AM2	AM2	Union L.	AM2	AM2		
	Lunch Break + Business M.										
13:30-15:00	PM1 Sessions										
15:00-16:30	Posters with Coffee (attendance of the authors)										
16:30-18:00	Opening	PM2 Sessions									Closing + Farewell
18:00-20:00 (21:00)	Reception	Posters with beer + Business M. + 2 Panel Discussions									

**Figure 1** Scientific programme outline by times

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu
IACS											
IAG											
IAGA											
IAHS											
IAMAS											
IAPSO											
IASPEI											
IAVCEI											

**Figure 2** Scientific programme outline by Associations

## 5. Call for Abstracts, Registration and Abstract Fee

The first Call for Abstracts was issued on 1 September 2014. The deadline for abstracts submission was set to 31 January 2015 and later on was extended by one week. The exceptions were three symposia/workshops of IAHS with contributions published in the Proceedings of the International Association of Hydrological Sciences. In this case, the deadline was 16 November 2014. In some few well justified cases later submissions of abstracts were allowed. These cases had to be requested through the symposia convenors and/or SsG of the Associations, and did not exceed 0.5% of total submissions.

Web registration and abstract submission was opened on 1 September 2014. The system was slightly different from those we are used at AGU or EGU Assemblies. However, it was rather intuitive and easy to be used. The only drawback was a bit ambiguous selection of adherence to individual Association, which resulted in a number of registrations without Association selected.

Submission of abstracts was upon the payment of abstract processing fee of 40 EUR (per submitting author). This fee was later deducted from the registration fee. The aim was to minimize the number of withdrawals. Despite that, 388 contributions were withdrawn (6.7% of the total of almost 5800 accepted submissions), 189 of them being oral contributions.

## 6. Mailings and Information Published on Web

All the important information was communicated through Web and mass mailings (Newsletters):

1 September 2014	Online registration and abstract submission opened
16 October 2014	Newsletter on abstracts submission and deadlines, detailed overview of all symposia, registration and accommodation
12 November 2014	Reminder of the advanced abstracts submission deadline (three symposia/workshops with pre-published proceedings)
14 January 2015	Reminder of the travel grants application and abstracts submission deadline
30 January 2015	Abstracts submission deadline extended to 8 February 2015
6 February 2015	Reminder of the extended abstracts submission deadline
17 March 2015	Newsletter on field trips and accommodation
18 March 2015	Newsletter reminding on sponsorship and exhibition opportunities
2 April 2015	Early bird registration deadline extended to 24 April
24 April 2015	Reminder of the early bird registration extended deadline
22 May 2015	Complete scientific programme and guidelines for presenters published
18 June 2015	Newsletter with practical information, including the link to Web uploader of presentations

## 7. The Final Programme Handbook

The Final Assembly Handbook was printed as hardcopy and the Scientific Programme pages were made available on the IUGG2015 Web site. Several views with simple search options were available. Mobile application with all the information related to the Assembly was available for Android, iOS and Windows mobile devices.

## 8. Role of the Leading Convenors and Co-Convenors

Leading convenors and co-convenors were identified by the SsG of the Union and Associations. In particular in the case of Associations programme, the convenors were nominated during the business meetings at the previous Assembly or through the internal processes within the individual Association. In case of Union and Joint symposia, it was important to have convenors from the other Associations.

Leading convenors had very important roles in the design and management of the Scientific Programme:

- Developing the symposia descriptions, usually in coordination with the co-convenors and the corresponding SsG;
- Inviting the solicited speakers;
- Promoting the symposia;
- Reviewing all submitted abstracts, accepting, rejecting or suggesting moving some abstracts to more relevant symposia;
- Assigning the final form of presentation – oral or poster;
- Scheduling the oral presentations for each session;
- In case of withdrawn oral contributions, they contacted authors of poster presentation and offered change from poster to oral;
- Approaching people to act as session chairs.

Co-convenors assisted the leading convenors in all of the tasks mentioned above. In many cases, co-convenors acted as session chairs. In some few cases, one of the co-convenors took over the responsibilities of the leading convenor. It was crucially important for the success of the programme that the working system of communication was established between the Chair of the SPC, SsG of the Union and Associations, leading convenor and co-convenors. For each symposium, only the leading

convenor was considered as the person in charge and acting in the name of all the co-convenors of the respective symposium.

In some few cases, the leading convenors were not timely in finalising their tasks, such as submitting the symposium description, reviewing and accepting the abstracts and scheduling the sessions. This caused delays in developing the draft full programme. In such cases, one of the co-convenors was asked to act instead. In exceptional cases, the Union and Associations SsG or the SPC Chair took over and completed the tasks.

## **9. Role of the Conference Organising Company C-IN**

The LOC contracted C-IN (formerly CZECH-IN) to provide conference management services. For the Scientific Programme activities, C-IN assigned a Project Manager to partner the SPC Chair. From the beginning, it was Monika Valterová. After she left for maternity leave in September 2014, the role was taken by Lukáš Mareček. Martin Valter acted as IT specialist and web manager, and Anna Hrabětová was in charge of the abstracts and programme scheduling.

C-IN arranged all SPC meetings in Prague and covered all the direct costs (meeting room, refreshments, dinner). The management of the IUGG2015 Web site was also undertaken by C-IN; they implemented a centralised Web site update process for the SsG and symposia convenors.

All the above mentioned persons worked very closely with the SPC to develop the Scientific Programme, including implementing a large number of changes as the Web site for the programme was developed.

As the Assembly approached, the magnitude of the tasks increased enormously. Dealing with delegate registrations and changes, the interminable changes from presenting authors, encouraging authors and convenors to respond to requests for action, developing the drafts of the detailed Scientific Programme, allocating the appropriate rooms and audio-visual requirements in the venue, and many other unseen tasks, kept Lukáš, Anna and their team very busy.

In close cooperation with the SPC Chair, C-IN devised the drafts of all correspondence with authors and convenors, developed and managed the abstract review process, managed all the details of assigning symposia sessions to a program grid and matching that with the rooms available in the venue, preparing the whole printed and electronic Assembly Handbook, including devising and preparing the mobile application for Android, iOS and Windows mobile devices.

During the Assembly, all of the C-IN staff continually managed the Scientific Programme onsite, including managing missing speakers, allocating new presentations to sessions, replacing speakers and poster presenters, and solving various technical issues.

## **10. Observations and Issues**

The following are some points worth capturing - what should have been done, what could have been done better, what should be kept in mind:

- It is crucial early in the preparation to clarify the priorities of the Scientific Programme, what programme structure elements are joint and what specific to individual Associations.
- Needs of IAHS to have pre-Assembly preprints of proceedings have to be clarified from the very beginning, as well as the impact the requirements for publication of abstract proceedings might have on the way abstracts will be submitted and the corresponding part of the programme will be finalised and published.
- Clear distribution of tasks and responsibilities between the SPC Chair, Union and Associations SsG is of primary importance, as well as good communication among them.
- Extensions of deadlines have flow-on effects to key dates. Therefore, it is highly advised to minimize the number of extensions and their duration. The set of deadlines, including anticipated extensions, should allow enough time for all the actions required (e.g., review and decision time for the convenors).
- Clarity on the requirements for abstract submissions and their repercussions: we required the submitting author to register and present at the Assembly, but it is important in scientific

circles that the submitted author list be maintained and not require the first listed author to be the submitting author.

- The SPC should be firm in avoiding too small or overlapping symposia. In several cases, such symposia were merged or the submissions were assigned to poster presentation. The leading convenors really do have to make hard decisions.
- In case of gaps in the programme of oral presentations, which are known in advance, the convenors should be able to fill them by offering the time slots to poster presenters. If done in advance, the change can be reflected in the online programme.
- It should be made clear that posters have the same significance as oral presentations. The time and space allocated to posters should not discourage from presenting them.
- Poster area should be an integral part of the whole Assembly space, not separated from the main life in between the lecture rooms. The same applies to exhibition area.
- The scientific programme timetable, consisting of oral sessions, breaks, two afternoon poster sessions (one combined with coffee break, the other one with complimentary beer), proved to work very well.
- It should be emphasised that timekeeping is a must and chair-persons should be strict with that.
- The basic structure of time slots and blocks (sessions) should be unique and fixed, without exceptions.
- Scientific workshops held during the Assembly should be well incorporated into the programme.
- The layout of the congress venue was not ideal, with the lecture rooms scattered all around the huge and complicated building. However, the system of guiding and orienting the participants was clear and efficient. Information screens in front of the lecture rooms provided all the necessary information on the running session, present and next speaker, etc. This system significantly contributed to overall comfort of the participants.
- Program codes should be set for Plenary Speaker presentations and for Opening Ceremony Speaker presentations to aid in defining the timetable and uploading presentations.
- The updating and the clarity of the Web site is an important requirement for any Assembly.
- The option to receive the Letter of Invitation should be clearly visible on the Web site. A similar ability to generate a Certificate of Participation during the Assembly is also important. This feature was available at the self-service PC station and proved to work very well.
- Poster boards were well located in central area, which was integrated with the area for coffee breaks and exhibition. Moreover, the poster area was attractive also due to the natural light and view of the Prague Castle.
- Spacy quiet area, appreciated and used by many participants, was located one floor above the poster area.
- Despite intense promotion and advertisement, it seems that exhibitors did not consider the IUGG Assembly as being of high priority. The number of exhibitors was much lower than at the AGU or EGU, and somewhat lower than at other assemblies of similar size (e.g., AOGS).
- Despite intense promotion and several press releases, the Czech news media and journalists did not cover the Assembly until the very last days. Although this seems to be specific to our society, more effort and personal negotiations should be done prior the Assembly to increase the public awareness.
- The work involved in putting together the scientific programme before the call for abstracts, the handling of abstracts, the structuring of sessions and speakers and room allocations, and the running of the Programme onsite was so large that the conference organising company was essential.
- Flexible communication within the SPC and between the SPC members and the conference organising company is crucial for the success of the whole event. The same applies to prompt responses and actions to all requests and needs.

## **11. Some Numbers**

The Scientific Programme of the XXVI General Assembly of IUGG (IUGG2015) ran from Tuesday, 23 June 2015, through Wednesday, 1 July 2015. It included 198 symposia and workshops, consisting of 639 oral sessions, and involved more than 4200 scientists from 88 countries. Over the 9 days of the Assembly delegates presented almost 5400 contributions (9 Union Lectures, 476 invited and solicited presentations, 2682 standard oral presentations and 2211 posters).

## LIST OF LECTURES AND SYMPOSIA HELD AT THE XXVI GENERAL ASSEMBLY OF THE INTERNATIONAL UNION OF GEODESY AND GEOPHYSICS

### Union Lectures

IUGG	Transformation of Human Society for Sustainable Future (Yuan Tseh Lee, China-Taipei)
IAGA	The Whole-System Approach to Extreme Space Weather (Janet Kozyra, USA)
IAHS	Challenges of Educating Hydrologists for the Global South, the Case of Southern Africa (Dominic Mazvimavi, South Africa)
IACS	Sea Level Change in the Anthropocene (Jonathan Gregory, United Kingdom)
IASPEI	Earthquake Dynamics and Seismic Radiation (Raoul Madariaga, France)
IAVCEI	Volcanic Ash and Aviation Safety (Thomas Casadevall, USA)
IAG	Contributions of Geodesy to Monitoring Natural Hazards and Global Change (Harald Schuh, Germany)
IAMAS	Atmospheric Chemistry in the Anthropocene (Laura Gallardo, Chile)
IAPSO	The Global Ocean Carbon Sink: Recent Trends and Variability (Nicolas Gruber, Switzerland)

### Union Symposia

U01	Future Earth and Sustainability
U02	Integrated Disaster Risk Science: Accounting for Extremes
U03	Mathematics and Observations of Earth Systems
U04	Data Science and Analytics in Geodesy and Geophysics - Research and Education Progress and Opportunities
U05	New Discoveries in Deep Interior of the Earth and Planets
U06	Data Assimilation and Inverse Problems in Geophysical Sciences
U07/JP02	The Potential for Carbon- and Climate-Engineering to Offset Global Change / The Potential for Carbon- and Climate-Engineering to Offset Global Change (IAPSO, IAMAS)
U08	Geo-Monitoring in the 21st Century
U09	Revolutions in Earth Sciences: from Different Spheres to a Common Globe
U10	Sea Level Change and Variability: Past, Present and Future
U11	Early Career Scientists Symposium

### Joint Inter-Association Symposia

JA01	Joint Inversion and Mutually Constrained Inversion of Geophysical Observations (IAGA, IAG, IASPEI) (IAGA, IAG, IASPEI)
JA02	Modelling of Space Weather Effects: Solar, Magnetospheric and Earth Resistivity Constraints (IAGA, IAMAS)
JA04	Results from SWARM, Ground Based Data and Earlier Satellite Missions - Recognition of Eigil Friis-Christensen (IAGA, IAG, IAMAS)
JA05	Physical Processes Prior to and During Earthquakes, Reliability of Precursors (IAGA, IASPEI)

XXVI General Assembly of the International Union of Geodesy and Geophysics  
List of Lectures and Symposia

- JA06 Data on the Edge: Preservation and Utilization of Historical Data in the Geosciences (IAGA, IASPEI, IAMAS, IAG, IAHS, IACS)
- JC01 Sea Ice in the Arctic and Southern Oceans (IACS, IAMAS, IAPSO)
- JC02/C13 Cold Regions Cryosphere and Hydrosphere (IACS, IAHS/ICSIH, IAMAS, IPA)
- JG01 Dynamics of the Cryosphere from Geometric and Gravimetric Observations (IAG, IACS)
- JG02 Modelling the Atmosphere and Ionosphere by Space Measurements (IAG, IAGA, IAMAS, IACS)
- JH01 Extreme Hydrological Events (IAHS, IACS, IAG)
- JH03/JG03 Assessment of Climate and Anthropogenic Changes Impacts on the Terrestrial Hydrosphere (IAHS, IAMAS) / Variations of the Hydrosphere from Satellite Gravity Missions (IAG, IAHS)
- JM02/JM01 Climate Variability and Earth Systems Modelling (IAMAS, IAPSO, IACS) / Earth Systems Dynamics, Predictability and Probabilistic Forecasting (IAMAS, IAG, IAGA, IAPSO, IASPEI)
- JM03 Geochemical Process and Cycles (IAMAS, IAPSO, IAVCEI, IAHS, IACS)
- JM04 Data Assimilation in Geophysical Sciences (IAMAS, IAGA, IACS, IASPEI, IAPSO, IAG)
- JP01 Sea Level Change and Variability: Past, Present and Future (IAPSO, IAG, IACS)
- JP04 Satellite Oceanography and Climatology (IAPSO, IAG)
- JP05 Tsunamis (IAPSO, IASPEI)
- JS02/JS01/  
JA03 Physics and Chemistry of Earth and Planetary Interiors with Implications for their Structure, Process and Evolution (IASPEI, IAVCEI, IAGA, SEDI, IACS) / Planetary Physics (IASPEI, IACS) / Geophysical Constraints on Geodynamical Processes (IAGA, SEDI, IASPEI, IAVCEI)
- JS03 Geophysical Imaging of Natural Resources (IASPEI, IAG, IAGA, SEG)
- JS04 Deformation of the Lithosphere: Integrating Seismology and Geodesy through Modelling (IASPEI, IAG)
- JS05 Glacier, Ice Sheet and Snow Seismology (IASPEI, IACS)
- JS06/JP06 Array Techniques for Monitoring the State of the Earth (IASPEI, IAPSO, IAGA) / Acoustical Oceanography (IAPSO, IASPEI)
- JV03 Geophysical Imaging and Monitoring of Volcanoes (IAVCEI, IASPEI, IAGA)

### Association Symposia and Workshops

#### International Association of Cryospheric Sciences (IACS)

- C01 GLIMS and the Randolph Glacier Inventory: where Do We Go from Here?
- C02 Advances in Estimating and Measuring Glacier Ice Thicknesses
- C03 Glacier Monitoring from In-Situ and Remotely Sensed Observations
- C04 Modelling of Mountain Glaciers, Past and Future
- C05 Impacts of Dust and Black Carbon on Snow and Glaciers
- C06 Ice Sheet and Ocean Interactions on Multiple Scales
- C07 Understanding Linkages between Different “Elements” of the High-Latitude Cryosphere
- C08 Ice Cores and Climate
- C09 Water Stable Isotopes as Tools to Elucidate Atmosphere, Hydrosphere and Cryosphere Interactions
- C11 Climate Downscaling for Modelling Glacier Mass Balance
- C12 Coupling Processes between the Atmospheric Boundary-Layer and Snow/Ice Surfaces: Observations and Modelling
- C14 Snow: Physical Properties and Impact on the Cryosphere
- C15 Cryosphere, Atmosphere and Climate: Evaluation of the Cryosphere in CMIP5 Models

- C16 Cryosphere, Atmosphere and Climate: The Cryosphere and Polar Amplification of Climate  
C17 Challenges in Cryospheric Sciences: Past, Present and Future

**International Association of Geodesy (IAG)**

- G01 Reference Frames  
G02 Static Gravity Field Models and Observations  
G03 Variations of the Gravity Field  
G04 Earth Rotation and Geodynamics  
G05 GNSS++: Emerging Technologies and Applications  
G06 Unifying Height Systems  
G07 Geohazards Monitoring  
G08 Sea-Level Observation and Modelling

**International Association of Geomagnetism and Aeronomy (IAGA)**

- A01 Planetary Core Dynamics, Dynamos and Fundamental MHD Processes (Div. I)  
A02 Recent Theoretical Advances in Electromagnetic Induction: Analysis, Modelling and Inversion (Div. I)  
A03 Electromagnetic Imaging from the Near-Surface, Lithosphere-Asthenosphere, to the Core: Results and Interpretations (Div. I)  
A04 Magnetic Stratigraphy: Polarity Reversals, Relative Paleointensity and Excursions (Div. I)  
A06/A07 Applied Rock Magnetism (Div. I) / Theoretical and Experimental Rock Magnetism (Div. I)  
A08 Time Variation of Magnetic Field over Millennial Timescales and Longer (Div. I)  
A09/A05 Open Symposium on Paleomagnetism and Rock Magnetism (Div. I) / Paleomagnetic reference models, Apparent Polar Wander Paths, and their use in Global and Regional Tectonics (Div. I)  
A10 Paleomagnetism and Magnetic Fabrics Applied to Tectonic and Volcanic Processes (Div. I)  
A11 Electrodynamics and Energetics of the Middle Atmosphere Exploration with Ground and Space Experiments (Div. II-A)  
A12 Coupling Processes in the Atmosphere-Ionosphere System (Div. II-C/ICMA/SCOSTEP)  
A13 Solar-Related Variability of the Lower, Middle and Upper Atmosphere (Div. II-D/IAMAS-ICMA/IAMAS-IRC)  
A14 Equatorial Spread-F, Equatorial Ionization Anomaly (EIA) and F3-Layer Studies During Geomagnetic Quiet and Disturbed Periods (Div. II-E)  
A15 Long-Term Trends in the Stratosphere, Mesosphere, Thermosphere and Inosphere (Div. II-F/ICMA/SCOSTEP)  
A16 Energetic Particle Precipitation into the Atmosphere: Sources and Atmospheric Impacts (Div II-D/IAGA Div II-VERSIM/ICMA)  
A17 The Earth's Plasmasphere: Remote Sensing and Modelling (Div. II-VERSIM)  
A18 Sun-Earth System Response to Extreme Solar Events and Space Weather (Div. II/Div. III)  
A19 ULF Waves: Space-Ground Coordination (Div. III)  
A20 ULF waves in the inner magnetosphere (Div. III)  
A21 Wave and Particle Dynamics in the Radiation Belts and Ring Current (Div. III)  
A23 Different Response Modes of the Magnetosphere to Solar Wind Driving (Div. III)  
A24 The Plasmasheet - Ionosphere, a Coupled System: Sinks, Sources, Transport and the Roles of Field-Aligned Currents and Ion Outflow (Div. III/Div. II)  
A25 Auroral Processes (Div. III)  
A26 High-Latitude Electrodynamics and the Polar Cap (Div. III)



XXVI General Assembly of the International Union of Geodesy and Geophysics  
List of Lectures and Symposia

- A27 Reporter Review for Div III  
A28/A29 New advances in Solar and Interplanetary Physics (Div. IV) / Wave and Turbulence in the Solar Atmosphere and Solar Wind (Div. IV)  
A30 Multi-Spectral Studies of Solar Flares (Div. IV)  
A32 Studies of the Quiet Sun and Active Regions (Div. IV)  
A33/A22/A31 Boundary Layers in the Heliosphere (Div. IV) / Magnetospheric Boundary Layers (Div. III) / Crossing the Heliopause into the Interstellar Medium (Div. IV)  
A34 Division IV Reporter Reviews  
A35 High Resolution Data for Space Plasma Turbulence, and Applications to Space Weather and Space Climate (Div. V/Div. IV/Div. III)  
A36 Planetary Magnetic Fields and Geomagnetic Secular Variation (Div. V/Div. I)  
A37 Geophysical and Geomagnetic Diagnosis of the Sun and Near-Earth Space (Div. V/Div. III)  
A38/A40 Geomagnetic Observations under a Quiet Sun: the 50th Anniversary of the “International Year of the Quiet Sun“ (Div. V/Div. II/Div. III/Div. IV) / Use of Indices and Recovered Analogue Records in Geophysical Data Analysis (Div. V)  
A39 Geomagnetic Observatories, Variometers and Repeat Surveys: Instrumental and Operational Developments and Applications (Div. V)  
A41 Lithospheric Field Modeling, the WDMAM and Tectonic Implications (Div. V)  
A42 Div. V Reporter Reviews (Div. V)  
A43 Characterization of Ionospheric and Magnetospheric Processes from Ground and Satellite Observations and Their Connection to Space Weather (ICDC/Div. II/Div. III/Div. V)

**International Association of Hydrological Sciences (IAHS)**

- HS01 Changes in Flood Risk and Perception in Catchments and Cities  
HS02 Hydrologic Non-Stationarity and Extrapolating Models to Predict the Future  
HS03 Precipitation: measurements, instrumentation, statistics, modeling and predictions at all scales  
HW01 Exchange Processes at Aquatic Boundaries and Their Effects on Ecosystems  
HW02 Hydrological Model Intercomparison for Climate Impact Assessments  
HW03 Multivariate Analysis in Hydrological Modelling  
HW04 Hydrological Change in Statistical Perspective  
HW05 Societal Relevance of Groundwater: Ever Increasing Demands on a Limited Resource  
HW06 Socio-Hydrology: The Dynamic Interplay between Water and Human Systems  
HW07 Control of Water Resource Systems  
HW08 Water Security in a Changing World  
HW09 Hydrology Education in the Classroom  
HW10 The Role of Sediment as an Indicator of Hydrological and Societal Change  
HW11 Fingerprinting Techniques: Evaluating Methodological Approaches, Problems and Uncertainty  
HW12 Using Environmental Observatories in Catchment Studies and Management  
HW13 Hydrological Predictions in Ungauged Basins  
HW14 Advancing Water Quality Prediction at the Catchment Scale: New Theories and Approaches  
HW15 Tracer Methods for Understanding the Response of Hydrological Systems to Transient Contamination Inputs  
HW16 Observations and Modelling of Land–Atmosphere–Society Interactions in Hydrology  
HW17 Hydrological Forecasting and Predictive Uncertainty: Advances and Challenges of Transferring Science into Operational Practice  
HW18 Advances in Remote Observation of Snow  
HW19 Remote Sensing Retrievals of Precipitation and Evapotranspiration

**International Association of Meteorology and Atmospheric Sciences (IAMAS)**

- M01 Clouds, Precipitation and Aerosols and their Influence on Climate at High Latitudes, including the Role of the Southern Ocean and Sea Ice
- M02 Advances in Atmospheric Dynamics Including Topographic Forcing
- M03/M15 Weather and the Global Atmospheric Electric Circuit / Electrical Charging and Discharging in Thunderclouds
- M04 Numerical Models for Climate Studies and Forecasting at High Latitudes
- M05 Observations and Modelling of Cloud Condensate and Water Vapour Variability
- M06 Observations of Anthropogenic Aerosol-Cloud Interactions
- M07 The Relationship of Cloud Ice Properties and Processes in Observations and Models
- M08/M09 Comparative Planetary Atmospheres within and beyond the Solar System / Solar System Exploration of Atmospheres with Ground-Based and Space-Based Platforms
- M10 Global Monsoons and Climate Change
- M11 Tropical Cyclones
- M12 Tropical Dynamics
- M13 Regional Climate Variability and Change
- M14 Middle Atmosphere Science
- M16 Radiation in the Climate System
- M18/M17 Past Climate Changes: a Key for the Future / Science of Adaptation to Climate Change
- M19 El Niño / Southern Oscillation and Decadal Variability under Climate Change
- M20 The Ocean's Role in Climate Variability, Change and Predictability
- M21 Decadal Climate Dynamics and Prediction
- M22 Understanding and Predicting High-impact Weather and Climate Extremes

**International Association for the Physical Sciences of the Oceans (IAPSO)**

- PAS1 IAPSO 2015 Prince Albert I Medal Presentation and Memorial Lecture
- P01 General Topics on the Physical Science of the Oceans
- P02 Physics and Biogeochemistry of Semi-Enclosed and Shelf Seas
- P03 Ocean Mixing
- P04 Oceanic Boundary Current Systems
- P05 Southern Hemispheric Forcing of the MOC and Carbon Cycle in Past, Present, and Future Climate Change
- P06 The Southern Ocean: where Ocean, Ice and Atmosphere Meet
- P08 MOC and Deep Currents
- P09 The North Atlantic and Climate Change
- P10 Sub-Mesoscale Eddies
- P11 Wind Waves, Including Extreme Waves
- P12 IIOE to IIOE-2 - Five Decades of Indian Ocean Oceanography: Challenges in Physics and Biogeochemistry of Indian Ocean
- P13 Internal waves dynamics in world oceans: from remote sensing, insitu monitoring to numerical modelling

**International Association of Seismology and Physics of the Earth's Interior (IASPEI)**

- S01/S01f Seismological Observation and Interpretation: Open session, Seismic Time series Analysis
- S01a Seismological Observation and Interpretation: Seismic Swarms and Tectonic Tremors
- S01b Seismological Observation and Interpretation: 3D Velocity Models for Seismic Observatory Applications
- S01c Seismological Observation and Interpretation: Triggered and Induced Seismicity
- S01d Seismological Observation and Interpretation: Macroseismology and Historical Earthquakes

XXVI General Assembly of the International Union of Geodesy and Geophysics  
List of Lectures and Symposia

S01e	Seismological Observation and Interpretation: Real-Time Seismology and Early Warning
S01g/S11	Seismological Observation and Interpretation: The Future of the Global Seismic Infrastructures, Forensic Seismology and CTBTO Data
S02	50 Years of the ISC Service to Seismology
S03	Recent Large and Damaging Earthquakes
S04	Earthquake Generation Process: Physics, Modeling and Monitoring for Forecast
S05	Source Rupture Kinematics and Dynamics: Observation and Inversion
S06a/S06b	Strong Ground Motion: Open session, SGM Record Selection and Earthquake Scenarios
S06c	Strong Ground Motion: Ground Motion Prediction Equations
S06d/S06e	Strong Ground Motion: Site Effects and Rotational Seismology
S07	Seismic Hazard and Risk
S08/S08a	Lithosphere Structure and Dynamics: Open session, Lithospheric Structure - LAB Observations and Models
S08b/S08c	Lithosphere Structure and Dynamics: Lithospheric Stress and Strain - Observations and Modelling, Plate Boundary Deformation at Lithospheric Scale
S09	Mantle and Core Structure and Dynamics
S10/S10a	Earthquake Prediction: Open session, Operational Earthquake Forecasting
S10b	Earthquake Prediction: Earthquake Prediction Research
S12	Ambient Noise
S13	Terrestrial Heat Flow
S14	Nepal May 2015 Earthquake

**International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI)**

VS01	New Advances in Volcano Seismology and Related Geophysical Methods
VS02	Lava Flows
VS03	LIPs: vents and volatiles
VS04	Collapse Calderas
VS06	Benchmarking Pyroclastic Density Current Models: Code Inter-Comparison and Field Validation
VS08	Experimental Studies of Volcanic Systems
VS10/VS11/ VS31	Probabilistic Volcano Hazard Analysis / Short-Term Forecasting of Volcanic Hazard: So Far, So Good? / Quantifying and Communicating Uncertainty During Volcanic Crisis
VS12	Understanding Volcanic Lakes: a Multi-Disciplinary Approach
VS13/VS05	Environmental and Health Effects of Natural Mineral Dusts / Recent Eruption Impacts and Mitigation within Urban Areas
VS14/VS07	Unlocking the Enigma of Monogenetic Volcanism from a Historic Perspective to the Most Novel Recent Approaches / Explosive Basaltic Eruptions on Earth and other Planets
VS15/VS30/ VS34	Water and Magma / Volcaniclastic Sediments: Modern Applications for Marine and Earth Sciences / Effects of Water on Subaerial Volcanic Eruptions and Ash Dispersal
VS16	Mechanisms of Volcanic Ash Generation: from Lab to Field
VS17	Dynamics of Eruption Clouds
VS18	Rock Physics in Crustal Processes
VS21	Volcanic Ash Aggregation
VS22	Volcanic Risk - Bridging Hazard Assessment, Modeling Volcanic Processes, and Society
VS23	Rheological and Mechanical Influences on Volcanic Eruptions
VS24	Volcano Geology

XXVI General Assembly of the International Union of Geodesy and Geophysics  
List of Lectures and Symposia

VS25/VS09	Remotely Sensed Mapping of Volcanic Regions / Statistics in Volcano Remote Sensing
VS26	Volcanic Landscapes across the Solar System: from Field to Remote Sensing Analysis
VS28	Understanding VIPS (Volcanic and Igneous Plumbing Systems) through Multidisciplinary Research
VS32/VS33	Weather and Climate Effects of Volcanic Eruptions / VS33 Understanding Volcano-Climate Feedbacks
VW01	2nd Workshop on Volcano Geology
VW02	Best Practices and Recommendations for Tephra Measurements
VW03	Effective Communication Tools: What Can Volcanology Learn from Other Hazards?
VW04	Remote Sensing and Modelling of Volcanic Ash in Latin America
VW05	Models in Volcanology
VW06	New Processing and Interpretation Methods in Volcano Seismology

Open Panel Discussions

PD1	Protected Volcanic Areas and Volcanological Heritage (IAVCEI, UNESCO, IUGS)
PD3	Science in Support of Climate Services

**Statistics**

**Symposia and Oral Sessions Breakdown**

	No. of Symposia		No. of Oral Sessions	
	No.	%	No.	%
Union	11	5.6%	29	4.5%
Joint	23	11.6%	73	11.4%
IACS	15	7.6%	31	4.9%
IAG	8	4.0%	52	8.1%
IAGA	37	18.7%	109	17.1%
IAHS	22	11.1%	59	9.2%
IAMAS	19	9.6%	83	13.0%
IAPSO	12	6.1%	59	9.2%
IASPEI	23	11.6%	70	11.0%
IAVCEI	28	14.1%	74	11.6%
Total	198		639	

**XXVI IUGG GENERAL ASSEMBLY OPENING CEREMONY  
PRAGUE, CZECH REPUBLIC, 28 JUNE 2011**

The Opening Ceremony of the XXVI General Assembly of the International Union of Geodesy and Geophysics was held in the afternoon of Tuesday, 23 June 2011 at the Prague Congress Centre, Prague, starting at 16:30.

**PROGRAMME**

Address by Vladimír Cermak, Chair of the Local Organizing Committee of the XXVI IUGG General Assembly

Address by Jan Marek, Representative of the Czech Government

Address by Jan Safanda, Representative of the Czech Academy of Sciences

Address by Jiri Bičák, President of the Learned Society of the Czech Republic

Address by Yuan T. Lee, Past President of the International Council for Science and the Academia Sinica, and Nobel Prize Laureate

Address by Gordon McBean, President of the International Council for Science

Address by Patrick McKeever, Chief of the UNESCO Earth Sciences and Geohazard Risk Reduction Section

Address by Deon Terblanche, Director of the Atmospheric Research and Environment Branch of the World Meteorological Organization

Address by Eduard Petrovsky, Chair of the Scientific Program Committee of the XXVI IUGG General Assembly

Address by Alik Ismail-Zadeh, Secretary General of IUGG

Address by Harsh Gupta, President of IUGG

**ADDRESS BY VLADIMIR CERMAK,  
CHAIR OF THE LOCAL ORGANIZING COMMITTEE OF THE XXVI IUGG GENERAL  
ASSEMBLY**

Dear IUGG2015 Delegates, dear colleagues and guests,

Welcome to Prague, welcome to the 26<sup>th</sup> General Assembly of the International Union of Geodesy and Geophysics. On behalf of the Czech National Committee for Geodesy and Geophysics and of the IUGG 2015 Local Organizing Committee I am happy to welcome you. We have been planning for this assembly since year 2010, bidding for it during the 25<sup>th</sup> IUGG General Assembly at Melbourne four years ago and luckily succeeded the honor to host the IUGG in Prague in a memorable competition with four other respectable world cities.

IUGG holds its general assembly every four years and Prague can be proud of being the only city to host this event for the second time. It was in 1927 when Prague hosted the 3<sup>rd</sup> IUGG General Assembly of almost 300 participants. During these 88 years which went by, the world experienced a complex history, had passed over periods of sorrowful degradation, but successfully recovered and in the last decades is enjoying an unprecedented progress, which enabled an amazing worldwide cooperation. The IUGG did not stay behindhand; as an eminent science union and as a composite of eight semi-autonomous associations, well covers all Earth science disciplines stretching from the deepest Earth interior to the most remote edges of the Universe. Concurrently, the Czech Republic gets well from its unfortunate recent history. Its capital, Prague, in the last 25 years has been flourishing and became an affordable destination for people from the whole world. Prague, with its a unique collection of historical monuments dominated by the Prague Castle and Charles Bridge is one of the most beautiful cities in Europe. I am sure, that the sight view from the windows of the Prague Convention Centre, the meeting venue, is something, you will never forget.

To prepare this congress was not an easy task and it took certain effort to do so. On this occasion, I want to thank all members of the Local Organizing Committee for their help and cooperation, special thanks go to Eduard Petrovsky, who as the chairman of the Science Program Committee, did a good job and set up a superb program of the Union, Inter-Association and Association lectures, scientific sessions, workshops and short courses. It is obvious that he could not get by without the essential assistance of all secretaries of all eight IUGG Associations. Thanks go to the director of the Geophysical Institute, Czech Academy of Sciences, Pavel Hejda. The cooperation with the IUGG Secretary General, Alik Ismail-Zadeh, was constructively beneficial and pleasant. The organization of the conference could not have happened without the highly professional help of the C-IN company, a professional conference organizer, contracted by the LOC to assist with the realization of the general assembly.

To finish, I want to share the words of Albert Einstein, a resident of Prague between 1911 and 1912: "Besides, the city of Prague is wonderful, that beautiful that this city alone would already prove of value for a longer journey."

Thank you for coming to Prague. Make your attendance of the 26<sup>th</sup> IUGG General Assembly a successful scientific experience. Enjoy your stay, enjoy Czech culture and hospitality.

**ADDRESS BY JAN MAREK,  
REPRESENTATIVE OF THE CZECH GOVERNMENT**

Ladies and gentlemen,

It is my pleasure to greet you on behalf of Mr. Belobradek, the Vice Prime Minister for Science and Innovation of the Czech government.

Let me be a little bit provocative and ask you a question why should be the public money invested into research?

Probably everybody agrees that science should create new or unique knowledge or invention. This is why states support creativity of scientists and inventors in fundamental as well as in applied research. But this is only one dimension.

From my point of view, the second role of science of the highest quality is education of young specialist. Most of the students who come into contact with science during their studies, do not work for academia during their later professional life. They work for industry or services. Nevertheless, they have skills for solving problems through scientific methods and use scientific knowledge and information for their own business.

The third role of research is to help to develop new principles and solutions for society, business or services. By the way, this type of business is the most important activity for the long term competitiveness of a small country as for example the Czech Republic is.

This conference is focused on geodesy, geophysics, volcanism or meteorology. Scientific studies of Earth, its gravitational and magnetic fields, its internal structure, composition and tectonics, the hydrological cycle, all aspects of the oceans, the atmosphere, ionosphere and other information could be used for mitigation of natural hazards, environmental preservation, protection of people and for other needs of mankind. This is very good example of successful knowledge transfer.

I am very happy that this general assembly is held in the Czech Republic. Let me wish you successful stay, an interesting discussion and a lot of new contacts.

Thanks for your attention.

**ADDRESS BY JAN SAFANDA,  
REPRESENTATIVE OF THE CZECH ACADEMY OF SCIENCES**

Dear Mr. President of the International Union of Geodesy and Geophysics, Dear participants of the General Assembly, distinguished guests, dear colleagues, ladies and gentlemen,

It is my great honor and pleasure to welcome you on behalf of the Czech Academy of Sciences and especially on behalf of its President Professor Jiří Drahoš, who took patronage over the 26th General Assembly of the IUGG, but cannot welcome you personally due to his other duties.

I would like to express my gratitude to the organizers that such a large and representative scientific assembly has been convened to Prague. I acknowledge the fact that among the organizers there are outstanding scientists from several institutes of the Czech Academy of Sciences. In this connection, allow me to mention one of them, the Institute of Geophysics, where, as far as I know, the idea of organizing the IUGG 2015 assembly in Prague originated and that bore the main burden of and responsibility for its preparation.

When I looked at the Scientific Program of the Assembly I realized not only the importance of the individual topics for our understanding of the Earth System functioning, but also their large application potential in many spheres of the human activity. The Czech Academy of Sciences is aware of it and strongly supports research in this branch of science. Problems addressed by geophysics and geodesy are studied in several institutes including the recently established institute focused on the global change research.

These institutes exploit the existing expertise also in their service to the society, for instance through the program Natural Hazards, which is one of the programs of the new Strategy of the Czech Academy of Sciences.

Having in view a long tradition of geophysics and geodesy in this country and the share of the Czech geoscientists in the international networking and cooperation I am sure that the decision to hold the IUGG meeting in the capital of the Czech Republic was a right choice. Dear participants, allow me to wish you and your 26th General Assembly full success, fruitful discussions and new inspiration for you further research.

Thank you for your attention.



**ADDRESS BY JIRI BIČÁK,  
PRESIDENT OF THE LEARNED SOCIETY OF THE CZECH REPUBLIC**

Dear Ladies and Gentlemen,

I am happy and honored to give you a cordial welcome on behalf of the Learned Society of the Czech Republic. Allow me to tell you few words about our Society.

It was established on May 10, 1994 at a festive session in the Hall of Patriots of Carolinum, the original seat of the Charles University, founded 1348 in Prague. Attending were 36 members of the Foundation for the Restoration of the Learned Society who became its Founding Members. New members of the Learned Society were elected at annual general assemblies. At present our Society involves 102 regular, 45 foreign members and 9 emeritus members. The executive body of the Society is its Board which consists of eight regular members. The principal aim of the Society is to encourage and support the free, self-directed advancement of science and the spread of scientific understanding and knowledge at every level of the public. It also seeks to further the interests of Czech science and to increase its standing in the society. Of particular prominence is the development of inter-disciplinary communication at the national and international levels.

Going back in time, let me recall that the first Learned Society in our countries arose in 1746. It was founded in the Moravian historical episcopal city of Olomouc and had a mysterious name “Societas eruditorum incognitorum in terris Austriacis” (“the Society of Anonymous Scholars in the Austrian Lands”). It published the first scientific journal in the Habsburg monarchy--in German, apparently as the counterpart to Latin cultivated by Jesuits in Olomouc. “Societas eruditorum” lasted for a short time, however, only until 1751. Nevertheless, in 1791 the Royal Czech Learned Society was established which existed until 1951 when it was abolished by the communist regime. Among its members were such renowned personalities as mathematician and priest Bernard Bolzano, physicist Christian Doppler, or eminent Czech historians František Palacký and Josef Dobrovský. In 1890 architect Josef Hlávka inspired and financially supported the foundation of the Czech Academy of Sciences and Arts which lasted until 1952; again, it was abolished by the communist regime.

In 1953, following the Soviet system, the board of “Academicians” was established---a mixture of eminent scientists, together with “averaged-type” members, and even with those whose main “plus” was the support of the political regime. This “mixture” was dissolved in 1992. Afterwards, and after the split of Czechoslovakia into the Czech and Slovak Republics at the end of 1992, the Learned Society of the Czech Republic was established.

I would like to conclude by a remark why I esteem your field of knowledge. I am working in General Relativity which, just this year, celebrates the 100<sup>th</sup> anniversary of its “final” formulation by Albert Einstein. Of course, we all analyze the effects of the only universal force---the gravity. But there exist various more specific interrelations between our interests. So, for example, relativists employ, with a great profit, the results of the “geophysical” satellite GRACE, which is able to measure multipole moments of the Earth up to  $l=360$ . With this knowledge LAGEOS satellites can measure directly the relativistic effects of dragging of space due to Earth’s rotation. Or, as you analyze the earthquakes, relativistic astrophysicists are much interested in neutron-star-quakes. I think that for our fields a statement by Karl Popper is appropriate: “All science is cosmology, I believe”, indicating that though science is getting more and more specialized it also has a tendency towards “unity”.

I wish you most interesting, inspiring and enjoyable congress and a memorable stay in Prague.

**ADDRESS BY YUAN T. LEE,  
PAST PRESIDENT OF THE INTERNATIONAL COUNCIL FOR SCIENCE AND THE ACADEMIA  
SINICA, AND NOBEL PRIZE LAUREATE**

Four years ago in Rome, at the General Assembly of the International Council for Science, IUGG put forward a fascinating and important resolution to create, basically, an IPCC for disaster risk reduction: a global platform to regularly assess scientific knowledge on disaster risks, and to connect this knowledge to life-saving policy and action.

ICSU did not take up the initiative, but I always believed it a highly worthy and forward-looking idea. And it was only one of a great many excellent ideas from IUGG over the years.

So today, when I say thank you, I not only thank IUGG and Prof. Harsh Gupta for inviting me here, but also for the way IUGG has challenged, advanced and enriched science and the world at large.

In the years after that IUGG proposal, horrific disasters have confirmed the need to connect our best science to action. The April 2015 Nepal earthquake was so powerful it moved Mount Everest by 3cm and killed over 9,000. Better prevention and response measures informed by ever-improving science would surely make enormous differences in such crises.

We are also reminded of the need to connect knowledge to action on the evolving crisis of climate change. 2015 is on track to be by far the hottest year on record. California is suffering through a biblical drought, and extreme heat waves in India have already killed thousands.

This December, the world's nations may finally heed the voice of science and reason, and strike a global climate agreement. But to truly succeed, the accord must spark enough action.

So we need the amazing IUGG community to continue doing what it does: advancing knowledge, challenging leaders, and demanding the kind of action that will truly transform this world.

Thank you.

**ADDRESS BY DEON TERBLANCHE,  
DIRECTOR OF THE ATMOSPHERIC RESEARCH AND ENVIRONMENT BRANCH OF THE  
WORLD METEOROLOGICAL ORGANIZATION**

Ladies and Gentlemen,

On behalf of the Secretary-General of the World Meteorological Organization (WMO), Michel Jarraud, I would like to thank IUGG for the invitation to its 26<sup>th</sup> General Assembly. WMO and IUGG have a long history of constructive cooperation benefitting society through science. Together the two organizations provide a strong basis for constructive cooperation. Over the years this has contributed to the core WMO mission aimed at the protection of life and property through the provision of weather and climate services, based on sound science, as a prerequisite for sustainable development. The world that we live in is rapidly evolving, both the physical Earth System and, the socio-economic-population dynamics are changing fast. We witness the growing impact of extreme weather events on livelihoods and infrastructure. Growing urbanization this provides a new set of challenges and opportunities. Our human fingerprints are clearly evident across the entire Earth System but as scientists this does not mean that our hands are cut off.

Let me mention two recent cooperative events where stock was taken of the remarkable progress in weather and climate science in recent decades and through which the way forward were paved: the WCRP Open Science Conference in Denver during 2011 and the World Weather Open Science Conference in Montreal in the latter part of 2014. The results of these conferences of high scientific level confirm the current strong emphasis on a seamless approach to science that underpins weather, climate and related environmental sciences and in which the end user is central. Weather and climate are in fact the two faces of the same coin.

The 17<sup>th</sup> session of WMO Congress was concluded on 12 June 2015 and established key priorities for 2016-2019 that emphasize disaster risk reduction, climate services, meteorological services to aviation, observations, the cryosphere, and capacity development. The scientific contributions of the Volcanic Ash Scientific Advisory Group (VASAG), co-sponsored by WMO and the IUGG to the advancement of the International Airways Volcano Watch (IAVW), is but one tangible area of cooperation related to aviation. However, all these priorities demand a more integrated approach to weather, hydrology and climate science and services and will provide new and enhanced opportunities for WMO and IUGG to cooperate. Progress will greatly benefit from our ability to enhance our longstanding relationship. In this regard I find your slogan for the 26<sup>th</sup> IUGG General Assembly highly appropriate: 'Earth and Environmental Science for Future Generations'.

I wish you all success in your busy programme over the next week and a half.

Thank you.

**ADDRESS BY EDUARD PETROVSKY,  
CHAIR OF THE SCIENTIFIC PROGRAM COMMITTEE OF THE XXVI IUGG GENERAL  
ASSEMBLY**

Dear Mr. President, dear ladies and gentlemen,

It has been my great honour to serve as the chair of the Scientific Programme Committee and to welcome you to the beautiful city of Prague. The Committee, which I consisted of the following members:

- Andrew Mackintosh, Secretary General of the International Association of Cryospheric Sciences (IACS),
- Hermann Drewes, Secretary General of the International Association of Geodesy (IAG),
- Mioara Manda, Secretary General of the International Association of Geomagnetism and Aeronomy (IAGA),
- Christophe Cudennec, Secretary General of the International Association of Hydrological Sciences (IAHS),
- Hans Volkert, Secretary General of the International Association of Meteorology and Atmospheric Sciences (IAMAS),
- Johan Rodhe, Secretary General of the International Association for the Physical Sciences of the Oceans (IAPSO),
- Peter Suhadolc, Secretary General of the International Association of Seismology and Physics of the Earth's Interior (IASPEI),
- Joan Marti, Secretary General of the International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI),
- Alik Ismail-Zadeh, Secretary General of the Union,
- Harsh Gupta, President of the Union (non-voting member), and
- Franz Kuglitsch (Executive Secretary/Assistant Secretary General of the Union, non-voting member),

At several occasions, Adelina Geyer Traver (IAVCEI), Charles Fierz (IACS President) and Johannes Schweitzer (IASPEI Assistant Secretary General) joined the Committee meetings to represent related Associations on behalf of the Association Secretaries General. The Science Programme Committee held its first face-to-face meeting on 24 September 2013 in Prague. The next two face-to-face meetings on 27 April 2014 and 24 February 2015 were completed by several teleconferences and hundreds to thousands of e-mails and phone calls. As a result, you are now an active part of the programme, which is structured into 9 Union Lectures, 11 Union Symposia, 24 Joint Inter-Association Symposia and a number of Association's Symposia and Workshops. The programme is rich and diverse, reflecting the diversity and complexity of the IUGG and its eight Associations, and reflecting the actual hot topics of the research related to the Earth and its environment. This intrinsic diversity represented the main constraint and difficulty during the programme preparation. Along with different wishes, requests and preferences of individual Associations and groups of researchers, we had also to cope with limited time and number of rooms available. Finally, we are all here now, at an Assembly of more than 4100 registrants, and with programme counting more than 5700 contributions. I am well aware of the fact that the programme is not ideal. To be honest, it indeed can't satisfy everybody. However, believe me or not, we did our best to find a compromise (although sometimes it was tough job), and I am confident that most of you will enjoy your attendance and the Assembly will be an event to be remembered for a long time.

Welcome to Czech Republic, welcome to Prague, and enjoy the Assembly. Now it is all up to you.

**ADDRESS BY ALIK ISMAIL-ZADEH,  
SECRETARY GENERAL OF IUGG**

Distinguished Guests, Dear Colleagues, Ladies and Gentlemen,

It is my great pleasure to report to the 26th IUGG General Assembly certain aspects of the administration of the Union. Initially I summarize briefly the achievements of the Union since 2008 when IUGG started to reshape its structure and activities to meet scientific and organizational needs.

Two Union Commissions on Data and Information and on Climatic and Environmental Change, and the Union Working Group on History have been established to coordinate activities across Union Associations and other international organizations on relevant scientific topics. Four Standing Union Committees on the Membership Issues, the Capacity Building and Education, the Honor and Recognition, and the Visioning have been formed to help the Union to reshape the membership and science education programs, to establish Union awards and medals, and to develop an IUGG strategic plan for the nearest future.

IUGG established a new Grants Program to support projects, which will explore new scientific ideas and develop future international initiatives. Since 2012 IUGG awarded 9 grants to support projects of importance to the international geophysical and geodetic community.

IUGG established a new Science Education Program to enhance geophysical and geodetic science education. Since 2012 IUGG awarded 24 advanced schools and workshops at the Abdus Salam International Centre for Theoretical Physics designed by a Nobel Prize winner Prof. Abdus Salam to promote physical and mathematical sciences in the developing world.

Based on the report of the Union Honor and Recognition Committee, three major awards of IUGG have been established: (i) Early Career Scientist Award, (ii) Union Fellow award, and (iii) the Gold Medal to award Earth and space scientists for outstanding contributions to geodesy and geophysics and for unselfish international cooperation in research. This evening the Union President will present the new awards to the first recipients.

In addition to Associations outstanding publication programs, IUGG renewed its publication policy, and signed a Memorandum of Agreement with the Cambridge University Press to publish a series of works entitled “Special Publications of the IUGG”. The first volume of the series on *Extreme Natural Hazards* was published in 2014, and the second volume on *Weather and Climate events* is to be published soon.

Let me now present some specific activities of the Union for the last quadrennium.

A new category of Union Membership have been established: Affiliate Membership to strengthen cooperation with geoscientific organizations worldwide. Since 2012, 6 scientific organizations became IUGG Affiliate Members, namely, the American Geosciences Institute, the Commission for the Geological Map of the World, the International Association for Geoethics, the International Association for Mathematical Geosciences, the International Landslides Consortium, and the Young Earth Scientists Network.

For the last two years, IUGG has been discussing possibilities to introduce a Union *Individual Membership*. Based on the majority of the opinions from Union Associations and National Members, the IUGG Executive Committee agreed that the Union will not introduce Individual Membership program and continue with National, Affiliate, and Honorary Memberships. Meanwhile each Association may introduce their own Individual Membership program, which will not contradict the National Membership program of the Union.

As of 1 January 2015, IUGG has 70 Member Countries. The Kingdom of Saudi Arabia and Nicaragua became IUGG Regular Members. Due to mainly financial reasons Albania, Armenia, and Bosnia & Herzegovina moved to Associates. Unfortunately, Monaco withdrew from IUGG because its Adhering Body – research Council of Monaco, is not anymore involved in the activities related to geosciences. Meanwhile Prince of Monaco Albert II continues to support the IAPSO Prince Albert I Medal program, which IAPSO and IUGG greatly appreciate.

IUGG is comprised of eight semi-autonomous international associations, each responsible for a specific range of topics or themes within the overall scope of Union activities. IUGG is the roof of the geophysical colonnade that is supported by the eight pillars that are Union Associations. IUGG and its Associations operate through more than 100 scientific divisions, commissions, committees, working groups, and services. IUGG plays a special role in bringing state-of-the-art science to the developing countries of the world. This is done primarily through workshops, summer schools, symposia and scientific assemblies.

During the past quadrennium, Scientific Assemblies of the Union Associations were held around the world emphasizing the importance of science to benefit society: DACA-13, the joint assembly of cryospheric and atmospheric scientists, in Davos (Switzerland); the IAGA Scientific Assembly in Merida (Mexico); the joint scientific assembly of hydrologists, oceanographers and seismologists “Knowledge for the Future” in Gothenburg (Sweden); the Scientific Assembly of volcanologists in Kagoshima (Japan); and the Scientific Assembly of the International Association of Geodesy was held in Potsdam (Germany) celebrating 150<sup>th</sup> anniversary of the association. The IUGG Union Commissions organized 7 scientific events in Asia, Europe, and North America. The Union co-sponsored 43 international scientific events in 2011-2015.

For the last quadrennium the IUGG Bureau met together with the Executive Committee in Prague (Czech Republic) and in Vienna (Austria) as well as in Lauterbad (Germany) and in Baku (Azerbaijan) where organized a joint conference with the Azerbaijan Academy of Sciences, the Adhering Body to IUGG.

An important part of my duties during the past quadrennium has been service to the International Council for Science (ICSU), here represented by the ICSU President and IUGG Fellow Professor Gordon McBean, and the ICSU Immediate Past President and IUGG Union Lecturer, a Nobel Prize winner Prof. Yuan Lee.

IUGG was successful in winning a total of 50,000 Euros in competitive ICSU grants to promote geophysical research in Africa and to network the magnetic community in the northern Indian Ocean region. IUGG nominated persons for numerous ICSU panels and scientific committees, and endorsed many initiatives of the Council. IUGG officers and representatives attended multiple ICSU meetings including Union Meetings and General Assemblies.

IUGG strengthened its relationship with ICSU GeoUnions Consortium (9 International Scientific Unions) and many ICSU interdisciplinary bodies via cooperation in international programs on natural hazards, data & information, climatic and environmental changes, and health & well-being.

IUGG and the International Union of Geological Sciences (IUGS) are responsible for the International Lithospheric Programme (ILP), formerly an ICSU Interdisciplinary Body. ILP promotes multidisciplinary research projects of interest to both the geological and geophysical communities and seeks to achieve a fine balance between “addressing societal needs” and “satisfying scientific curiosity”. We look forward to continuing fruitful collaborations with ICSU Members and within the active consortium of international Unions as well as to continuing a support of international scientific programs.

Science for society. Several disasters caused by natural events occurred for the last quadrennium including the Great East Japan Earthquake and Tsunami and floods in Thailand in 2011, Typhoon

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Opening Ceremony

Yolanda in Philippines in 2013, the most recent Nepal earthquakes, and cyclone Pam in Vanuatu. The IUGG GeoRisk Commission has been involved in science policy issues related to disaster risk research and risk assessment and took a significant part in joint activities of the special advisory group established and coordinated by ICSU and the International Social Sciences Council. The activities of the group have been related to the preparatory work toward the U.N. World Conference on Disaster Risk Reduction in Sendai (Japan) in March 2015, and to drafting a synthesis paper on Disaster Risks Research and Assessment to Promote Risk Reduction and Management. Following the decision of the ICSU General Assembly, in the last issue of *Nature* on 17 June the advisory group calls to establish science-based assessment process for disaster risk reduction.

IUGG cooperates with many international and intergovernmental organizations such as UNESCO via the International Hydrological Program and the Intergovernmental Oceanographic Commission, the World Meteorological Organization, the Preparatory Commission on Comprehensive Nuclear-Test-Ban Treaty (CTBTO), the Group on Earth Observations, the International Telecommunication Union, the International Civil Aviation Organization, the U.N Office for Disaster Risk Reduction, and the U.N. Environmental Program. We keep close contacts and cooperate with multi-national geoscience societies like the American Geophysical Union, the Asia-Oceanic Geosciences Society, and the European Geosciences Union.

The 26<sup>th</sup> General Assembly the Union is held in the wonderful city of Prague. On behalf of IUGG, I thank the Mayor of Prague, the Local Organizing Committee, and the Scientific Programme Committee of the Assembly for the excellent work done. Of particular importance, the Local Organizing Committee allocated about 120,000 Euros to support registration fee of the scientists who could not otherwise afford to travel to Prague. We understand the challenges of hosting a General Assembly, and we are grateful for their hard work.

Since 2012 the office of the IUGG Secretariat has been hosted by the German Research Center for Geosciences (GFZ in Potsdam) and was financially supported by GFZ and DFG – the German Science Foundation. The grants permitted to hire two persons and to help in travels of the Secretary General. IUGG is very grateful to GFZ and DFG for this generous support. Also I thank the Karlsruhe Institute of Technology and the Russian Academy of Sciences, where I work, for their support and for a confidence.

Finally, I thank the Members of the IUGG Executive and Finance Committees, Association Secretaries General, Union Committees and Commissions officers and all IUGG Members for their dedication and voluntary participation in the IUGG activities for the past 4 years. In particular, it was delightful to work with President Harsh Gupta, Treasurer Aksel Hansen, and my Assistants Simone Oswald and Franz Kuglitsch, who served the Union with passion and dedication.

Best wishes to all for a successful General Assembly! Thank you.

**WELCOME BY HARSH GUPTA,  
PRESIDENT OF IUGG**

I am very pleased to welcome you to this beautiful city, Prague, for the 26<sup>th</sup> General Assembly of the International Union of Geodesy and Geophysics. This is the only city in the world that is holding the IUGG General Assembly for a second time. The first one was held in 1927, some 88 years ago. Those were the formative years of IUGG, as it was established in 1919. We are now heading towards completing 100 years of IUGG in another 4 years. Over the years IUGG has made tremendous progress in several disciplines of Geodesy and Geophysics. Currently there are 8 International Associations that constitute IUGG.

Over the past four years, several new initiatives of IUGG fructified. An IUGG Early Career Scientist Award was instituted. An IUGG Gold Medal is instituted for an individual for outstanding contributions in geodesy and geophysics. This most prestigious IUGG recognition is for a scientist only once in every four years. An IUGG Fellowship has been instituted for individuals who have made exceptional contributions in international collaboration in geodesy or geophysics and attained eminence in the field of Earth and space sciences. The number is limited to 10 Elected Fellows every four years. Additionally, the past office bearers of IUGG and the Associations shall be given Conferred Fellowship for their outstanding services to IUGG and its Associations. The Award Committees set up for these awards and recognitions have done a wonderful job of processing the nominations for the various awards and recommending the most suitable candidates. All these award and fellowships would be given for the first time here in Prague.

Good progress has been made in developing a Strategic Plan for IUGG for the period 2016-2023, keeping in view the latest scientific developments and societal requirements. The committee for the IUGG Strategic Plan for 2016-2023 has been very active and has redefined the objectives, Mission and Vision statements, Core Principals & Aspirations and Strategic Goals.

Union Lectures are one of the most important activities of the IUGG General Assembly. We are lucky to have Nobel Laureate Prof. Y. T. Lee, the past president of ICSU to deliver a Union Lecture. The other lecturers include Prof. Dominic Mazumavi, South Africa; Prof. Harald Schuh, Germany; Prof. Jonathan Gregory, U.K.; Prof. Janet Kozyra, USA; Dr. Laura Gallardo Klenner, Chile; Prof. Nicolas Gruber, Switzerland; Prof. Raoul Madariaga, France; and Dr. Thomas Casadevall, USA.

Prof. Vladimir Cermak, the Chair of the Local Organizing Committee, Prof. Eduard Petrovsky, the chair of the Scientific Program Committee and their team of associates have done a commendable job of developing the IUGG GA program.

I thank the IUGG Bureau, the Executive Committee, Secretariat and several individuals for their continued dedicated work and support to IUGG.

I wish you all a very pleasant, scientifically and culturally rich XXVI IUGG GA. With great pleasure I declare the XXVI IUGG GA open.



**MINUTES OF THE COUNCIL MEETINGS**  
**26<sup>TH</sup> GENERAL ASSEMBLY, PRAGUE, CZECH REPUBLIC, 22-29 JUNE 2015**

**MINUTES OF THE FIRST SESSION**

**MONDAY, 22 JUNE, 2015 (13:30 – 18:00), CONFERENCE HALL, PRAGUE CONGRESS CENTRE**

**PARTICIPANTS**

**NATIONAL DELEGATES**

Argentina	Corina Risso
Australia	Ian Jackson
	Chris Rizos (alternate)
Austria	Georg Kaser
Canada	Zoltan Hajnal
China	Jianping Li
China-Taipei	Shaw-Chen Liu
Costa Rica	Marino Protti
Czech Republic	Vladimir Cermak
Denmark	Søren Gregersen
Finland	Elena Kozlovskaya
France	Jonathan Chenal
Germany	Jürgen Müller
Iceland	Kristin Vogfjörð
India	Vijay Prasad Dimri
Indonesia	Hasanuddin Abidin
	Dodi Sukmayadi (alternate)
	Djaya Murjaya (alternate)
Ireland	Alan Jones
Israel	Colin Price
Italy	Giuliano Panza
Japan	Setsuya Nakada
Luxembourg	Tonie van Dam
Mexico	Avtandil Gogichaishvili
New Zealand	David Rhoades
Norway	Oddgeir Kristiansen
Poland	Jan Krynski
Romania	Constantin Sava
Russia	Alexei Gvishiani
Slovak Republic	Miroslav Bielik
South Africa	Pieter Kotze
Sweden	Per Holmlund
Switzerland	Adrian Wiget
Turkey	Metin Kesap
	Hasan Yildiz (alternate)
United Kingdom	Harry Bryden
United States of America	Jeffrey Freymueller
Vietnam	Nguyen Xuan Anh

**LISTENERS**

Brazil	Denizar Blitzkow
Georgia	Tamaz Chelidze
Thailand	Krit Rammon
	Chaiwat Promthong
	Chainarong Puiaaroon

**MEMBERS OF THE EXECUTIVE COMMITTEE**

President	Harsh Gupta
Vice-President	Michael Sideris
Secretary General	Alik Ismail-Zadeh
Past President	Tom Beer
Treasurer	Aksel Hansen
Bureau Member	Isabelle Ansoorge
Bureau Member	Pierre Hubert
Bureau Member	Kenji Satake
President IACS	Charles Fierz
President IAG	Chris Rizos
President IAHS	Hubert Savenije
President IAMAS	Athena Coustenis
President IAPSO	Eugene Morozov
President IASPEI	Domenico Giardini
President IAVCEI	Ray Cas

**MEMBERS OF THE FINANCE COMMITTEE**

Chair	David Collins
-------	---------------

**GUESTS OF THE PRESIDENT ATTENDING THE FIRST SESSION OF THE COUNCIL**

Chair of World Climate Research Programme	Guy Brasseur
IAHS Secretary General	Christophe Cudennec
IUGG Secretariat	Katrin Gundrum
Chair of Statutes and By-Laws Committee	David Kerridge
IUGG Assistant Secretary General	Franz G. Kuglitsch
IAGA Secretary General	Mioara Manda
President of International Council for Science	Gordon McBean
Chair of Site Comparison Committee	Setsuya Nakada
Chair of Nominating Committee	Uri Shamir
Ass. Director of BISO, U.S. Nat. Acad. of Sciences	Ester Szein

**1. Greetings; Presentation of the credentials; election of tellers**

The First Session of the Council Meeting was called to order at 13:30 and began with a roll call of delegates. Delegates from 37 member countries were present at the opening. Delegates from 34 member countries were eligible to vote. The total number of countries eligible to vote was 51 (70 minus 9 in observer status minus 10 in associate status). The quorum (17) was reached.

Harsh Gupta welcomed all participants to the Council Meeting.

Vladimir Cermak, Council Delegate of the Czech Republic, proposed, seconded by Zoltan Hajnal, Council Delegate of Canada, three tellers for voting matters. The proposed tellers were Tom Beer, Katrin Gundrum, and Jianping Li. The Council Members accepted the proposal.

## 2. Approval of the Agenda

The Agenda was approved.

## 3. Approval of the Minutes of the Council Meeting in Melbourne (2011)

The Minutes of the 2011 Council Meeting were distributed to the participants of the 2015 General Assembly for their comments, published in the Comptes Rendus of the 25<sup>th</sup> General Assembly, and also posted on the IUGG web page. The Minutes were approved.

## 4. Brief Reports of the Officers

### President Harsh Gupta

Harsh Gupta summarized his activities since 2011 as detailed in his report in the Council Meeting Agenda Book. (Note: the quadrennial report of the President can be found in the Comptes Rendus of the 2015 IUGG General Assembly.

He especially highlighted the establishment of the following union awards that are all awarded during the General Assembly in Prague:

- IUGG Early Career Scientist Award
- IUGG Gold Medal
- IUGG Fellowship

Harsh Gupta further stressed that the long-required IUGG Secretariat was set up at the Helmholtz Center, Potsdam in 2013, and Franz G. Kuglitsch was appointed as the Executive Secretary/Assistant Secretary General of IUGG. The office is being run to the satisfaction of all concerned.

Furthermore, he pointed out that good progress has been made in developing a Strategic Plan for IUGG for the period 2016-2023.

He mentioned that IUGG set up the new Union Commission on Climatic and Environmental Change (CCEC) in 2012. Its aim is to promote the scientific understanding of climate and environmental change, to boost research for reducing uncertainties in climate and environmental models, and to encourage trans-disciplinary research on related topics.

On the recently much-debated issue of Individual Membership of IUGG, Harsh Gupta pointed out that considering the importance of this issue and

the different opinions of the Union Associations, the IUGG Bureau had decided to request the Union's Adhering Bodies and National Committees of the Member Countries to express their opinion on introducing an IUGG individual membership. The outcome has been analyzed and shall form the basis for discussion and further course of action.

To conclude, Harsh Gupta thanked for all the assistance he received as IUGG President. It was a pleasure for him working for the IUGG Bureau for 16 years (as Bureau Member 1999-2007, Vice-President 2007-2011, and President 2011-2015).

### Secretary General Alik Ismail-Zadeh

Alik Ismail-Zadeh summarized the activities of the Union since 2011 as detailed in his report in the Council Agenda Book. (Note: the quadrennial report of the Secretary General can be found in the Comptes Rendus of the 2015 IUGG General Assembly).

Among the activities related to the modernization of the Union, he especially highlighted the introduction of Affiliate and Honorary Membership as new categories of Union Membership and the setting-up of four Union Committees (Committee on Membership Issues, on Capacity Building and Education, on Honor and Recognition, and on Visioning). He further highlighted on the development of the IUGG Grants Program and the initiation of a new science education program that was given a significant boost by signing an agreement with the Abdus Salam International Centre for Theoretical Physics (ICTP). Another highlight in connection with the establishment of the Honor and Recognition program was the introduction of three major awards to be bestowed for the first time during the General Assembly: the Early Career Scientist Award, the Union Fellow award, and the Gold Medal to award Earth and space scientists for outstanding contributions to geodesy and geophysics and for unselfish international cooperation in research. In 2012, the enhancement of publication policy received substantial impetus from signing an agreement with the Cambridge University Press to develop a new series of special publications of the IUGG to publish peer-reviewed books on perspectives and reviews in multidisciplinary research. The first volume of this series, "Extreme Natural Hazards, Disaster Risks and Societal Implications" was published in 2014, and the second volume is planned for 2015.

### Treasurer Aksel Hansen

Aksel Hansen summarized his report on the financial status of the Union as detailed in the Council Agenda Book. (Note: the quadrennial report of the Treasurer can be found in the Comptes Rendus of the 2015 IUGG General Assembly).

IUGG currently has 70 members, i.e., 60 Regular Members (9 of them in observer status) and 10 Associate Members. The Observers are: Belgium, Brazil, Bulgaria, Iran, Macedonia, Nicaragua, Nigeria, Philippines, and Thailand. The Associates are Albania, Armenia, Bolivia, Bosnia & Herzegovina, D.R. Congo, Georgia, Ghana, Mauritius, Morocco, and Peru.

The economic situation of IUGG is sound and the net balance allows IUGG some flexibility. However, differently than written in the Council Meeting Agenda Book, it is expected that the total assets of IUGG as a union will be close to zero by the end of 2015. The new budget for 2016-2019 will again allow for increased expenditures of the Union on scientific programs and grants.

Still, it is very important that IUGG will be able to keep its present members in the Union and at the same time attract new members.

#### Vice-President Michael Sideris

Michael Sideris summarized his activities since 2011 as detailed in his report in the Council Agenda Book. (Note: the quadrennial report of the Vice-President can be found in the Comptes Rendus of the 2015 IUGG General Assembly).

#### Review of IUGG Union Commissions and Working Group

Michael Sideris reported on the activities of the five Union Commissions and the activities of the Union Working Group on History (WGH) established in 2012. Detailed reports from the Union Commissions and Working Group can be found in the Council Agenda Book (Note: the quadrennial reports of the Union Commissions can be found in the Comptes Rendus of the 2015 IUGG General Assembly).

The five Union Commissions and the Union Working Group are:

- Commission on Climatic and Environmental Change (CCEC)
- Commission on Data and Information (UCDI),
- Commission on Geophysical Risk and Sustainability (GRC),
- Commission on Mathematical Geophysics (CMG)
- Committee on the Study of the Earth's Deep Interior (SEDI), and
- Working Group on History (WGH).

All Union Commissions and the Working Group have been very active for the reporting period.

#### Ratification of major decisions by the Bureau and Executive Committee

Alik Ismail-Zadeh summarized the major decisions of the IUGG Bureau and Executive Committee as

detailed on page 68 of the Council Meeting Agenda Book which were taken after the last Council Meeting during the 25<sup>th</sup> IUGG General Assembly in 2011. The Bureau met three times during the term: in Lauterbad, Germany (September 2012), in Prague, Czech Republic (September 2013), and in Baku, Azerbaijan (June 2014). In addition, the Bureau held a teleconference meeting in November 2014. The Executive Committee met in Melbourne, Australia, (July 2011), in Prague, Czech Republic (September 2013), and at an extra-ordinary meeting in Vienna, Austria (April 2015).

Harsh Gupta pointed out that the Executive Committee recommended a ratification of these decisions by the Council by one single move. Motion was proposed by Marino Protti, Council Delegate of Costa Rica, and seconded by Ian Jackson, Council Delegate of Australia. A vote by hand was conducted. The decisions were unanimously, with no abstention, ratified by the Council.

#### **5. Matters of Membership**

Several new admissions of new members to IUGG require a two-thirds absolute majority vote of the Council for final approval (IUGG Statute 18).

The matters requiring votes were presented in detail in the Council Meeting Agenda Book. There was one vote for all matters of membership. A vote by ballot was conducted. Motion was proposed by Jeffrey Freymueller, Council Delegate of the US, seconded by Ian Jackson, Council Delegate of Australia. Of the 33 valid votes, there were 32 consents and one abstention.

Admission of the following members was ratified:

- Saudi Arabia as Regular Member (Cat. 2)
- Nicaragua as Regular Member (Cat. 1)
- The Commission for the Geological Map of the World (CGMW) as Affiliate Member
- The Young Earth Scientists (YES) Network as Affiliate Member
- The American Geosciences Institute (AGI) as Affiliate Member
- The International Association for Mathematical Geosciences (IAMG) as Affiliate Member
- The International Association for Geoethics (IAGETH) as Affiliate Member
- The International Consortium on Landslides (ICL) as Affiliate Member

Transfer of Membership of the following members was ratified:

- Albania from Regular Member (Cat. 1) to Associate
- Armenia from Regular Member (Cat. 1) to Associate
- Bosnia & Herzegovina from Regular Member (Cat. 1) to Associate

- Greece from Regular Member (Cat. 3) to Regular Member (Cat. 2)

Costa Rica changed from Associate to Regular Membership (Cat. 1). Here, a vote of the Council was not required.

Alan Jones, Council Delegate of Ireland, noted the danger that small countries might leave the Union when introducing individual membership. Alik Ismail-Zadeh responded that the Executive Committee cannot decide on the introduction of individual membership but only the Council. He added that a majority of the 27 responses on the request of the IUGG President to the Union's Adhering Bodies and National Committees of the Member Countries to give an opinion about the introduction of IUGG individual membership was against the Union individual membership. Harsh Gupta advised to discuss these questions more detailed later under point 7. *Proposed Changes of Statutes and By-Laws.*

## 6. Report of the Nominating Committee

Uri Shamir, Chair of the Nominating Committee, gave the report of the Nominating Committee and introduced the nominees for the IUGG Bureau and IUGG Finance Committee.

As required by IUGG By-Laws 10b and 10c, one or two candidates have been nominated for each position. The positions and the nominated candidates were:

### IUGG Bureau

President: Michael Sideris (Canada)  
Vice-President: Kathy Whaler (UK)  
Secretary General: Alik Ismail-Zadeh (Germany/  
Russia)  
Treasurer: Aksel Hansen (Denmark)  
Bureau Members (Positions #1, #2, #3):  
Isabelle Ansoorge (South Africa)  
Pierre Hubert (France)  
Jianping Li (China)  
Chris Rizos (Australia)  
Kenji Satake (Japan)  
Constantin Sava (Romania)

### IUGG Finance Committee

Position #1: Corina Risso (Argentina)  
Position #2: Virendra Tiwari (India)  
Position #3 and #4: David Collins (UK)  
Zoltan Hajnal (Canada)  
Jan Krynski (Poland)

Regarding the re-nomination of the Treasurer, Uri Shamir explained that this does not contradict By-Law 10a because Aksel Hansen is the sole candidate for this position and agreed to serve for another period if re-elected by the Council.

Marino Protti, Council Delegate of Costa Rica, asked for possibilities to increase the number of female candidates. Harsh Gupta urged the council delegates to try to encourage the members to nominate more female candidates for the next elections. Uri Shamir added that there is not just a gender, but also an important geographical and age issue.

Votes on the nominated candidates will be taken in the third session of the Council Meeting.

## 7. Proposed Changes of Statutes and By-Laws

Harsh Gupta invited David Kerridge, Chair of the Statutes and By-Laws Committee, to present the report given in the Council Agenda Book.

Nine proposed changes to the Statutes and By-Laws were received by the Statutes and By-Laws Committee and were discussed in the Council.

They are:

1. Permanent delegates to IUGG Council – to allow the Adhering Bodies of Member Countries to appoint Delegates to IUGG Council for the period between General Assemblies (normally for 4 years) so that the Council can vote electronically to make decisions as soon as the need arises.
2. Electronic voting by IUGG Council – to allow Council to vote electronically to improve the decision-making process within IUGG.
3. Definition of National Committees – to define the composition of National Committees.
4. Gender criterion – to give instructions to the IUGG Nominating Committee to consider gender balance when drawing up its list of candidates for election to the IUGG Bureau.
5. Permission for Associate Members to speak at Council Meetings – to allow a representative of an Associate Member to speak (without the right to vote) at Council meetings.
6. Expansion of the duties of the Finance Committee - to introduce one of the Finance Committee's functions, reviewing the membership categories of Member Countries, explicitly into the By-Laws as a formal duty.
7. Individual scientists and their eligibility for election – to allow individuals from countries in Associate or Observer status or from non-Member countries to be elected to Association offices (except to the position of the Association President because the Association President is a member of the IUGG Executive Committee).

8. Assistants to the Secretary General and to the Treasurer – to place references to Assistants to the IUGG Secretary General and to the Treasurer in a single By-Law, rather than in two By-Laws as at present.

9. Minor (wording or orthographical) changes.

The changes were proposed by the IUGG Bureau with the following exceptions: In the case of Change No. 5, the Bureau acted on a request of Costa Rica and Change No. 6 was proposed by the United Kingdom.

In the discussion of the changes, the following points arose:

Regarding *electronic voting*, Alan Jones, Council Delegate of Ireland, wanted to know the difference between a permanent Council Delegate and a National Correspondent. Harsh Gupta clarified that the Adhering Bodies appoint the Council Delegates for the Council Meeting, and these individuals have the power to vote for the next council term, whereas a National Correspondent as correspondent to an Association has no vote.

David Kerridge further confirmed Harsh Gupta's presumption that a delegate has a vote only during the years the country had paid its membership fees.<sup>New</sup>

To answer a question of Marino Protti, Council Delegate of Costa Rica, David Kerridge stated that the changes would be effective at the end of the Council Meeting.

Alan Jones, Council Delegate of Ireland, further wanted to know which measures are planned if technical prerequisites are not sufficient for electronic voting in some countries.

Metin Kesap, Council Delegate of Turkey, asked if electronic voting could be played off against attendance to council meetings. Alik Ismail-Zadeh explained that there shall be many topics requiring a meeting of the Council at IUGG General Assemblies; electronic voting will be used to make decisions on the urgent topics faster, not waiting for four years.

Regarding the *definition of National Committees*, Constantin Sava, Council Delegate of Romania, regretted that a distinct presidency definition with statements on the election of vice-presidents was still missing.

Regarding the *gender criterion*, Alan Jones, Council Delegate of Ireland, regretted that "age" was not included as a criterion. Michael Sideris asks to take into consideration here that the Union is seeking - not "prescribing" - balance.

Relating to the *individual scientists' eligibility to elections*, individual IUGG membership was advocated by Ray Cas. Constantin Sava responded

that he could not understand the striving for individual membership, taking into account that IUGG is a Union of associations, and not a society of individuals. Søren Gregersen, Council Delegate of Denmark, added that the dangers of introducing individual membership would be more convincing to him than the advantages. In this respect, Alan Jones voiced his worries that interdisciplinarity would suffer by more independent associations in the end.

Domenico Giardini regretted that the statutes and by-laws did not guarantee a better geographical distribution and gave the example that in many regional commissions, whole continents are not reflected.

A vote on the proposed changes of the Statutes and By-Laws will be taken in the third session of the Council Meeting.

## 8. Report on the proposals to host the XXVII General Assembly in 2019

IUGG received two bids to host the XXVII General Assembly in 2019 to be decided on:

- Montréal, Canada
- Delhi, India

Setsuya Nakada, Chair of the Site Evaluation Committee, informed that the committee comprised the following members:

Chair: Setsuya Nakada  
Members: Ian Allison  
Peter Suhadolc  
Kathryn Whaler  
Alik Ismail-Zadeh (ex officio)

In the following report, both proposals were shortly introduced and compared against the criteria published in the Guidelines for IUGG General Assemblies (<http://www.iugg.org/assemblies/>). The Site Evaluation Committee Members had also visited the proposed venues of the general assembly (S. Nakada visited Delhi, and K. Whaler Montreal). For their evaluation, impressions gained during these visits were also taken into consideration.

Alan Jones, Council Delegate of Ireland, asked if the proposed assembly dates are fixed. Organizing a General Assembly in March (as proposed by India) would be difficult to make for many scientists because of university exams and many meetings. Harsh Gupta noted India would be flexible to shift the days of the General Assembly to a period when more people have time to travel.

Alexei Gvishiani, Council Delegate of Russia, asked that the bidders should account for weather conditions at the proposed venues.

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Minutes of the Council Meeting

Harry Bryden, Council Delegate of the UK, asked whether a General Assembly had ever taken place in India or Canada. Harsh Gupta replied that IUGG General Assemblies have not been held in India, but twice in Canada.

Each of the bidder countries will present their bids at the third session of the Council Meeting. A vote on the host of the XXVII General Assembly will be taken directly after these presentations.

The First Session of the Council Meeting closed at 18:00

## MINUTES OF THE SECOND SESSION

THURSDAY, 25 JUNE 2015 (8:30 – 12:00), CONFERENCE HALL, PRAGUE CONGRESS CENTRE

### PARTICIPANTS

#### NATIONAL DELEGATES

Argentina	Corina Risso
Australia	Chris Rizos
Austria	Georg Kaser
Canada	Zoltan Hajnal
Chile	Rony Jara Lecanda
	Jaime Ramirez (alternate)
China	Jianping Li
Costa Rica	Marino Protti
Croatia	Mirko Orlic
Czech Republic	Vladimir Cermak
Denmark	Søren Gregersen
Egypt	Ahmed Abdel Hady
Estonia	Rein Room
Finland	Elena Kozlovskaya
France	Claude Boucher
Germany	Jürgen Müller
Hungary	Jozef Adam
Iceland	Kristin Vogfjörd
India	Vijay Prasad Dimri
Indonesia	Hasanuddin Abidin
	Dodi Sukmayadi (alternate)
	Djaya Murjaya (alternate)
Ireland	Alan Jones
Israel	Colin Price
Italy	Giuliano Panza
Japan	Setsuya Nakada
Luxembourg	Tonie van Dam
Mexico	Avtandil Gogichaishvili
New Zealand	David Rhoades
Norway	Oddgeir Kristiansen
Poland	Jan Krynski
Romania	Constantin Sava
Russia	Alexei Gvishiani
Slovenia	Matjaž Mikoš
Spain	Jesus Gomes Gonzalez
Sweden	Per Holmlund
Switzerland	Adrian Wiget
Turkey	Metin Kesap
	Hasan Yildiz (alternate)
United Kingdom	Harry Bryden
United States of America	Jeffrey Freymueller
Vietnam	Nguyen Xuan Anh

#### LISTENERS

Belgium	Kris Vanneste
Brazil	Marcelo Sousa de Assumpcao
D.R. Congo	Wafula Mifundu
Georgia	Tamaz Chelidze
Nigeria	Shakirudeen Odunuga
Thailand	Krit Rammon
	Chaiwat Promthong
	Chainarong Puiaroon

#### MEMBERS OF THE EXECUTIVE COMMITTEE

President	Harsh Gupta
Vice-President	Michael Sideris
Secretary General	Alik Ismail-Zadeh
Past President	Tom Beer
Treasurer	Aksel Hansen
Bureau Member	Isabelle Ansoerge
Bureau Member	Pierre Hubert
Bureau Member	Kenji Satake
President IACS	Charles Fierz
President IAG	Chris Rizos
President IAGA	Kathryn Whaler
President IAHS	Hubert Savenije
President IAMAS	Athena Coustenis
President IAPSO	Eugene Morozov
President IASPEI	Domenico Giardini
President IAVCEI	Ray Cas

#### MEMBERS OF THE FINANCE COMMITTEE

Chair	David Collins
-------	---------------

#### GUESTS OF THE PRESIDENT ATTENDING THE SECOND SESSION OF THE COUNCIL

Vice-President ISPRS	Orhan Altan
American Geosciences Institute	Thomas J. Casadevall
President of International Lithosphere Program	Sierd Cloetingh
IUGG Secretariat	Katrin Gundrum
IUGG Assistant Secretary General	Franz G. Kuglitsch
IACS Secretary General	Andrew Mackintosh
IAGA Secretary General	Mioara Manda
President of International Council for Science	Gordon McBean
International Association on Mathematical Geosciences	Jennifer McKinley
President of International Union of Geological Sciences	Roland Oberhänsli
IAPSO Secretary General	Johan Rodhe
Ass. Director of BISO, U.S. Nat. Acad. of Sciences	Ester Szein
IAMAS Secretary General	Hans Volkert

The Second Session of the Council Meeting was called to order at 08:30 with a roll call of delegates.

Delegates from 43 member countries were present, 37 eligible to vote. The total number of countries eligible to vote was 51 (70 minus 9 in observer status minus 10 in associate status). The quorum (17) was reached.

## 9. Strategic Plan for 2015-2023

Harsh Gupta invited Chris Rizos, Chair of the Visioning Committee, to present the first draft of the IUGG Strategic Plan for 2015-2023 given in the Council Agenda Book. (Note: the draft "Towards a Strategic Plan for the IUGG" can be found in the Council Meeting Agenda Book.)

Alan Jones, the Council Delegate of Ireland, wished for a better clarification of the attractiveness of IUGG, especially to young scientists, and a clearer differentiation between IUGG and IUGS. He noted the number of members has been static for a long time.

Claude Boucher, the Council Delegate of France, wished for better links to planetology or biological sciences.

Georg Kaser, the Council Delegate of Austria, wished to strengthen interdisciplinarity and to better promote joint sessions.

Ray Cas noted that for PhD students it is difficult to access IUGG General Assemblies since they take place only once in 4 years.

Harry Bryden, the Council Delegate of the UK, missed a clear definition where IUGG wants to lead.

It was decided to ask the National Delegates to comment on the Draft Strategic Plan and to revise Strategic Plan accordingly.

## 10. Reports by Association Presidents

Council Delegates were asked to note the reports of the Associations available in the Council Agenda book. (Note: the quadrennial reports of the IUGG Associations can be found in the Comptes Rendus of the 2015 IUGG General Assembly).

The IUGG Associations Presidents reported on the activities of the associations from 2011-2015.

### IACS

Charles Fierz gave a report on the activities of IACS. At present, there are 39 IACS national correspondents in the national committees of IUGG. Charles Fierz hoped that scientists in more member countries would become interested in collaboration within IACS and become a national correspondent and he encouraged the delegates to propagate this IACS appeal in their countries.

Besides IACS activities described in the quadrennial report, Charles Fierz noted that IACS has also many collaborations within (e.g. IAVCEI/IACS Joint Commission on Volcano-Ice Interactions) and outside IUGG (especially with ICSU and UN bodies).

He then especially highlighted DACA-13, the Davos Atmosphere and Cryosphere Assembly 2013, "Air, Ice & Process Interactions". This joint scientific assembly of IACS and IAMAS with more than 950 participants from 52 countries in Davos, Switzerland in July 2013 was excellently rated by the participants.

IACS established a number of new Working Groups and Standing Groups in the last four years. Charles Fierz highlighted the presently very active Working Group MICROSNOW ('From quantitative stratigraphy to microstructure-based modelling of snow'; 2012-2016), or the WGs 'Randolph Glacier Inventory and infrastructure for glacier monitoring' (2014-2018) and 'Glacier thickness estimation' (2014-2018).

In addition, IACS has Joint Bodies, i.e., Working Groups, Standing Groups, Steering Committees and jointly run with other international organizations (e.g. the World Glacier Monitoring Service; International Permafrost Association). IACS established an annual IACS Early Career Scientist Prize to be awarded for the first time in 2015.

A Joint IACS/International Glaciological Society (IGS)/World Climate Research Programme Climate and Cryosphere (CliC) Assembly will be held in Wellington, New Zealand, in February 2017.

### IAG

Chris Rizos reported that the IAG has 65 National Delegates and has elected a new Bureau and Executive Committee. The new officers of the IAG Bureau for 2015-2019 are:

President: Harald Schuh (Germany)  
Vice-President: Zuheir Altamimi (France)  
Secretary General: Hermann Drewes (Germany)

Chris Rizos highlighted the four IAG Commissions, the Inter-Commissions Committee, the 14 IAG Services, the Communication and Outreach Branch and the Global Geodetic Observing System (GGOS), which became a major component of IAG in the last years.

IAG maintains close cooperation with several organizations within and outside IUGG.

IAG offers individual membership and currently has around 200 members. The IAG Scientific Assembly was held in Potsdam, Germany, in 2013. Besides the General Assembly, IAG sponsored many smaller scientific meetings. Altogether, IAG sponsored 65 symposia, meetings and workshops during the last quadrennial.

At the 2015 IUGG General Assembly, IAG has contributed to 8 IAG led symposia, several joint symposia, 1 Union symposium, and 1 Union



XXVI General Assembly of the International Union of Geodesy and Geophysics  
Minutes of the Council Meeting

lecture. The next scientific assembly will be held jointly with IAG in 2017, in Kobe, Japan.

IAGA

Kathryn Whaler gave a report on the activities of IAGA. She especially highlighted the IAGA Scientific Assembly held in Merida, Mexico, in 2013 and the IAGA Book Series published in cooperation with Springer Sciences and Business Media B.V.

In the 2015 IUGG General Assembly, IAGA has contributed to 43 IAGA-led symposia, several joint symposia, 2 Union symposia, and 1 Union lecture. The next scientific assembly will be held jointly with IAMAS and IAPSO in 2017, in Cape Town, South Africa.

IAHS

Hubert Savenije mentioned that IAHS has a global network of individual members without voting rights. Ten International Commissions and three Working Groups initiate and conduct conferences, symposia, workshops, courses, publications and research programmes.

He mentioned that the IAHS 90<sup>th</sup> Anniversary meeting was held in Delft, The Netherlands in 2012, and that the IAHS Scientific Assembly was held jointly with IAPSO and IASPEI in Gothenburg, Sweden, in 2013.

Hubert Savenije brought special attention to the 2013-2022 Scientific Decade “Panta Rhei – Everything flows” being the major and extremely successful initiative of IAHS. The “PUB – Prediction in Ungauged Basins Decade” resulted in the publication of major books in 2013.

IAHS has a very strong publication output. From 2012-2015, the IAHS Press published among others the *Hydrological Sciences Journal*, 27 *Red Books*, 4 volumes in the *Benchmark Series*, and one special publication. Three further *Red Books* are in preparation for the current IUGG General Assembly.

Hubert Savenije emphasized that IAHS strongly cooperates with other international organizations especially with UNESCO IHP, and the World Meteorological Organization (WMO).

The next IAHS Assembly will be held in Port Elizabeth, South Africa, in 2017.

IAMAS

Athena Coustenis reported on the broad activities of IAMAS and its ten International Commissions which carry out, coordinate, and communicate the main research work.

She mentioned that IAMAS currently has 300-350 expert members and that the last IAMAS Assembly

was held in 2013 jointly with IACS in Davos, Switzerland.

The next scientific assembly will be held jointly with IAGA and IAPSO in 2017, in Cape Town, South Africa.

IAPSO

Eugene Morozov reported that IAPSO has 62 national delegates and works mainly through biennial scientific assemblies, working groups, commissions, services and website information.

The last IAPSO Scientific Assembly was held jointly with IAHS and IASPEI in Gothenburg, Sweden, in 2013. At the 2015 IUGG General Assembly, IAPSO has contributed to 13 IAPSO-led symposia, 7 interdisciplinary symposia and the Union symposia. The next scientific assembly will be held jointly with IAMAS and IAPSO in 2017, in Cape Town, South Africa.

Eugene Morozov emphasized that IAPSO bodies are closely working together and several Working Groups collaborate with SCOR and other international bodies.

He also highlighted the presentation of the Prince Albert 1 Medal, which was awarded to Prof. Arnold L. Gordon at the IAHS-IAMAS-IAPSO Assembly in Gothenburg in 2013, and to Prof. Toshia Yamagata at this 2015 IUGG General Assembly.

IASPEI

Domenico Giardini reported that the last IASPEI Scientific Assembly was held jointly with IAHS and IAPSO in Gothenburg, Sweden, in 2013.

He reported that IASPEI has elected a new Bureau and Executive Committee. The new officers of the IASPEI Bureau for 2015-2019 are:

President:	Thorne Lay (USA)
1st Vice-President:	Kenji Satake (Japan)
2nd Vice-President:	Michelle Grobbelaar (South Africa)
Secretary General:	Johannes Schweitzer (Norway)

IASPEI is currently active in 67 member countries.

He especially highlighted the scientific work done by the six commissions and the four regional commissions incl. the Asian Seismological Commission (ASC), the European Seismological Commission (ESC), the Latin American and Caribbean Seismological Commission (LACSC), and the African Seismological Commission (AfSC) of IASPEI, which are very active. Moreover IASPEI participates in six inter-association activities.

IASPEI issued many scientific products such as technical standards and recommendations,

seismological software, training courses, and earth models. Furthermore, IASPEI cooperated with many international organizations, e.g., with the *Global Earthquake Model (GEM)* project, the *International Digital Earthquake Archives (IDEA)* project, or with the *International Seismological Centre (ISC)*.

The next scientific assembly will be held jointly with IAG in 2017, in Kobe, Japan.

### IAVCEI

Ray Cas reported that IAVCEI has elected a new Bureau and Executive Committee. For 2015-2019, the new President will be Donald Dingwell (Germany), and the new Secretary General will be Roberto Sulpizio (Italy). He highlighted the involvement of several women in the Executive Committee and reported that most of the IAVCEI administration, correspondence and decision making are done online.

IAVCEI has more than 2,000 individual members including approximately 500 donor members who also financially support IAVCEI activities. IAVCEI also accepts individual members from non IUGG member countries.

IAVCEI activities are mainly done by its commissions and working groups.

Ray Cas highlighted the successful conference series "Cities on Volcanoes". The last IAVCEI Scientific Assembly took place in Kagoshima, Japan, in 2013. In general, more IAVCEI members attend the IAVCEI Assemblies than the IUGG Assemblies. The next IAVCEI Scientific Assembly will take place in Portland, OR, USA, in 2017.

In addition, IAVCEI publishes the Bulletin of Volcanology, newsletter, book series, conference proceedings etc.

The Council Delegates were asked to approve the reports. The reports were approved unanimously.

### **11. Report on scientific and educational programs**

Alik Ismail-Zadeh summarized the reports on the activities of the International Lithosphere Program (ILP) and the cooperation with the Abdus Salam International Centre for Theoretical Physics (ICTP). Detailed reports can be found in the Council Meeting Agenda Book. (Note: the quadrennial report of the International Lithosphere Program can be found in the Comptes Rendus of the 2015 IUGG General Assembly).

#### International Lithosphere Program (ILP)

ILP is a joint body of IUGG and the International Union of Geological Sciences (IUGS).

IUGG had appointed two representatives to the ILP Bureau for the term 2011-2015, namely David Jackson (USA) and Kalanchand Sain (India). Alan Green (Switzerland) is the joint IUGS/IUGG representative.

ILP holds annual meetings, either during the EGU General Assembly in Vienna, Austria, or the AGU Fall Meeting in San Francisco, USA, where the results and further tasks of its Task Forces and Regional Coordinating Committees are discussed. Furthermore, an ILP award is given to young excellent scientists active within the ILP Task Forces.

Alik Ismail-Zadeh especially highlighted the impressive publications list of ILP and its contributions to the scientific program at IUGG General Assemblies and International Geological Congresses. ILP will celebrate its 35th anniversary in 2015 in Potsdam, Germany.

The report on the ILP activities was approved unanimously by the Council Delegates.

#### Cooperation with the Abdus Salam International Centre for Theoretical Physics (ICTP)

In 2011, ICTP and IUGG signed a memorandum of understanding to promote educational programs related to geodesy and geophysics in the period 2012-2015.

In this 4-year period, IUGG co-sponsored 24 educational events organized by ICTP with a total of USD 80,000.

### **12. Relations with ICSU**

Alik Ismail-Zadeh summarized his report on the relations with the International Council for Science (ICSU). A detailed report can be found in the Council Meeting Agenda Book.

Alik Ismail-Zadeh highlighted the importance of (i) ICSU to promote interdisciplinary research, and (ii) strengthening the collaboration between IUGG and other ICSU GeoUnions (e.g. IUGS).

Alik Ismail-Zadeh welcomed Gordon McBean, ICSU President, and underlined that several former and present IUGG officers (still) have key roles within ICSU, e.g., Guoxiong Wu was elected member to the Executive Board of ICSU (2011-2014), Tom Beer was selected as a member of the ICSU Committee on Scientific Planning and Review (CSPR) (2011-2014, 2014-2017).

IUGG has been a very active participant in ICSU programs, IUGG people were selected to serve for several ICSU panels and working groups, e.g., in the Scientific Committee of the Integrated Research and Disaster Risk, the Scientific Committee of the ICSU World Data System, the Scientific Committee of the ICSU Health and

Wellbeing in the Changing Urban Environment, and the Scientific Committee on Future Earth of the ICSU Regional Office for Africa.

Alik Ismail-Zadeh highlighted the IUGG participation in the ICSU General Assemblies in 2011, 2013, and 2014 to further develop the links between ICSU and IUGG, as well as the links between IUGG and the other nine GeoUnions of ICSU (<http://www.icsu-geounions.org>).

Alan Jones, Council Delegate of Ireland, suggested that, at Council Meetings, there should be more time for discussing topics (e.g. IUGG Strategic Plan) and much less time for presenting the content of the Agenda Book.

No further comments or questions were raised by the Council.

### **13. Reports from Liaisons to ICSU Commissions and Committees**

In order to conserve time, Alik Ismail-Zadeh referred the Council to the reports in the Agenda Book and only briefly reviewed each of the organizations. He welcomed any comments and questions by the Council.

- Committee on Data for Science and Technology (CODATA),
- Committee on Space Research (COSPAR),
- ICSU Regional Office for Africa,
- ICSU Regional Office for Asia and the Pacific,
- ICSU Regional Office for Latin America and the Caribbean,
- Scientific Committee on Antarctic Research (SCAR),
- Scientific Committee on Oceanic Research (SCOR),
- Scientific Committee on Solar-Terrestrial Physics (SCOSTEP)
- ICSU-ISSC-UNISDR Scientific Committee on Integrated Research on Disaster Risk (IRDR)

The new liaison officers were recommended and voted on in the Third Session of the Council Meeting.

No comments or questions were raised by the Council. The reports of the liaisons were accepted unanimously.

### **14. Reports from Liaisons to inter-governmental and other organizations**

Alik Ismail-Zadeh continued to briefly review on these reports in the Council Agenda Book.

- Cartographic Office of the United Nations,
- International Civil Aviation Organization (ICAO),
- American Institute of Geography and History (PAIGH),
- UNESCO International Hydrological Programme (IHP),
- UNESCO Intergovernmental Oceanographic Commission (IOC),
- World Climate Research Programme (WCRP),
- World Meteorological Organization (WMO),
- Consultative Committee for Time and Frequency (CCTF)
- Group on Earth Observations (GEO)

No comments or questions were raised by the Council. The reports of the liaisons were accepted unanimously.

### **15. Report of the IUGG Finance Committee**

David Collins presented the report of the Finance Committee which was distributed during his presentation. He mentioned that the IUGG is doing well in maintaining the annual balances of roughly the funds necessary to support the Union's outgoings for one calendar year (USD 500,000 +/- 5%). The Finance Committee is concerned that out of 70 IUGG member countries, only 50 are fully active members with subscriptions paid up to date, and therefore suggested to consider adaptations in the calculations of the membership category. Also, IUGG should try to (re-)gain more member countries by explaining them the benefits of an IUGG membership.

The report of the Finance Committee was accepted by the Council.

### **16. Presentation of the 2016-2019 Budget**

Aksel Hansen discussed the proposed budget. As recommended by the Finance Committee, the reserve of the IUGG budget was set to approximately 1 year's turnover.

He highlighted the significant changes, then went through the budget line by line and answered questions as they were asked.

A final vote to adopt the 2016-2019 Budget took place in the Third Session of the Council Meeting.

The Second Session of the Council Meeting closed at 12:00.

## MINUTES OF THE THIRD SESSION

MONDAY, 29 JUNE 2015 (15:00 – 18:00), CONFERENCE HALL, PRAGUE CONGRESS CENTRE

<b>PARTICIPANTS</b>		Thailand	Krit Rammon
<b>NATIONAL DELEGATES</b>			Chaiwat Promthong
			Chainarong Puiaroon
Argentina	Sergio Cimbaro		
	Corina Risso (alternate)		
Australia	Ian Jackson	<b>MEMBERS OF THE EXECUTIVE COMMITTEE</b>	
	Chris Rizos (alternate)	President	Harsh Gupta
Austria	Georg Kaser	Vice-President	Michael Sideris
Azerbaijan	Ibrahim Guliyev	Secretary General	Alik Ismail-Zadeh
	Gulam Babayev (alternate)	Past President	Tom Beer
Canada	Zoltan Hajnal	Treasurer	Aksel Hansen
Chile	Rony Jara Lecanda	Bureau Member	Isabelle Ansoorge
	Jaime Ramirez (alternate)	Bureau Member	Pierre Hubert
China	Jianping Li	Bureau Member	Kenji Satake
Costa Rica	Marino Protti	President IACS	Charles Fierz
Croatia	Mirko Orlic	President IAG	Chris Rizos
Czech Republic	Vladimir Cermak	President IAGA	Kathryn Whaler
Denmark	Søren Gregersen	President IAHS	Hubert Savenije
Egypt	Ahmed Abdel Hady	President IAPSO	Eugene Morozov
Estonia	Rein Room	President IASPEI	Domenico Giardini
Finland	Elena Kozlovskaya	President IAVCEI	Ray Cas
France	Claude Boucher		
Germany	Jürgen Müller	<b>MEMBERS OF THE FINANCE COMMITTEE</b>	
Hungary	Laszlo Bozo	Chair	David Collins
Iceland	Kristin Vogfjörð		
India	Vijay Prasad Dimri	<b>GUESTS OF THE PRESIDENT ATTENDING THE THIRD SESSION OF THE COUNCIL</b>	
Indonesia	Hasanuddin Abidin	IAHS Secretary General	Christophe Cudennec
	Dodi Sukmayadi (alternate)	ICSU World Data System	Michael Diepenbroek
	Djaya Murjaya (alternate)	Manager Business	Marc-André Gemme
Ireland	Alan Jones	Development, Convention	
Israel	Colin Price	and exhibition Centre	
Italy	Giuliano Panza	Montréal	
Japan	Setsuya Nakada	Secretary, Union	Adelina Geyer Traver
Luxembourg	Tonie van Dam	Commission on Data and	
Mexico	Jose Luiz Macias Vazquez	Information	
New Zealand	David Rhoades	IUGG Secretariat	Katrin Gundrum
Norway	Oddgeir Kristiansen	Congress Director ISPRS	Lena Halounová
Poland	Jan Krynski	Integrated Research on	David Johnston
Portugal	Jorge Miguel Miranda	Disaster Risk Committee	
Romania	Constantin Sava	IUGG Assistant Secretary	Franz G. Kuglitsch
Russia	Anatoly Soloviev	General	
Slovak Republic	Miroslav Bielik	President of the Federal	Hans-Joachim Kämpel
Spain	Carmen Lopez	Institute for Geosciences	
Sweden	Per Holmlund	and Natural Resources	
Switzerland	Adrian Wiget	(BGR)	
Turkey	Metin Kesap	IGA Secretary General	Mioara Mandea
	Hasan Yildiz (alternate)	Presenter of the Indian	Ajai Manglik
United Kingdom	Harry Bryden	Bid (IUGG 2019)	
United States of America	Jeffrey Freymueller	International Association	Jennifer McKinley
<b>LISTENERS</b>		on Mathematical	
Belgium	Kris Vanneste	Geosciences	
Brazil	Marcelo Sousa de	IAPSO Secretary General	Johan Rodhe
	Assumpcao	IASPEI Secretary General	Peter Suhadolc
D.R. Congo	Wafula Mifundu	Ass. Director of BISO,	Ester Szein
Nigeria	Shakirudeen Odunuga	U.S. National Academy	
		of Sciences	

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Minutes of the Council Meeting

President of European Geosciences Union	Hans Thybo
Candidate for Finance Committee	Virendra Mani Tiwari
IAMAS Ex-Officio Member	John Turner
Executive Director, Canadian Geophysical Union	Gordon Young

The Third Session of the Council Meeting was called to order at 15:00 with a roll call of delegates. Delegates from 43 member countries were present, 39 eligible to vote. The quorum (17) was reached. Delegates from Greece, China-Taipei, Slovenia, and South Africa had deposited their votes with the IUGG President for matters to be taken up at the Third Session. Altogether, only 42 votes were cast.

Tom Beer, Katrin Gundrum, and Jianping Li were appointed as tellers.

Harsh Gupta reminded the Council Delegates about the Closing Ceremony taking place on 1 July from 16:30-18:00 followed by a farewell reception.

#### 17. Adoption of the 2016-2019 Budget

The Council was asked to vote on the 2016-2019 Budget presented in the Second Session of the Council Meeting. Votes on financial matters are weighted by category. The results are given below.

For: 137      Against: 0      Abstain: 5

The 2016-2019 Budget was adopted.

#### 18. Election of IUGG Officers

The Council was asked to elect the IUGG Officers for the term 2016-2019. All candidates were announced in the First Session of the Council Meeting. No further comments or questions were asked by the Council. This vote requires a simple majority of all ballots cast. For the position of President, Michael Sideris was elected. For the position of Vice-President, Kathryn Whaler was elected. For the position of Secretary General, Alik Ismail-Zadeh was elected. For the position of Treasurer, Aksel Hansen was elected. The three Bureau Members elected are Isabelle Ansorge, Pierre Hubert and Chris Rizos. David Collins, Jan Krynski, Corina Risso and Virendra Tiwari are the elected Finance Committee members for the term 2015-2019. The actual vote tallies are given below:

Candidate	For	Against	Abstain
Michael Sideris for President	42	0	0
Kathryn Whaler for Vice-President	40	0	2
Alik Ismail-Zadeh for Secretary General	39	1	2

Aksel Hansen for Treasurer	42	0	0
Isabelle Ansorge for Bureau Member	31		
Pierre Hubert for Bureau Member	23		
Jianping Li for Bureau Member	20		
Chris Rizos for Bureau Member	24		
Kenji Satake for Bureau Member	11		
Constantin Sava	15		
Corina Risso for Finance Committee	41	1	0
Zoltan Hajnal for Finance Committee	22		
Virendra Tiwari for Finance Committee	37	0	4
David Collins for Finance Committee	32		
Jan Krynski for Finance Committee	23		

#### 19. Presentation of the preliminary proposal to host a World Geosciences Congress 2023/2024 in Germany

Hans Joachim Kumpel, President of the Federal Institute for Geoscience and Natural Resources (BGR), adhering body to IUGG, presented the initiative to host a joint IUGG/IUGS Congress in Germany in the time frame 2023/24.

He mentioned particularly that the estimated number of participants is approximately 10,000-14,000, and the congress should last 10 days.

Alan Jones, Council Delegate of Ireland, mentioned that the German plan for a joint IUGG/IUGS congress is an excellent initiative, and he supported this initiative.

#### Presentation of National Reports

The Turkish National Committee for Geodesy and Geophysics was the only national committee, whose representative requested a time for presentation of a National Report. Harsh Gupta invited Hazan Yildiz, Council Delegate of Turkey, to present the report during the time the votes were being cast. During his presentation Hazan Yildiz mentioned particularly that the Turkish National Union of Geodesy and Geophysics decided to bid for hosting in Istanbul the IUGG General Assembly in 2023, and the Turkish government supported this initiative.

#### 20. Presentations of the proposals to host the XXVII General Assembly. Selection of the venue of the XXVII General Assembly.

The IUGG Bureau received two bids to host the XXVII IUGG General Assembly. One from Montreal, Canada, and one from New Delhi, India. Harsh Gupta invited the presenters of both bids to give a short presentation of ten minutes to the Council.

Following this, the Council was asked to vote on these two venues. The results were as follows:

2015 GA venue	Votes
Montreal, Canada	25
New Delhi, India	17

The XXVII IUGG General Assembly will take place in Montreal, Canada.

### 21. Vote on proposed changes of Statutes and By-Laws

Before the vote on each proposed change to the IUGG Statutes and By-Laws, David Kerridge answered last questions that arose. If Proposals 1 and 2 for changes to the Statutes and By-Laws are approved by the Council, the Council authorizes the Secretary General to ask Adhering Bodies of Member Countries to appoint a Council Delegate, with the authority to vote, by 1 November 2015.

All proposed changes were accepted by the Council. The changes to the Statutes and By-Laws come into effect directly after the closure of the General Assembly. The results of each vote are given below (on Statutes and By-Laws, altogether only 41 ballots were cast).

Proposal	For	Against	Abstain
1. Permanent Delegates to the IUGG Council	39	1	1
2. Electronic Voting by IUGG Council	40	1	0
3. Definition of National Committees	35	4	2
4. Gender Criterion	38	2	1
5. Permission for Associate Members to speak at Council	38	2	1
6. Expansion of the duties of the Finance Committee	39	0	2
7. Individual Scientists and their Eligibility for Election	33	6	2
8. Assistants to the Secretary General and to the Treasurer	37	1	3

### 22. Renewal of the IUGG liaison officers for 2015-2019

Alik Ismail-Zadeh presented the following table of proposed liaison appointments to the Council. Harsh Gupta then asked the Council to approve the appointments and there was no dissent. Principle Liaisons are marked by bold:

Organization	Liaisons 2015-2019
CODATA	<b>Alexei D. Gvishiani (RUSSIA)</b> Bernd Richter (GERMANY)
COSPAR	<b>Andrew W. Yau (CANADA)</b> Geoffrey Blewitt (USA)
ROA	<b>Isabelle Ansoerge (SOUTH AFRICA)</b>
ROAP	<b>Sukanta Roy (INDIA)</b>
ROLAC	<b>Jaime U. Fucugauchi (MEXICO)</b>
SCAR	<b>Ian Allison (AUSTRALIA)</b> John Turner (UK)
SCOR	<b>Denise Smythe-Wright (UK)</b> John Turner (UK)
SCOSTEP	<b>Vladimir Kuznetsov (RUSSIA)</b>
WDS	<b>Aude Chambodut (FRANCE)</b> Ruth E. Neilan (USA)
The U.N. Geospatial Information Section	<b>Hermann Drewes (GERMANY)</b>
UNESCO-IHP	<b>Christophe Cudennec (FRANCE)</b> Georg Kaser (AUSTRIA)
UNESCO-IOC	<b>Stefania Sparnocchia (ITALY)</b> Eugene Morozov (RUSSIA)
ICAO	<b>John Eichelberger (USA)</b> Arnau Folch (SPAIN)
IRDR	<b>Harsh Gupta (INDIA)</b>
WCRP	<b>Tom Beer (AUSTRALIA)</b> Richard Essery (UK)
CCTF	<b>Richard Biancale (FRANCE)</b> Claude Boucher (FRANCE)
PAIGH	<b>Laura Sanchez (GERMANY)</b>
WMO incl. GFCS	<b>Arthur Askew (SWITZERLAND)</b> Xiao Cunde (CHINA) Alan Thomson (UK) Christophe Cudennec (FRANCE) Joyce E. Penner (USA) Arnau Folch (SPAIN)

Group on Earth Observations (GEO)	<p><b>Alik Ismail-Zadeh (GERMANY/RUSSIA)</b>          Claude Boucher (FRANCE)          Mioara Manda (FRANCE)          Peter Fox (USA)          Hansjörg Kutterer (GERMANY)          Göran Ekström (USA)</p>
-----------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

**23. Presentation and adoption of the Resolutions**

Tom Beer, Chair of the Resolutions Committee, began his report by introducing the members of the Resolutions Committee: Kusumita Arora, Domenico Giardini, Laura Sanchez, and Pierre Hubert. Associations had been asked to submit their Resolutions to the Resolutions Committee. Each Resolution was then examined by the Resolutions Committee and carefully considered by the IUGG Executive Committee before being brought to the Council. Seven Resolutions plus one traditional Resolution of Thanks of IUGG to all organizers of the 2015 General Assembly were put on screen, read and commented by Tom Beer. He welcomed questions and comments by the Council. All Resolutions were reviewed in British English. [The final versions of the Resolutions that were adopted will be presented in the Comptes Rendus as a separate section.]

Resolution 1: Role of Ocean in Climate.

Resolution 2: Future Satellite Gravity and Magnetic Mission Constellations.

Resolution 3: Global Geodetic Reference Frame.

Resolution 4: Real-time GNSS Augmentation of the Tsunami Early Warning System.

Resolution 5: Geo-energy Resources.

Resolution 6: Geoscience Co-operation.

Resolution 7: International Scientific Activities and Cooperation.

Resolution 8: Thanks.

It was regretted that the resolutions were presented only during the very Council Meeting day when they are to be voted on, thus making real debate difficult. Tom Beer described the tight schedule and that the Resolutions Committee itself could discuss the resolutions version approved by the Executive Committee only this morning. Alik Ismail-Zadeh noted that the Bureau would look after an ease of this tight schedule in future.

Following brief discussion on the resolutions, Harsh Gupta asked the Council to vote on the Resolutions. The Resolutions passed with one abstention.

**Closing remarks**

Upon suggestion of Marino Protti, Council delegate of Costa Rica, Alik Ismail-Zadeh asked the delegates to meet outside for a group photo after the meeting.

Harsh Gupta thanked all Council Members, Committees and organizers of the General Assembly for their help and assistance to make the Assembly such a success. He invited all Members to make their comments for the improvement of future General Assemblies known to IUGG.

Harsh Gupta declared that the Council of Delegates to the XXVI General Assembly was adjourned at 18:00.

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Minutes of the Council Meeting

**IUGG Budget 2016 - 19, approved 29 June 2015, Prague**

Based on discussions at Bureau meetings in Baku, 2014, and in Prague 2015

Approved by Council, Finance Committee and Executive Committee in Prague, 2015

All figures, except the value and number of units, are in thousands of US dollars

Year	2015	2016-2019	2012-2015
Estimated unit value	\$1.905	\$1.940-2.050	\$1.800-1.900
Estimated number of units	270	1080	1100
<b>INCOME</b>			
		Budget 2016-2019	Budget 2012-2015
1. MEMBERSHIP DUES	514,4	2157,3	2036,0
2. ASSEMBLY SURCHARGE		20,0	20,0
3. SALES OF PUBLICATIONS, ETC		0,8	1,0
4. MISCELLANEOUS (interest)		0,0	50,0
5. ICSU GRANTS		0,0	30,0
<b>6. TOTAL INCOME</b>		<b>2178,1</b>	<b>2137,0</b>
7. INCOMING BALANCE 2016	<b>500,0</b>		
<b>EXPENDITURES</b>			
		Budget 2016-2019	Budget 2012-2015
11. ADMINISTRATION		400,0	470,0
11.1 Personnel		60,0	
11.2 Equipment		4,0	
11.3 Supplies		16,0	
11.4 Communication		17,0	
11.5 Travel, organizational		295,0	
11.6 Miscellaneous		8,0	
12. NEW INITIATIVES		160,0	240,0
12.1 Education and outreach		80,0	
12.2 Science		80,0	
13. ASSEMBLIES		110,0	160,0
13.1 Organization		10,0	
13.2 Travel Grants for countries in need		60,0	
13.3 Other Travel Grants		40,0	
14. SYMPOSIA		60,0	90,0
14.1 Symposia		60,0	
15. ASSOCIATIONS		1059,1	998,0
15.1 Allocations		1059,1	
16. DUES		120,0	100,0
16.1 ICSU		120,0	100,0
17. ICSU GRANTS		0,0	0,0
18. UNION ACTIVITIES		250,0	372,0
18.1 GRC, SEDI, CMG, UCDI, CCEC, WGH		104,0	
18.2 Inter-Union Science (ILP)		60,0	
18.3 Liaison Officers		40,0	
18.4 International Scientific Programs		24,0	
18.5 New commissions (UCPS)		22,0	
19. FEES		32,0	32,0
20.1 Professional Services		20,0	
20.2 Bank Fees		12,0	
20. CONTINGENCIES		10,0	20,0
<b>21. TOTAL EXPENDITURES</b>		<b>2201,1</b>	<b>2482,0</b>
23. OUTGOING BALANCE 2019		<b>477,0</b>	



## OFFICERS OF IUGG AND THE UNION ASSOCIATIONS FOR 2015-2019

### BUREAU OF THE UNION

<i>President:</i>	Michael Sideris	CANADA
<i>Vice-President:</i>	Kathryn Whaler	UNITED KINGDOM
<i>Secretary General:</i>	Alik Ismail-Zadeh	GERMANY/RUSSIA
<i>Treasurer:</i>	Aksel W. Hansen	DENMARK
<i>Members:</i>	Isabelle Ansorge	SOUTH AFRICA
	Pierre Hubert	FRANCE
	Chris Rizos	AUSTRALIA

### EXECUTIVE COMMITTEE OF THE UNION

According to Article 10 of the Statutes of IUGG the Executive Committee consists of:

- the Bureau (see above),
- the Retiring President of the Union, Harsh Gupta (India)
- the Presidents of the International Associations:

<i>IACS:</i>	Charles Fierz (2015-2017)	SWITZERLAND
<i>IAG:</i>	Harald Schuh	GERMANY
<i>IAGA:</i>	Eduard Petrovsky	CZECH REPUBLIC
<i>IAHS:</i>	Hubert Savenije (2015-2017)	NETHERLANDS
<i>IAMAS:</i>	John Turner	UNITED KINGDOM
<i>IAPSO:</i>	Denis Smythe-Wright	UNITED KINGDOM
<i>IASPEI:</i>	Thorne Lay	USA
<i>IAVCEI:</i>	Donald Dingwell	GERMANY

### FINANCE COMMITTEE OF THE UNION

<i>Chair:</i>	David Collins	UNITED KINGDOM
<i>Members:</i>	Jan Krynski	POLAND
	Corina Risso	ARGENTINA
	Virendra Tiwari	INDIA

### SECRETARIES GENERAL OF THE INTERNATIONAL ASSOCIATIONS

<i>IACS:</i>	Andrew Mackintosh	NEW ZEALAND
<i>IAG:</i>	Hermann Drewes	GERMANY
<i>IAGA:</i>	Mioara Manda	FRANCE
<i>IAHS:</i>	Christophe Cudennec	FRANCE
<i>IAMAS:</i>	Teruyuki Nakajima	JAPAN
<i>IAPSO:</i>	Stefania Sparnocchia	ITALY
<i>IASPEI:</i>	Johannes Schweitzer	NORWAY
<i>IAVCEI:</i>	Roberto Sulpizio	ITALY

**RESOLUTIONS ADOPTED AT THE XXVI GENERAL ASSEMBLY  
BY THE UNION - 29 JUNE 2015  
XXVI GENERAL ASSEMBLY, PRAGUE, CZECH REPUBLIC, 22 JUNE - 2 JULY 2015**

**Resolution 1: Role of ocean in climate**

The International Union of Geodesy and Geophysics,

*Considering*

- the important role of the ocean in the whole Earth system, in particular its interactions with the atmosphere, at all time-scales,

*Acknowledging*

- that this fact must be properly translated into modeling, either for operational oceanography or for study of the Earth climatic system and that the use of these models for estimating relevant states (past, present or future) requires specific observations,
- quantities related to physical oceanography are of fundamental importance for research related to biological or environmental aspects of the ocean (for instance ocean acidification and deoxygenation) or for societal impact (sea level),

*Noting*

- the recommendations from recent international conferences,

*Urges*

- all countries to contribute through international cooperation and coordination to establish adequate and sustainable observing systems, ensuring high quality observations of the ocean on long time scales,
- relevant international organizations such as the Intergovernmental Oceanographic Commission (IOC) and the Group on Earth Observations (GEO) organization to work together to reach the previous objectives,

*Resolves*

- to continue and amplify national and international research efforts on the proper modeling of the ocean in climatic systems and to contribute fully to societal investigations related to this topic.

**Resolution 2: Future satellite gravity and magnetic mission constellations**

The International Union of Geodesy and Geophysics,

*Considering*

- the interest and need of the IUGG scientific community to understand processes of global mass transport in the Earth system, and the interaction among its subsystems including continental hydrology, cryosphere, atmosphere, ocean and solid Earth, in order to close the global water budget and to quantify the climate evolution of the Earth,
- the long lead time required to bring an earth observation system into operation,

*Acknowledging*

- the experience acquired in the last decade within the IUGG in analysing data from dedicated satellite missions such as CHAMP, GRACE, GOCE and Swarm for the purpose of estimating the gravity and magnetic fields and their time variations,
- the clear expression of need from the user communities, and the definition of joint science and user requirements for a future satellite gravity field mission constellation by an international working team under the umbrella of IUGG,

*Noting*

- the need for a long-term sustained observation of the gravity and magnetic fields and related mass transport processes of the Earth beyond the lifetime of GRACE and the GRACE Follow-On planned for the 2017- 2022 period, and beyond the

- Urges*
- lifetime of Swarm, currently 2013 to 2018,
  - the demonstrated need for satellite constellations to improve temporal and spatial resolution and to reduce aliasing effects,
  - international and national institutions, agencies and governmental bodies in charge of supporting Earth science research to make all efforts to implement a long-term satellite gravity and magnetic observation constellations with high accuracy that responds to the aforementioned need for sustained observation.

### **Resolution 3: Global Geodetic Reference Frame**

The International Union of Geodesy and Geophysics,

*Considering*

- the significant efforts of the International Association of Geodesy in developing and maintaining fundamental geodetic products for scientific and societal benefits, in particular through its Global Geodetic Observing System (GGOS),
- the achievements realized by the UN Global Geospatial Information Management (GGIM) through its Working Group on Global Geodetic Reference Frame (GGRF), in which IUGG played a significant role through its International Association of Geodesy,

*Recognising*

- the adoption in February 2015 by the General Assembly of the United Nations of a resolution entitled “A Global Geodetic Reference Frame for Sustainable Development”,

*Urges*

- the UN GGIM Global Geodetic Reference Frame Working Group to engage with the IUGG and other concerned organizations such as CEOS and GEO, in order to promote the implementation of the UN GGIM GGRF RoadMap,

*Resolves*

- to support the implementation of the intent of the UN resolution.

### **Resolution 4: Real-time GNSS augmentation of the tsunami early warning system**

The International Union of Geodesy and Geophysics,

*Considering*

- that large populations may be impacted by tsunamis generated by megathrust earthquakes,
- that among existing global real-time observational infrastructure, the Global Navigation Satellite System (GNSS) can enhance the existing tsunami early warning systems,

*Acknowledging*

- the need to coordinate with the UNESCO Intergovernmental Oceanographic Commission (IOC) and the established intergovernmental coordination framework to define GNSS network requirements, data sharing agreements and a roadmap for the development and integration of the GNSS tsunami early warning augmentation,

*Urges*

- operational agencies to exploit fully the real time GNSS capability to augment and improve the accuracy and timeliness of their early warning systems,
- that the GNSS real-time infrastructure be strengthened,
- that appropriate agreements be established for the sharing of real-time GNSS data within the tsunami early warning systems,
- continued support for analysis and production of operational warning products,

*Resolves*

- to engage with IUGG member states to promote a GNSS augmentation to the existing tsunami early warning systems,
- initially to focus upon the Pacific region because the high frequency of tsunami events constitutes a large risk to the region's large populations and economies, by developing a prototype system, together with stakeholders, including scientific, operational, and emergency responders.

**Resolution 5: Geo-energy resources**

The International Union of Geodesy and Geophysics,

*Considering*

- the challenges posed to our planet by climate change, and the international efforts to transition in the next decades towards a low-carbon economy with the aim to limit the global warming to within 2°C with respect to the 1850-1900 average,

*Noting*

- the crucial role of new renewable energy and electricity sources for the future energy strategy and climate change control,
- the invaluable contribution that science can bring to develop scenarios and identify new technologies and solutions enabling the required transition to a low-carbon economy,
- the challenges posed by the global exploitation of geo-resources, including issues such as induced/triggered seismicity, environmental contamination, and resource supply,

*Recognising*

- the Future Earth initiative of the International Council for Science,
- the unique competence of IUGG in climate change consequences as well as renewable geo-resources fundamental for the future energy supply, including hydropower, wind and geothermal energy, and to study scientifically the challenges and risks associated with the exploitation and extraction of new renewables sources of energy and electricity,

*Urges*

- international and national institutions, agencies and governmental bodies to support scientific advancement and new knowledge development in the field of geo-resources,

*Resolves*

- to promote and coordinate scientific contributions needed to limit the impact of climate change and enable the transition to a future low-carbon economy, and to adopt a holistic view covering all aspects from geo-resources to consequences and risks.

**Resolution 6: Geoscience co-operation**

The International Union of Geodesy and Geophysics,

*Noting*

- the increasingly cross-disciplinary nature of geoscience research means that fields that once were distinct now overlap in interests,
- that many important problems in geosciences require the integration of geodesy, geology, geophysics, and other geoscience fields,
- that the IUGG and other geoscience unions are able to serve as a focal point for many of these common interests,
- that the International Union of Geological Sciences has suggested exploring the possibility of organizing a joint geoscientific assembly,

*Resolves*

- to enhance cooperation and exchange with the other geoscience unions by expanding the formation of joint working groups or commissions,
- to explore the organization of a joint geoscientific assembly.

**Resolution 7: International Scientific Activities and Cooperation**

The International Union of Geodesy and Geophysics,

*Considering*

- that opportunities to undertake, evaluate, and apply international scientific research on environmental extremes and their associated impacts useful to society are growing, necessitating and justifying increased support in order to provide maximum benefits for society in both the near- and long-term,

*Acknowledging*

- the need to continue the extensive existing efforts to enhance the worldwide availability of vital information about the global environment, especially through monitoring, service, and commission-focused research efforts and activities,

*Noting*

- the increasing world-wide occurrence and intensities of environmental problems and the disruptions to overall economic well-being and development that have been and could be caused by natural hazards and extremes and the need to be prepared for the increasing potential for new threats to emerge,

*Urges*

- national and scientific leaders of all nations to recognize the substantial benefits to overall well-being and economic progress, both nationally and globally, that will accrue through advancing scientific understanding of and capabilities for predicting potentially disruptive environmental consequences and extremes,
- national and scientific leaders of all nations to support the active participation of the members of their scientific community in the collective international effort being undertaken by the IUGG and associated scientific unions within ICSU to strengthen and apply research capabilities and findings for public and general economic benefit and the coordination activities necessary to accomplish such efforts,
- scientists and experts around the world to re-dedicate their efforts better to understand the Earth system and, in this time of increasing stress on the global environment, to make their findings available to the public in the most useful and appropriate ways,

*Resolves*

- To be steadfast in: (1) encouraging and supporting the participation of scientists in international scientific meetings and activities, (2) undertaking efforts to enhance fundamental understanding of geophysical processes and behavior, especially in the grand challenge areas, (3) increasing efforts to utilize scientific understanding for the benefit of society and the environment and for promotion of the economy and societal resilience; and (4) in providing an independent voice in support of undertaking and relying on the most rigorous and well-tested scientific findings.

**Resolution 8:           Thanks**

The International Union of Geodesy and Geophysics,

*Resolves*

- gratefully to record its appreciation for the organization, arrangements, and hospitality at the XXVI General Assembly. On behalf of all participants, the Council expresses its warm thanks to the Deputy Prime Minister for Science Research and Innovations, the Mayor of Prague and the President of the Academy of Sciences of the Czech Republic, the Local Organizing Committee, the Scientific Program Committee, and all others for making the XXVI General Assembly a scientific success in the beautiful city of Prague.

**RESOLUTIONS ADOPTEES A LA XXVI ASSEMBLEE GENERALE  
PAR L'UNION – 29 JUIN 2015  
XXVI GENERAL ASSEMBLY, PRAGUE, REPUBLIQUE TCHEQUE, 22 JUIN - 2 JUILLET 2015**

**Résolution 1: Rôle de l'océan dans le climat**

L'Union internationale de géodésie et de géophysique

*Au vu*

- Du rôle important de l'océan dans l'ensemble du système terrestre, notamment ses interactions avec l'atmosphère à toutes les échelles temporelles.

*En reconnaissant*

- Que cet état de fait doit être correctement traduit lors de la modélisation, soit dans le domaine de l'océanographie opérationnelle, soit pour l'étude du système climatique terrestre, et que l'utilisation de ces modèles pour réaliser des estimations d'états donnés (passés, présents et futurs) nécessite des observations spécifiques.
- Que les mesures liées à l'océanographie physique sont cruciales pour la recherche portant sur les aspects biologiques ou environnementaux de l'océan (par exemple l'acidification et la désoxygénation de l'océan) ou sur son impact social (niveau de la mer).

*En tenant compte*

- Des recommandations émanant des dernières conférences internationales.

*Exhorte*

- Tous les pays à favoriser l'établissement de systèmes d'observation durables et adaptés dans le cadre d'une coopération et d'une coordination internationales afin de garantir la qualité des observations de l'océan à long terme.
- Les organisations internationales concernées, comme la Commission océanographique intergouvernementale (COI) et le Groupe pour l'observation de la Terre (GEO), à travailler ensemble pour atteindre les objectifs ci-dessus.

*Décide*

- De poursuivre et d'amplifier les efforts de recherche nationaux et internationaux afin de modéliser correctement l'océan dans les systèmes climatiques et de contribuer pleinement aux enquêtes sociales liées à ce sujet.

**Résolution 2: Futures constellations de satellites pour des missions sur la gravité et le magnétisme**

L'Union internationale de géodésie et de géophysique

*Au vu*

- De l'intérêt et de la nécessité pour la communauté scientifique de l'UGGI de comprendre les processus de transfert de masse global au sein du système terrestre, ainsi que l'interaction parmi ses sous-systèmes y compris l'hydrologie continentale, la cryosphère, l'atmosphère, les océans et les continents, afin de boucler le budget global en matière d'eau et de quantifier l'évolution climatique de la Terre.
- De la longueur des délais requis pour rendre un système d'observation terrestre opérationnel.

*En reconnaissant*

- L'expérience acquise ces dix dernières années au sein de l'UGGI en termes d'analyse de données issues de missions satellites dédiées comme CHAMP, GRACE, GOCE ou Swarm afin d'estimer la gravité et les champs magnétiques ainsi que leur évolution au cours du temps.
- Le besoin clairement exprimé de la part des communautés d'utilisateurs ainsi que la définition des conditions conjointement requises par les utilisateurs et par la science

pour une constellation future de satellites en mission sur le champ de gravité, organisée par une équipe de travail internationale sous l'égide de l'UGGI.

*En tenant compte*

- Du besoin d'observations permanentes des champs magnétiques et gravitationnels ainsi que des processus terrestres de transfert de masse qui y sont liés, au-delà de la durée de vie de GRACE et de son suivi, prévue pour la période 2017-2022, et au-delà de la durée de vie de Swarm, actuellement de 2013 à 2018.
- Du besoin prouvé en matière de constellations de satellites afin d'améliorer la résolution spatiale et temporelle et de réduire les effets de repliement.

*Exhorte*

- Les institutions nationales et internationales, les agences et les organismes gouvernementaux chargés de promouvoir la recherche en sciences de la Terre à fournir tous les efforts possibles pour mettre en œuvre des constellations de satellites d'observation magnétique et gravitationnelle de grande précision afin de répondre au besoin d'observation permanente que l'on a mentionné précédemment.

### **Résolution 3: Cadre de référence géodésique global**

L'Union internationale de géodésie et de géophysique

*Au vu*

- Des efforts importants fournis par l'Association internationale de géodésie pour développer et entretenir des produits géodésiques fondamentaux pour le bien de la science et de la société, notamment grâce à son Système global d'observation géodésique (SGOG).
- Des réalisations accomplies par la Gestion globale de l'information géospatiale des Nations unies (GGIM) grâce à son groupe de travail sur le cadre de référence géodésique global (GGRF), dans lequel l'UGGI a joué un rôle important à travers son Association internationale de géodésie.

*En reconnaissant*

- L'adoption en février 2015 d'une résolution intitulée « Un cadre de référence géodésique global pour le développement durable » par l'Assemblée générale des Nations unies.

*Exhorte*

- Le groupe de travail sur le cadre de référence géodésique global de la GGIM à s'impliquer aux côtés de l'UGGI et des autres organisations concernées comme le CEOS et la GEO afin de promouvoir la mise en œuvre de la feuille de route de l'UN GGIM GGRF.

*Décide*

- De soutenir la réalisation des objectifs poursuivis par la résolution des Nations unies.

### **Résolution 4: Amélioration par le GNSS en temps réel du système d'avertissement précoce contre les tsunamis**

L'Union internationale de géodésie et de géophysique

*Au vu*

- Du fait que des populations importantes peuvent être touchées par les tsunamis générés par des mégaséismes ;
- Du fait qu'au sein de l'infrastructure d'observation globale en temps réel existante, le système de positionnement par satellites (GNSS) peut améliorer les systèmes d'avertissement précoce contre les tsunamis existants.

*En reconnaissant*

- La nécessité de travailler avec la Commission océanographique intergouvernementale de l'UNESCO (COI) et le cadre de coordination intergouvernemental établi afin de définir les besoins en termes de réseau GNSS, les conventions de partage des données et la



feuille de route du développement et de l'intégration de l'amélioration de l'avertissement précoce contre les tsunamis par GNSS.

*Exhorte*

- Les agences opérationnelles à exploiter pleinement les capacités du GNSS en temps réel afin d'augmenter et d'améliorer la précision et la ponctualité de leurs systèmes d'avertissement précoce.
- Au renforcement de l'infrastructure GNSS en temps réel.
- A la mise en place de conventions adaptées pour le partage des données GNSS en temps réel au sein des systèmes d'avertissement précoce contre les tsunamis.
- A continuer à soutenir l'analyse et la production de produits d'avertissement opérationnels.

*Décide*

- De s'engager avec les pays membres de l'UGGI afin de promouvoir une contribution plus importante du GNSS au sein des systèmes existants d'avertissement précoce contre les tsunamis.
- De commencer par se concentrer sur la région du Pacifique, car la fréquence élevée des tsunamis représente un risque important pour les populations nombreuses et pour l'économie des pays de cette zone, en développant un système prototype conjointement avec les parties intéressées, notamment les responsables scientifiques, opérationnels et les premiers secours.

## **Résolution 5: Ressources géoénergétiques**

L'Union internationale de géodésie et de géophysique

*Au vu*

- Des défis que le changement climatique représente pour notre planète et des efforts internationaux pour passer à une économie à faible émission de carbone au cours des prochaines décennies afin de limiter le réchauffement climatique à 2 °C par rapport à la moyenne sur 1850-1900.

*En tenant compte*

- Du rôle crucial des nouvelles sources d'énergie et d'électricité renouvelables pour les stratégies énergétiques à venir et le contrôle du changement climatique.
- De l'incalculable contribution que la science peut apporter pour élaborer des scénarios et identifier de nouvelles technologies et solutions permettant de passer à une économie à faible émission de carbone.
- Des défis que pose l'exploitation globale des géoressources, notamment les problèmes de sismicité induite ou déclenchée, de pollution environnementale et d'approvisionnement en ressources.

*En reconnaissant*

- L'initiative Future Earth du Conseil international pour la science.
- La compétence unique de l'UGGI en matière de conséquences du changement climatique et de géoressources renouvelables indispensables pour l'alimentation énergétique de demain, notamment l'énergie géothermique, éolienne et hydraulique, et en matière d'étude scientifique des défis et des risques liés à l'exploitation et à l'extraction des nouvelles sources d'énergie et d'électricité renouvelables.

*Exhorte*

- Les institutions nationales et internationales, les agences et les organismes gouvernementaux à soutenir le progrès scientifique et le développement de nouvelles connaissances dans le domaine des géoressources.

*Décide*

- De promouvoir et de coordonner les contributions scientifiques nécessaires pour limiter l'impact du changement climatique et permettre la transition vers une future économie à faible émission de carbone, et d'adopter une vision globale qui recouvre tous les aspects allant des géoressources jusqu'aux risques et aux conséquences.

## **Résolution 6:           Coopération en géosciences**

L'Union internationale de géodésie et de géophysique

*En tenant compte*

- De la nature de plus en plus pluridisciplinaire de la recherche en géosciences, qui provoque une convergence d'intérêts entre des disciplines jusqu'alors distinctes.
- Du fait que de nombreux problèmes importants dans le domaine des géosciences nécessitent l'intégration de la géodésie, de la géologie, de la géophysique et d'autres domaines des géosciences.
- Du fait que l'UGGI et d'autres associations de géosciences sont en mesure de servir de point focal pour nombre de ces intérêts communs.
- Du fait que l'Union internationale des sciences géologiques a suggéré d'examiner la possibilité d'organiser une assemblée géoscientifique commune.

*Décide*

- D'améliorer la coopération et l'échange avec les autres associations de géosciences en augmentant la création de commissions ou de groupes de travail communs.
- D'examiner l'organisation d'une assemblée géoscientifique commune.

## **Résolution 7:           Coopération et activités scientifiques internationales**

L'Union internationale de géodésie et de géophysique

*Au vu*

- De l'augmentation des opportunités d'entreprendre, d'évaluer et d'appliquer des recherches scientifiques internationales sur les extrêmes environnementaux et leurs impacts socialement utiles, nécessitant et justifiant un accroissement du soutien afin d'offrir des bénéfices maximaux pour la société à la fois à court terme et à long terme.

*En reconnaissant*

- La nécessité de poursuivre les efforts approfondis actuellement menés pour améliorer la disponibilité mondiale d'informations vitales sur l'environnement global, notamment grâce à la surveillance, au service et à des activités et des efforts de recherche axés sur la commission.

*En tenant compte*

- De l'augmentation de la fréquence et de l'intensité des problèmes environnementaux à travers le monde et des perturbations du développement et du bien-être économique global qui sont ou pourraient être causées par des événements extrêmes ou des dangers naturels, ainsi que de la nécessité de se préparer à l'augmentation du risque d'émergence de nouvelles menaces.

*Exhorte*

- Les dirigeants scientifiques et nationaux de toutes les nations à reconnaître les bénéfices importants pour le bien-être global et le développement économique à la fois national et mondial qui pourraient découler d'une meilleure compréhension scientifique et de la capacité à prédire des conditions extrêmes et des conséquences environnementales potentiellement perturbatrices.
- Les dirigeants scientifiques et nationaux de toutes les nations à soutenir la participation active des membres de leur communauté scientifique à l'effort collectif international entrepris par l'UGGI et les associations scientifiques partenaires au sein de l'ICSU pour renforcer et appliquer les potentiels et les résultats des recherches pour le bien de la population et de l'économie générale ainsi que les activités de coordination nécessaires pour effectuer de telles réalisations.
- Les scientifiques et les experts du monde entier à recentrer leurs efforts afin de mieux comprendre le système terrestre et, en cette époque d'accroissement de la pression sur l'environnement global, à mettre leurs résultats à la disposition du public de la façon la plus utile et appropriée possible.

*Décide*

- De poursuivre inébranlablement : (1) le soutien et l'incitation des scientifiques à participer aux réunions et aux activités scientifiques internationales, (2) ses efforts pour améliorer la compréhension fondamentale du comportement et des processus géophysiques, notamment dans les domaines qui représentent un défi particulier, (3) l'augmentation de ses efforts afin d'utiliser les connaissances scientifiques pour le bien de la société et de l'environnement et pour promouvoir la résistance économique et sociale, et (4) l'apport d'une voix indépendante pour soutenir les initiatives et s'appuyer sur les résultats scientifiques les plus rigoureux et les mieux testés.

## **Résolution 8: Remerciements**

L'Union internationale de géodésie et de géophysique

*Décide*

- De manifester sa reconnaissance pour l'organisation, les dispositions et l'hospitalité dont elle a bénéficié à l'occasion de sa XXVI<sup>e</sup> Assemblée générale. Au nom de tous les participants, le Conseil exprime ses remerciements chaleureux au ministre de la Recherche scientifique et de l'Innovation, au maire de Prague et au président de l'Académie des sciences de la République tchèque, au comité local d'organisation, au comité du programme scientifique et à tous les autres intervenants, grâce auxquels la XXVI<sup>e</sup> Assemblée générale a été un véritable succès scientifique dans la belle ville de Prague.

**RESOLUTIONS ADOPTED AT THE XXVI GENERAL ASSEMBLY  
BY THE IUGG ASSOCIATIONS  
XXVI GENERAL ASSEMBLY, PRAGUE, CZECH REPUBLIC, 22 JUNE - 2 JULY 2015**

**IAG Resolution 1: For the definition and realization of an International Height Reference System (IHR)**

The International Association of Geodesy,

*Recognizing that*

- to determine and to investigate the global changes of the Earth, the geodetic reference systems with long-term stability and worldwide homogeneity are required,
- to detect sea level change of a few millimeters per year can only be possible when a stable spatial reference with globally high accuracy over a long period of time is realized; for this purpose, an integrated global geodetic reference frame with millimeter accuracy must be implemented; to reach this goal, the inconsistencies existing between analysis strategies, models, and products related to the Earth's geometry and gravity field must be solved,
- to accomplish both definition and realization of a height reference system (HRS) standards and conventions that allow a consistent definition and a reliable realization are required,

*Noting*

- the results of the GGOS Theme 1 investigations for the definition and realization of an International Height Reference System in particular the conventions and the computations of the height reference level as the potential value  $W_0$  at the geoid based on the newest global gravity field and sea surface models,
- the necessity of ensuring the reproducibility and interpretability of the reference value, the procedure applied for the determination of  $W_0$  must be well documented including conventions and guidelines,

*Resolves*

- the following conventions for the definition of an International Height Reference System (see note 1),
  1. the vertical reference level is an equipotential surface of the Earth gravity field with the geopotential value  $W_0$  (at the geoid),
  2. parameters, observations, and data shall be related to the mean tidal system/mean crust,
  3. the unit of length is the meter and the unit of time is the second (SI),
  4. the vertical coordinates are the differences  $-\Delta W_P$  between the potential  $W_P$  of the Earth gravity field at the considered points P, and the geoidal potential value  $W_0$ ; the potential difference  $-\Delta W_P$  is also designated as geopotential number  $C_P$ :  $-\Delta W_P = C_P = W_0 - W_P$ ,
  5. the spatial reference of the position P for the potential  $W_P = W(X)$  is related as coordinates X of the International Terrestrial Reference System,
- $W_0 = 62\,636\,853.4 \text{ m}^2\text{s}^{-2}$  as realization of the potential value of the vertical reference level for the IHR (see note 2).

---

Note 1: Ihde J., Barzagli R., Marti U., Sánchez L., Sideris M., Drewes H., Foerste Ch., Gruber T., Liebsch G., Pail R.: Report of the Ad-hoc Group on an International Height Reference System (IHR); In: IAG Reports 2011-2015 (Travaux de l'AIG Vol. 39), <http://iag.dgfi.tum.de/index.php?id=329>.

Note 2: Report of Joint Working Group 0.1.1: Vertical Datum Standardization (JWG 0.1.1); In: IAG Reports 2011-2015 (Travaux de l'AIG Vol. 39), <http://iag.dgfi.tum.de/index.php?id=329>.

**IAG Resolution 2: For the establishment of a global absolute gravity reference system**

The International Association of Geodesy,

*Considering that*

- the time variable gravity field is one of the keys to understanding the changing Earth,
- the accuracy of modern absolute gravimeters has significantly improved,
- absolute gravity observation has become a valuable tool for monitoring crustal deformations and mass transports,
- new observation principles and instruments like cold atom interferometers and ultra-precise clocks are in preparation and testing,
- modern gravity observations need to be based upon the International Metre Convention and the relevant measurement standards,
- international comparisons of absolute gravimeters under the auspices of International Committee for Weights and Measures (CIPM) define the best metrological realization,
- absolute gravity observations are archived and distributed at global scale according to international standards by the International Gravimetric Bureau (BGI) jointly with the Federal Agency for Cartography and Geodesy (BKG) under the auspices of International Association of Geodesy (IAG);

*Acknowledging*

- that the Strategy Paper between Metrology and Geodesy (see note 1) has been accepted by the IAG Executive Committee;

*Noting*

- that the International Gravity Standardization Net 1971 (IGSN71) no longer fulfills the requirements and accuracy of a modern gravity reference thus requiring replacement by a new global gravity reference system,
- that measurement accuracies have improved from the “100  $\mu$ Gal” to the “few  $\mu$ Gal” level,
- that only with an improved gravity reference system time-dependent gravity variations can be determined with high reliability,
- that the use of consistent standards and conventions is necessary for the comparison of geometric and gravimetric observations in the framework of the Global Geodetic Observing System (GGOS);

*Resolves*

- to adopt the Strategy Paper as the metrological basis for absolute gravimetry,
- to initiate a working group to compile standards for the definition of a geodetic gravity reference system based upon the international comparisons of absolute gravimeters,
- to establish a gravity reference frame by globally distributed reference stations linked to the international comparisons of absolute gravimeters where precise gravity reference is available at any time,
- to link the reference stations to the International Terrestrial Reference System by co-location with space-geodetic techniques,
- to initiate the replacement of the International Gravity Standardization Net 1971 (IGSN71) and the latest International Absolute Gravity Base Station Network by the new Global Absolute Gravity Reference System.

---

Note 1: Report of Commission 2: CCM – IAG Strategy for Metrology in Absolute Gravimetry, Role of CCM and IAG. In Travaux of the IAG 2011-2015.

### **IASPEI Resolution 1a:**

*Recognizing*

- the outstanding value of the New Manual of Seismological Observatory Practice (NMSOP), and the efforts of Peter Bormann and GFZ in the development of the Manual,

the International Association of Seismology and Physics of the Earth's Interior,

- is grateful to GFZ German Research Centre for Geosciences, Potsdam for providing continued support and overseeing further development of the NMSOP.

### **IASPEI Resolution 1b:**

*Recognizing*

- the great value of the homogeneous global instrumental (ISC-GEM) and Global historical (GHEC) earthquake catalogues, sponsored by GEM, for scientific and societal purposes,

the International Association of Seismology and Physics of the Earth's Interior,

- strongly urges the community to continue to support these efforts.

### **IASPEI Resolution 1c:**

*Recognizing*

- the importance of standards in seismological observational practice,

the International Association of Seismology and Physics of the Earth's Interior,

- encourages wider implementation and use of the ISF2.0 and QuakeML formats by seismological data centres and observatories.

### **IASPEI Resolution 2:**

#### **Real-time Seismology and Earthquake Early Warning Systems**

*Considering*

- that earthquakes continue to cause substantial damage and loss of life globally, and

*Noting*

- that real-time seismology and earthquake early warning has the potential to play a very important role in the mitigation of earthquake disasters, and

*Acknowledging*

- the technical complexity related to the design, implementation, and operation of an earthquake early warning system, the need for the rapid access to critical data, and that these data may come from a variety of national and regional seismic networks,

the International Association of Seismology and Physics of the Earth's Interior,

- urges support for the research, development, and implementation (including the appropriate use) of earthquake early warning systems, the necessary associated open international exchange of real-time data, and cooperation in the application of that data for disaster mitigation purposes.

**IASPEI Resolution 3: Availability of Multidisciplinary Data for Earthquake Risk Mitigation**

*Considering*

- that a variety of data sources and types including GNSS, InSAR, broadband and strong motion seismic data, and other observations of crustal deformation in concert with integrative modeling better image earthquake processes, and

*Noting*

- that the ready access to archived and real-time data is critical to this integration,

the International Association of Seismology and Physics of the Earth's Interior,

*Urges*

- the continued and increased sharing of these data, particularly during major earthquake events,
- their combined use in earthquake analyses in order to improve the ability to anticipate and respond to earthquake impacts to help mitigate earthquake disasters.

**IASPEI Resolution 4: Appreciation**

*Recognising*

- the enormous effort required to organise the General Assembly,

the International Association of Seismology and Physics of the Earth's Interior,

- *THANKS* and *CONGRATULATES* the IUGG Local Organizing Committee and its Chair Professor Vladimir ČERMAK for the excellent organisation that has led to a most memorable meeting in Prague.

## **XXVI IUGG GENERAL ASSEMBLY CLOSING CEREMONY**

The Closing Ceremony of the XXVI General Assembly of the International Union of Geodesy and Geophysics was held in the afternoon of Wednesday, 1 July 2015 at the Prague Congress Centre, Prague, starting at 16:30.

### **PROGRAMME**

Remembrance of Colleagues deceased since the 2011 General Assembly

Report of the IUGG Secretary General Alik Ismail-Zadeh

Report of the IUGG Treasurer Aksel W. Hansen

Reading of the Resolutions of the Union adopted at the XXVI General Assembly

Final Remarks by Harsh Gupta, Outgoing IUGG President

Closing Remarks by Michael Sideris, Incoming IUGG President



## REMEMBRANCE OF COLLEAGUES DECEASED SINCE THE XXV IUGG GENERAL ASSEMBLY

### IUGG

Nicholas N. AMBRASEYS (Greece/UK)  
Hans BERCKHEMER (Germany/USA)  
Hans-Jürgen BOLLE (Germany/Austria)  
Vladimir Isaakovich KEILIS-BOROK (Russia/USA)  
Elvin KEJLSØ (Denmark)  
Devendra LAL (India/USA)  
Mark F. MEIER (USA)  
Marcel ROCHE (France)  
Klaus-Peter SCHWARZ (Germany/Canada)  
Duzheng YE (China)

### IAG

Istvan FEJES (Hungary)  
Andrey M. FINKELSTEIN (Russia)  
Soren W. HENRIKSEN (USA)  
Klaus-Peter SCHWARZ (Germany/Canada)  
Bob SCHUTZ (USA)  
Elvin KEJLSØ (Denmark)  
Carl Christian TSCHERNING (Denmark)

### IAGA

Louis A. FRANK  
Robert D. HUNSUCKER  
Edward IRVING  
Alexei KHARAMOV  
Johannes KULTIMA  
Igor TUNYI  
Father Josep Oriol CARDÚS ALMEDA  
Knud LASSEN  
Santimay BASU  
Roberto LANZA  
Ravipati RAGHAVARAO  
Reidar LOVLIE  
Kenneth L. ZONGE  
Evgeny P. KHARIN  
Theodore MADDEN  
Ebong W. MBIPOM  
Ahmet M. ISIKARA  
John SAMSON  
Hagai RON  
John B. "Jack" TOWNSHEND  
Tom MULLENDER

### IAHS

Mike BONNELL (UK)  
Wojciech CHELMICKI (Poland)  
Daniel DUBAND (France)  
Genady GOLUBEV (Russia)  
Reg HERSCHY (UK)  
Ivan JOHNSON (USA)

Mark F. MEIER (USA)  
Janusz NIEMCZYNOWICZ (Sweden)  
Terence O'DONNELL (UK)  
Marcel ROCHE (France)  
Harry SALZ (Czech Republic)  
Masami SUGAWARA (Japan)

### IAMAS

Natalia G. ANDRONOVA (USA/USSR)  
Hans-Jürgen BOLLE (Germany/Austria)  
Joseph C. FARMAN (UK)  
Arvydas J. KLIORE (USA)  
Thomas F. MALONE (USA)  
Sir John MASON (UK)  
Bruce R. MORTON (New Zealand/UK/Australia)  
F. Sherwood ROWLAND (USA)  
Sean TWOMEY (Ireland/USA)  
Duzheng YE (China)

### IAPSO

Eberhard FAHRBACH (Germany)  
Bruce HAMON (Australia)  
Masaki KAWABE (Japan)  
Motoyasun MIYATA (Japan)  
Yutaka NAGATA (Japan)  
Toshiro SAINO (Japan)  
Hideo SUDO (Japan)

### IASPEI

Nicholas N. AMBRASEYS (Greece/UK)  
Don L. ANDERSON (USA)  
Sergei ARAFIEV (Russia)  
Hadj BENHALLOU (Tunisia)  
Hans BERCKHEMER (Germany/USA)  
Peter BORMANN (Germany)  
Anton M. DAINTY (USA)  
Alan DOUGLAS (UK)  
John Russel EVANS (UK)  
Slawomir Jerzy GIBOWICZ (Poland)  
James Freeman GILBERT (USA)  
Erik HJORTENBERG (Denmark)  
Vladimir Isaakovich KEILIS-BOROK (Russia/USA)  
Janez LAPAJNE (Slovenia)  
Luis MENDES-VICTOR (Portugal)  
Betim MUCO (Albania)  
Georgios STAVRAKAKIS (Greece)  
Eduard SUSTAROVA (Albania)  
Torild VAN ECK (The Netherlands)

**REPORT OF THE IUGG SECRETARY GENERAL**  
**ALIK ISMAIL-ZADEH**  
**XXVI GENERAL ASSEMBLY, PRAGUE, CZECH REPUBLIC, 1 JULY 2015**

Dear Colleagues, Ladies and Gentlemen,

The ten-day meeting bringing together Earth and space scientists from more than hundred countries of the world comes to closure. The IUGG General Assembly consisted of three important parts: an open Scientific Assembly (all you participated), a meeting of the duly accredited Delegates of the IUGG Member Countries and guests invited in accordance with the By-Laws (referred to as the Council Meeting); and many business meetings of the Union, its Associations, and scientific groupings.

70 countries are members of IUGG, and we are always encouraging new members. Any country in which “independent activity in geodesy and geophysics has been developed” is eligible for IUGG membership. We believe that IUGG membership contributes to the scientific well-being of our member countries, and may lead to economic benefits through enhanced exchange of scientific and technical expertise. The Secretary General is always interesting in talking to people about National or Affiliate membership and possibilities to join the Union.

At the Council meeting, delegates from 49 Adhering Bodies attended one or more sessions of the Council Meeting. The IUGG Council considered and approved a number of initiatives and activities. Namely,

- The Council ratified the admission of Saudi Arabia and Nicaragua as Regular National Members; six international organizations as Affiliate Members; Albania, Armenia and Bosnia & Herzegovina as Associate Members; and transfer of Costa Rica from Associate to Regular membership.
- All proposed changes to the Statutes and By-Laws have been approved by the Council.
- The Union Strategic Plan for 2016-2023 have been endorsed. It will be developed further together with an implementation plan to be approved by the Council in the nearest future.
- New IUGG and Association Officers have been elected.
- Official IUGG Liaisons to various intergovernmental and international scientific bodies have been appointed.
- The budget for 2016-2019 has been approved. You will hear the presentation by IUGG Treasurer after my report.
- Montréal, Canada, has been selected as the venue for the 27th General Assembly of the Union in 2019.

- Eight resolutions have been passed.

Let me explain the major changes in the IUGG constitution documents. The changes introduce the Permanent Delegates to IUGG Council. Namely, the Adhering Bodies of Member Countries shall appoint Delegates to Council for the period between General Assemblies (earlier it was only for the Council meeting), so that the Council can vote electronically to make decisions as soon as the need arises. This will make our Union more vibrant in terms of decision making.

Scientists from any country are now eligible to hold various positions within IUGG family with the following exceptions: positions in the Bureau and the Finance Committee, and the positions of Presidents of the Associations, which can only be held by scientists from Member Countries.

The IUGG Council elected the following Officers of the Union. President Michael Sideris, Vice President Kathy Whaler, Secretary General Alik Ismail-Zadeh, Treasurer Aksel Hansen, and three members at large: Isabelle Ansoerge, Pierre Hubert, and Chris Rizos. Also the IUGG Council elected David COLLINS, Jan KRYNSKI, Corinna RISSO, and Virendra TIWARI to the IUGG Finance Committee.

IUGG cooperates with many international and intergovernmental organizations. Therefore, the IUGG Council has appointed official liaisons to the cooperating organizations. Here is the list of persons appointed (Principal Liaisons are marked by **bold**):

<b>Organization</b>	<b>Liaisons 2015-2019 (country)</b>
ICSU Committee on Data for Science and Technology (CODATA)	<b>Alexei D. GVISHIANI (Russia)</b> Bernd RICHTER (Germany)
ICSU Committee on Space Research (COSPAR)	<b>Andrew W. YAU (Canada)</b> Geoffrey BLEWITT (USA)
ICSU Regional Office for Africa (ROA)	<b>Isabelle ANSORGE (South Africa)</b>
ICSU Regional Office for Asia and the Pacific (ROAP)	<b>Sukanta ROY (India)</b>

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Closing Ceremony

ICSU Regional Office for Latin America and the Caribbean (ROLAC)	<b>Jaime U. FUCUGAUCHI (Mexico)</b>
ICSU Scientific Committee on Antarctic Research (SCAR)	<b>Ian ALLISON (Australia)</b> John TURNER (UK)
ICSU Scientific Committee on Oceanic Research (SCOR)	<b>Denise Smythe-Wright (UK)</b> John TURNER (UK)
ICSU Scientific Committee on Solar-Terrestrial Physics (SCOSTEP)	<b>Vladimir KUZNETSOV (Russia)</b>
ICSU World Data System (WDS)	<b>Aude CHAMBODUT (France)</b> Ruth E. NEILAN (USA)
The Cartographic Section of the United Nations	<b>Hermann DREWES (Germany)</b>
UNESCO International Hydrological Program (UNESCO-IHP)	<b>Christophe CUDENNEC (France)</b> Georg KASER (Austria)
UNESCO Intergovernmental Oceanographic Commission (UNESCO-IOC)	<b>Stefania SPARNOCCHIA (Italy)</b> Eugene MOROZOV (Russia)
International Civil Aviation Organization (ICAO)	<b>John EICHELBERGER (USA)</b> Arnau FOLCH (SPAIN)
ICSU-ISSC-UNISDR Scientific Committee on Integrated Research on Disaster Risk (IRDR)	<b>Harsh GUPTA (India)</b>
WMO-ICSU-IOC World Climate Research Programme (WCRP)	<b>Tom BEER (Australia)</b> Richard ESSERY (UK)
Consultative Committee for Time and Frequency (CCTF)	<b>Richard BIANCALE (France)</b> Claude BOUCHER (France)
Pan American Institute of Geography and History (PAIGH)	<b>Laura SANCHEZ (Germany)</b>
World Meteorological Organization (WMO), incl. the Global Framework for Climate Services (GFCS)	<b>Arthur ASKEW (Switzerland)</b> Xiao CUNDE (China) Alan THOMSON (UK) Christophe CUDENNEC (France) Joyce E. PENNER (USA) Arnau FOLCH (SPAIN)

Group on Earth Observations (GEO)	<b>Alik ISMAIL-ZADEH (Germany/Russia)</b> Claude BOUCHER (France) Mioara MANDEA (France) Peter FOX (USA) Hansjörg KUTTERER (Germany) Göran EKSTRÖM (USA)
-----------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Eight resolutions were passed. They are:

- Role of Ocean in Climate
- Future Satellite Gravity and Magnetic Mission Constellation
- Global Geodetic Reference Frame
- Real-Time GNSS Augmentation of the Tsunami Early Warning System
- Geo-Energy Resources
- Geoscience Cooperation
- International Scientific Activities and Cooperation
- The resolution of Thanks

And finally, the Council selected Montreal (Canada) as the venue for the 27th IUGG General Assembly in 2019, where the Union will celebrate its 100th anniversary. Details about these decisions will be broadcast via the IUGG Electronic Journal and will be available on our website as soon as we can manage it.

The General Assembly held in the historical and beautiful city of Prague has been a scientific success! The Scientific Program Committee, chaired by Eduard Petrovsky, prepared an exciting program. The program consisted of 202 symposia and workshops and 639 sessions in total. Among of more than 5300 presentations at the General Assembly have been 9 Union lectures, 476 invited presentations, 2682 oral presentations, and 2211 poster presentations.

On behalf of the IUGG, I thank the Deputy Prime Minister for Science Research and Innovations, the Mayor of Prague, the President of the Czech Academy of Sciences, the Local Organizing Committee, the Scientific Program Committee, the C-IN company (which managed the assembly), and all others for making the 26th General Assembly a scientific success in the beautiful city of Prague!

Thank you all for your contribution to the success of the 26th IUGG General Assembly!

## REPORT OF THE IUGG TREASURER

**AKSEL W. HANSEN**

**XXVI GENERAL ASSEMBLY, PRAGUE, CZECH REPUBLIC, 1 JULY 2015**

My job today is to give a brief overview of IUGG's financial status just before we are closing the XXVI General Assembly. I could give you many numbers, but time does not allow this, and I guess you would not want to see them. Therefore, I'll keep it simple.

IUGG is a union with 8 associations each of them having their own economy. Here I'll give a brief report of the union only.

The Union's economy is based on dues paid by the members. 60 members in different categories pay dues of approximately USD 500,000 per year.

The money goes to Associations and commissions, meetings, grants, administration and membership dues of other organizations.

IUGG has now reserves close to one year income. On 29 June 2015, the Council approved the budget for 2016 – 2019.

### Adopted Budget for 2016 – 2019

<b>Expected balance (1 January 2016)</b>	<b>USD 500K</b>
<b>Income in 2016-2019</b>	<b>USD 2,178K</b>
<b>At our disposal</b>	<b>USD 2,678K</b>
<b>Expenditures in 2016-2019</b>	<b>USD 2,201K</b>
- Associations	USD 1,059K
- IUGG Grants Programme, Meetings	USD 140K
- Travel Grants, Montreal	USD 100K
- Outreach, Education	USD 80K
- Union Commissions	USD 186K
- International Relations	USD 184K
- Administration (Traveling)	USD 452K
<b>Balance (31 December 2019)</b>	<b>USD 477K</b>

#### Conclusion

The economy of IUGG is good. The budget for the coming period is balanced, i.e. we are planning to keep

the expenditure at the same level as the expected income. Compared to the previous period there is reduction regarding new initiatives for 2015-2019.

**READING OF THE RESOLUTIONS OF THE UNION  
ADOPTED AT THE XXVI GENERAL ASSEMBLY  
XXVI GENERAL ASSEMBLY, PRAGUE, CZECH REPUBLIC, 1 JULY 2015**

The Resolutions adopted by the IUGG Council constitute the most serious and enduring business of the General Assembly. These Resolutions present the findings of the Union to our Adhering Bodies and to the scientific community as a whole, and recommend actions. The Resolutions of the Union and also of the

Associations that adopted resolutions are printed in these *Comptes Rendus*. At the Closing Ceremony, each resolution was read in English by Tom Beer, and they were shown on overhead projection in English.

**FINAL REMARKS BY HARSH GUPTA, OUTGOING IUGG PRESIDENT**  
**XXVI GENERAL ASSEMBLY, PRAGUE, CZECH REPUBLIC, 1 JULY 2015**

Dear IUGG Colleagues, Guests, Ladies and Gentlemen,

We are at the closing ceremony of the most remarkable XXVI IUGG General Assembly at this beautiful Conference Hall in the city of Prague. It is noteworthy that Prague is so far the only city in the world, which have had two IUGG GAs. The first one was in 1927, some 88 years ago.

The XXVI GA has been one of the biggest IUGG GA with close to 5,000 participants. The scientific program of the General Assembly consisted of 202 symposia/workshops totaling to 639 sessions where over 5300 presentations were made. For the last two weeks, we have had wonderful scientific sessions, an excellent area for posters where scientists intermingled and had pleasant and fruitful discussions. The hosts have been very courteous and hospitable. Several new initiatives of IUGG fructified. These include institution and presentation of the IUGG Gold Medal; IUGG Fellowship; and IUGG Early Career Scientist Awards. The scientific program has been very exciting with several symposia concentrating on inter Association and interdisciplinary studies. Participation of a large number of budding young scientists has been very encouraging.

The Assembly had IUGG Executive Committee, Bureau and Council meetings as well as the organizational meetings of all the 8 Associations. Several important decisions were taken that would shape the future of IUGG.

During the Assembly new Officers of the IUGG Bureau and Finance Committee were elected. The Associations also held elections for their officers. It is a pleasure for me to introduce the 2015-2019 Bureau, Finance Committee, Presidents and the Secretary Generals of the Associations:

IUGG Bureau members for 2015-2019

President: Michael Sideris (Canada)  
Vice-President: Kathryn Whaler (UK)  
Secretary General: Alik Ismail-Zadeh  
(Germany/Russia)  
Treasurer: Aksel Hansen (Denmark)  
Bureau Members: Isabelle Ansoorge  
(South Africa)  
Pierre Hubert (France)  
Chris Rizos (Australia)

IUGG Finance Committee members for 2015-2019

Chair: David Collins (UK)  
Members: Jan Krynski (Poland)  
Corina Risso (Argentina)  
Virendra Tiwari (India)

Association Presidents and Secretaries General for 2015-2019

*International Association for Cryospheric Sciences*

President: Charles Fierz (Switzerland)  
President-elect: Regine Hock (USA)  
Secretary General: Andrew Mackintosh  
(New Zealand)

*International Association of Geodesy*

President: Harald Schuh (Germany)  
Secretary General: Hermann Drewes  
(Germany)

*International Association of Geomagnetism and Aeronomy*

President: Eduard Petrovsky  
(Czech Republic)  
Secretary General: Mioara Manda (France)

*International Association of Hydrological Sciences*

President: Hubert Savenije  
(The Netherlands)  
President-Elect: Günter Blöschl (Austria)  
Secretary General: Christophe Cudennec  
(France)

*International Association of Meteorology and Atmospheric Sciences*

President: John Turner (UK)  
Secretary General: Teruyuki Nakajima (Japan)

*International Association for the Physical Sciences of the Oceans*

President: Denise Smythe-Wright  
(UK)  
Secretary General: Stefania Sparnocchia (Italy)

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Closing Ceremony

*International Association of Seismology and Physics of  
the Earth's Interior*

President: Thorne Lay (USA)  
Secretary General: Johannes Schweitzer  
(Norway)

*International Association of Volcanology and  
Chemistry of the Earth's Interior*

President: Donald B. Dingwell  
(Germany)  
Secretary General: Roberto Sulpizio (Italy)

The IUGG Council selected Montreal, Canada as the host for the XXVII IUGG General Assembly. The dates are July 8 to 19, 2019. I wish Canada a very successful IUGG GA and look forward to meeting you there after 4 years.

Today, it is natural for me to feel a little nostalgic as I complete 16 years of my association with the IUGG Bureau, where I was elected as a Bureau Member way back in 1999 at Birmingham, UK. Two terms as a Bureau Member (1999-2003 and 2003 – 2007), Vice President (2007- 2011) and President (2011-2015) is indeed a long journey, which I thoroughly enjoyed, working on various issues/policies/new-initiatives with total support and co-operation of all concerned.

As President, I must put on record my thanks to the IUGG Bureau: Vice President Michael Sideris; Secretary General Alik Ismail Zadeh; Treasurer Aksel Hansen; and Bureau Members Isabelle Ansorge, Pierre Hubert, and Kenji Satake. Franz Kuglitsch has been a very effective Assistant Secretary General/Executive Secretary of IUGG. A very dedicated Executive Committee of IUGG comprising of the Presidents of the Associations, ably supported by the Secretary Generals of Associations carefully examined the issues being dealt by IUGG and provided a very wise advice. I am grateful to all these colleagues and friends. In the end I must also thank all the IUGG Council Members for their understanding and guidance in running the business of IUGG. Lastly, I profusely thank Prof. Vladimir Cermak, the Chair of the Local Organizing Committee and Prof Eduard Petrovsky, the Chair of the Scientific Program Committee along with their colleagues, for having done a wonderful job of organizing this mega event and making it a memorable General Assembly. Thanks are also due to all the participants of the General Assembly for making it so successful.

**CLOSING REMARKS BY MICHAEL SIDERIS, INCOMING IUGG PRESIDENT**  
**XXVI GENERAL ASSEMBLY, PRAGUE, CZECH REPUBLIC, 1 JULY 2015**

**Position Statement/The Challenges**

- No single Association and no single Geoscience can, by itself, provide solutions to today's pressing societal needs:
  - climate change
  - environmental protection
  - natural hazards
  - risk reduction
  - ...
- Studying and understanding the "Earth System" as a whole requires both interdisciplinary and international collaborations of scientists as well as governments.
- I would therefore consider it as one of my priorities to support, integrate, advance and promote collaborative work between the Union's Associations.
- This type of integrated and collaborative work needs to also be promoted outside IUGG and its substructures.
- Work towards further strengthening the Union's
  - Relevance
  - Effectiveness
  - Visibility
  - Attractiveness
  - Young scientists
  - Developing countries

**How to Achieve These Goals**

- Add value to the work of the Associations by
  - Enabling joint research work
  - Facilitating joint Assemblies and other Conferences
  - Supporting Education and R & D programs
  - Organizing General Assemblies focused more on larger Themes /Problems rather than narrow-topic symposia
  - Promoting of the work of the Associations and the Union
- Look outwards and improve collaborations with, e.g.,
  - International Council for Science (ICSU)
  - UNESCO
  - World Meteorological Organization (WMO)
  - Other Geo-Unions
  - ...
- Ceaselessly promote of IUGG's contributions to science and society

- Engage in capacity building activities
- Strive for open access to, and free distribution of information, data and research results
- Establish a flexible and effective governance of the Union and its Associations so as to enable them to respond quickly to current and future challenges
- Happy to report that some of these have been already in place via *the Resolutions* and the changes to the *Statutes and Bylaws* of the Union
  - Permanent Council, email voting
  - Election of scientists from non-member countries
  - Collaborations with other Geo-Unions
  - Support for open access to data and information

**Acknowledgements**

- All members of IUGG's Bureau, and in particular
  - IUGG President, Harsh Gupta
  - IUGG Secretary General, Alik Ismail-Zadeh
- All members of IUGG's Executive Committee
- The City of Prague and the LOC, and in particular
  - Eduard Petrovsky, Chair, Scientific Program Committee
  - Vladimir Cermak, Chair of the Local Organizing Committee
- The IUGG Council and all National Delegates for their trust and support
- All participants in this most successful Assembly

**Invitation**

- Please be – in particular the younger scientists – active participants in IUGG and its Associations
- Be involved not only in the science but also in the governance structures
- Provide feedback for improvements: sideris@ucalgary.ca
- Join us in four years in Montreal, Canada, for the 27th IUGG General Assembly

THANK YOU ALL



**ADMINISTRATIVE REPORTS**  
**XXVI GENERAL ASSEMBLY, PRAGUE, CZECH REPUBLIC, 22 JUNE - 2 JULY 2015**

**QUADRENNIAL REPORT OF THE PRESIDENT**

**IUGG**

The 2011-2015 quadrennial period has been very productive and path breaking in many ways for the entire IUGG community. Sincere efforts were made to engage younger generation of geodesists and geophysicists to be involved with IUGG activities. An IUGG Early Career Scientist Award was instituted, and the first awards would be made during the IUGG GA at Prague. An IUGG Gold Medal is instituted for an individual for outstanding contributions in geodesy and geophysics. This most prestigious IUGG recognition is for a scientist only once in every four year. An IUGG Fellowship has been instituted for individuals who have made exceptional contributions in international collaboration in geodesy or geophysics and attained eminence in the field of Earth and space sciences. The number is limited to 10 Elected Fellows every four years. Additionally, the past office bearers of IUGG and the Associations shall be given Conferred Fellowship for their outstanding services to IUGG and its Associations.

During this quadrennium, two ICSU General Assemblies took place: the XXX General Assembly from September 27 through September 30, 2011 at Rome, Italy and XXXI General Assembly from August 30 to September 3, 2014 at Auckland, New Zealand. IUGG took a very active part in both these assemblies.

One of the requirements was setting up of the IUGG Secretariat at a suitable location. Discussions were on with the GFZ German Research Center for Geosciences, Potsdam. During one of my visits to GFZ, a meeting was set up with Prof. Dr. H.C. Reinhard Hüttl, Scientific Executive Director and Chairman of the Executive Board of GFZ by Rainier Kind on 17<sup>th</sup> June, 2011. After some negotiations an agreement was reached and IUGG Secretariat was set up at the Helmholtz Center, Potsdam in 2013, and Franz G. Kuglitsch was appointed as the Executive Secretary of IUGG / Assistant Secretary General of IUGG. The office is being run to the satisfaction of all concerned.

Good progress has been made in developing a Strategic Plan for IUGG for the period 2016-2023, keeping in view the latest scientific developments and societal requirements.

The issue of Individual Membership of IUGG has drawn IUGG's attention since 2013. The opinion of the Association on this issue is divided. On advice of the IUGG Bureau, I sought the opinion of the Presidents and the Secretary Generals of the National Adhering bodies through a letter written on December 1, 2014. The response is being analyzed.

During the quadrennium Scientific Assemblies of all the 8 Associations were held. It was encouraging to see that several of these assemblies were held jointly by two or more associations.

IUGG Bureau meetings were held from 29<sup>th</sup> September through 2<sup>nd</sup> October 2012 at Lauterbad, Germany; 20<sup>th</sup> and 21<sup>st</sup> September 2013 at Prague, Czech Republic and on 11<sup>th</sup> and 12<sup>th</sup> June 2014 at Baku, Azerbaijan. These meetings were very productive and well organized, thanks to the efforts of IUGG Secretariat and the local hosts. The IUGG Executive Committee meeting followed the 2013 Bureau meeting at Prague.

**International Council of Science (ICSU)**

I completed my two terms as a Member of Committee on Scientific Planning & Review (CSPR) of ICSU by the end of 2011. IRDR and Future Earth were two very important topics where I could contribute significantly.

IUGG adheres to ICSU. During the quadrennium, two ICSU General Assemblies were held. In the XXX General Assembly held at Rome from September 27 through 30, 2011, IUGG was very visible. A resolution on "Science on Disaster Risk" was presented and due to technical issues, it was referred to ICSU EB. It was heartening to see that nomination emerging from IUGG for the position of President-Elect of ICSU was successful and Gordon McBean became the President Elect of ICSU. Gordon McBean had earlier served on the IUGG Bureau as a member for two terms (1987-1991, and 1991-1995). Orhan Altan was elected as an Ordinary Member of ICSU EC representing Geo-Union cluster. At the same time Guoxiong Wu was elected as an Ordinary Member of ICSU EB in the category of National Members. Wu is the past president of IAMAS (2007- 20011).

The XXXI ICSU GA held at Auckland, New Zealand would be remembered for the in depth discussions on the "Future Earth" initiative. At the end of the GA, Gordon McBean took over as the President of ICSU.

Orhan Altan was elected for the second term as an Ordinary Member of ICSU EB representing the Geo-Union cluster.

### **IUGG Initiatives**

#### **CCEC**

In the year 2012, IUGG set up the Union Commission on Climatic and Environmental Change (CCEC). The aim is to promote the scientific understanding of climate and environmental change, boost research for reducing uncertainties in climate and environmental models, and encourage trans-disciplinary research on related topics. CCEC is expected to provide an all-Union perspective on the much-debated topic of climate and environmental change.

Chair: Tom Beer, Vice Chair: Jianping Li, Secretary-Treasurer: Keith Averson.

#### **IUGG Gold Medal**

IUGG Gold Medal, established in 2013, is the highest honor of the International Union of Geodesy and Geophysics to award Earth and Space scientists for their outstanding contributions to geodesy and geophysics and for unselfish international collaboration in research. The Medal is to be presented at the IUGG General Assembly by the President. There would be on such award every four years. The awardee is given the Medal, a Medal Certificate and an honorary Membership of IUGG.

Award Committee:

Chair: Dr. Robert (Bob) Engdahl  
Members: Dr. Claudio Brunini; Dr. Laura Gallardo; Dr. Demetris Koutsoyiannis; Dr. Joan Marti; Dr. Lawrence Mysak; Dr. Olga Solomina; Dr. Mamoru Yamamoto; Dr. Alik Ismail-Zadeh.

The first IUGG Gold Medal would be awarded to Prof. Sir Brian J. Hoskins, United Kingdom at the IUGG General Assembly at Prague in June 2015.

#### **IUGG Fellowship**

Fellowship of IUGG is recognition of outstanding work carried out by individuals in the field of geodesy and geophysics, by the IUGG Bureau. Honorary members, selected for IUGG Fellowship, are bestowed with a certificate of IUGG Fellowship by the IUGG President at the opening ceremony of the IUGG General Assembly. The number of fellowships granted is limited to ten every four years.

Fellowship Committee:

Chair: Dr. Joyce E. Penner  
Members: Dr. Hugo Delgado Granados; Dr. Jan Laštovicka; Dr. Harald Schuh; Dr. Konrad Steffen; Dr. Kuniyoshi Takeuchi; Dr. Isabelle Ansorge.

Awardees:

1) Prof. Xiaofei Chen, China; 2) Dr. Godin-Beckmann, France; 3) Prof. Jianping Li, China; 4) Prof. John Burrows, Germany; 5) Prof. Andrea Flossmann, France; 6) Prof. Gerald Jones, Canada.

The IUGG Bureau has also announced the names of the “Conferred Union Fellows”, who have served IUGG and the Associations with distinctions. These are:

IUGG: A. A. Ashour (Egypt), G. Balmino (France), O. B. Andersen (Denmark), J. Chen (China), Y. T. Chen (China), V. K. Gaur (India), S. Gregersen (Denmark), E. Groten (Germany), M. J. Hamlin (UK), D. D. Jackson (USA), J. A. Joselyn (USA), B. L. N. Kennett (Australia), M. Kono (Japan), G. McBean (Canada), H. Moritz (Austria), P. Pinet (France), U. Shamir (Israel), J. Somogyi (Hungary), A. F. Spilhaus (USA), K. Suyehiro (Japan), A. A. A. Tealeb (Egypt), J. F. Vilas (Argentina), S. Uyeda (Japan), P. J. Wyllie (USA);

IACS: I. Allison (Australia), G. Kaser (Austria), M. Lange (Germany/Cyprus);

IAG: G. Beutler (Switzerland), C. Boucher (France), M. Louis (France), I. Mueller (USA) F. Sansó (Italy), W. Torge (Germany);

IAGA: C. Barton (Australia), E. Friis-Christensen (Denmark), B. Hultqvist (Sweden), D. J. Kerridge (UK), H. W. Kroehl (USA), J. G. Roederer (USA);

IAHS: A. Askew (Switzerland/Australia), H. Colenbrander (The Netherlands), J. C. Rodda (UK), K. Takeuchi (Japan), G. Young (Canada);

IAMAS: H. C. Davies (Switzerland), R. A. Duce (USA), B. J. Hoskins (UK), M. Kuhn (Austria), R. List (Canada), M. C. MacCracken (USA), G. Wu (China);

IAPSO: F. E. Camfield (USA), S. Imawaki (Japan), P. Malanotte-Rizzoli (USA/Italy), R. D.

Muench (USA), L. Mysak (Canada), J.-J. O'Brien (USA), L. V. Shannon (South Africa);

IASPEI: R. Adams (UK), E. R. Engdahl (USA), C. Froidevaux (France), A. V. Nikolaev (Russia), Z. Wu (China); Jean-Claude deBremaecker (USA),

IAVCEI: S. Aramaki (Japan), P. Gasparini (Italy), S. A. Fedotov (Russia), G. Heiken (USA), R. W. Johnson, S. R. McNutt (USA), S. Nakada (Japan), O. Navon (Israel), H.-U. Schmincke (Germany), S. J. Sparks (UK).

The "Conferred Fellows" will be bestowed with a certificate of IUGG Fellowship and a pin at the closing ceremony of IUGG XXVI GA on July 1, 2015.

### **IUGG Early Career Scientist Award**

This Award honors early career scientists for their outstanding research in Earth and space sciences and for their international research cooperation. IUGG Early Career Scientist Awards are presented by the IUGG President at the IUGG General Assembly following the announcement of the awards. The awardees are bestowed a certificate. IUGG covers travel expenses of the awardees to attend the General Assembly. The awardees will be invited to give a talk at the General Assembly.

Early Career Scientist Award Committee:

Chair: Jenny Baeseman;  
Members: Salvatore Grimaldi; Thorne Lay;  
Satheesh Sheno; John Turner; Laszlo Szarka.

Awardees:

1) Dr. Ilona Riipinen, Sweden; 2) Dr. Johanna Salminen, Finland; 3) Dr. Ruiqiang Ding, China; 4) Dr. Gregory Foltz, USA; 5) Dr. Ben Kravitz, USA; 6) Dr. Ben Marzeion, Austria; 7) Dr. Futoshi Takahashi, Japan; 8) Dr. Andreas Fichtner, Switzerland; 9) Dr. Markus Hrachowitz, The Netherlands; 10) Dr. Matthias Huss, Switzerland.

### **Strategic Plan for IUGG**

A committee with C. Rizos, F. Kuglitsch, M. Manda, A. Mackintosh, D. Giardini, has been charged with the preparation of the IUGG Strategic Plan for 2016-2023. The Committee has been very active and has redefined the objectives, Mission and Vision statements, Core Principals & Aspirations and Strategic Goals. The

document is under consultation and would be finalized in time for suitable implementation.

### **Preparation for the Prague General Assembly**

Prof Vladimir Cermak is the Chair of the Local Organizing Committee of the XXVI IUGG GA to be held at Prague from 22<sup>nd</sup> June through 2<sup>nd</sup> July 2015. The preparation is underway. The scientific program committee chaired by Prof. Eduard Petrovsky (Czech Republic) is doing a commendable job of developing the IUGG GA program.

### **Union Lectures**

Union Lectures are one of the most important activities of the IUGG General Assembly. We are lucky to have the concurrence of Noble Laureate Prof Y. T. Lee, the past president of ICSU to deliver an Union Lecture. The complete list of the lecturers is as follows:

1) Prof. Yuan T. Lee, Taipei; 2) Prof. Dominic Mazumavi, South Africa; 3) Prof. Harald Schuh, Germany; 4) Prof. Jonathan Gregory, U.K.; 5) Prof. Janet Kozyra, USA; 6) Dr. Laura Gallardo Klenner, Chile; 7) Prof. Nicolas Gruber, Switzerland; 8) Prof. Raoul Madariaga, France; 9) Dr. Thomas Casadevall, USA

### **Committees**

With consultation of the Bureau and the Executive Committee of IUGG and drawing from the past experience of individual scientists globally with the IUGG affairs, the following committees have been constituted:

#### **Nomination Committee:**

Chair: Prof. Uri Shamir  
Members: Prof. Alexie Gvishiani, Prof. Paola Rizzoli, Prof. Guoxiong Wu.

Nominations are solicited by the Nomination Committee, from all those eligible to nominate to the open Bureau and Finance Committee positions. Efforts are made to strike a balance of experience, disciplines, geographical distribution and gender balance in preparing the slate of candidates for the positions. The Statutes and By- Laws of the Union provide a possibility of further nominations.

#### **Statutes and By-Law Committee:**

Chair: Dr. David J. Kerridge  
Members: Dr. Vijay Dimri, Dr Jerome Dymont, Dr Jeff Freymueller, Dr. JoAnn Joselyn, Dr. Michael Sideris.

The Statutes and By-Law Committee has been examining various issues that have arisen over the quadrennium with respect to existing Statutes and By-Laws. An effort is made to generate closeness and association with regional and national geo-societies to achieve common goals.

#### **Resolution Committee:**

Chair: Dr. Tom Beer  
Members: Dr. Pierre Hubert, Dr. Laura Sanchez, Dr. Kusumita Arora, Prof. Domenico Giardini

The Resolution Committee will solicit proposals during the General Assembly, examine and evaluate them and prepare suggested resolutions appropriately for the consideration of the IUGG Council.

#### **Site Evaluation Committee:**

Chair: Prof. Satsuya Nakada  
Members: Dr. Ian Allison, Dr. Alik Ismail-Zadeh, Dr. Peter Suhadolc, Dr. Kathy Whaler.

The Site Evaluation Committee was set up as a consequence of IUGG Council meeting at Sapporo, Japan in 2003 where it was required that the invitations to host the IUGG General Assemblies should be evaluated and the results be presented to the Council to facilitate its decision process. The members of this committee have rich experience of organizing large IUGG related conferences including past general assemblies. For the IUGG GA XXVII there are two bids, from Canada and India. After ascertaining that the two bids meet the desired criteria, and a visit to the venues, the Site Evaluation Committee will report to the IUGG Council.

#### **Individual Membership**

Currently 70 National Members of the International Union of Geodesy and Geophysics (IUGG) contribute to the development of the Union and promote an international cooperation in Earth and space sciences. IUGG would be happy to expand its membership involving as many countries as possible from Africa, Asia, and South America. This is a challenging problem, because many of the countries in the regions either have economical/financial difficulties or the fields of basic geophysics and geodesy are not well developed. However, there are active geophysicists and geodesists in non-member countries, who would like to contribute to activities of IUGG and its Associations. In 2013 IAVCEI raised the topic of whether IUGG should introduce an individual membership allowing

an individual scientist from any country (not only from Member country) to become an IUGG member, provided that individual members pay their membership dues and receive their membership benefits including the right to vote and the right to be elected to the office of the Union and its Associations.

This proposal was discussed by the IUGG Bureau, and the Bureau decided to seek the Association Presidents' opinion on the individual membership. The reports received from the Association Presidents showed a lack of consensus on the topic among the IUGG Associations.

Considering the importance of this issue and the different opinions of the Union Association, the IUGG Bureau decided to request the Union's Adhering Bodies and National Committees of the Member Countries to express an opinion about the introduction of an IUGG individual membership. The questions raised are:

1. How would National and individual memberships complement each other and contribute constructively to IUGG activities?
2. What would be the benefits of IUGG to have individual members and the benefits of individual geoscientists to become members of IUGG?
3. How a geoscientist would become an individual member of the IUGG, and should individual membership be paid or free?

The response is sought by 1<sup>st</sup> February 2015. The outcome shall form the basis for discussion and further course of action.

#### **Acknowledgements and Thanks**

The end of the IUGG GA on July 2, 2015 would bring to close my long association with the IUGG Bureau. I was first elected as a Bureau Member at the IUGG GA at Birmingham, UK in the year 1999. The positions held in IUGG Bureau by me include Member (two terms, 1999-2003, and 2003-2007), Vice President (2007-2011) and President (2011-2015). It has been a pleasure working for IUGG Bureau for a long period of 16 years.

During my term as the President of IUGG, several individuals provided support and advice making my task easier. Alik Ismail Zadeh, Secretary General of IUGG, needs to be thanked for constant advice and council. He has been all through very prompt and very knowledgeable about the IUGG affairs. He also carried the immense burden of day- to- day demands and operations of IUGG. Vice President Michael Sideris took care of his part of the responsibilities and

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Quadrennial Reports of the IUGG Officers

provided support and advice. Treasurer Aksel Hansen has a long experience of managing finances of IUGG. He worked very well with the Finance Committee and has kept IUGG finances in an excellent shape. Members of the Bureau, namely, Isabelle Anorge, Pierre Hubert and Kenji Satake came with different back- grounds and provided valuable inputs to running the IUGG. We found in Franz G. Kuglitsch a very young and energetic Executive Secretary/Assistant Secretary General of IUGG, who has been very quick in learning and brought a lot of energy to the organization. I am most grateful to the Presidents and the Secretary Generals of the 8 Associations for their constructive participation in IUGG affairs and it's good performance. Special thanks are also due for the tremendous task done by the Local Organizing Committee under the Chairmanship of Vladimir Cermak and to the International Scientific Program Committee Chaired by Eduard Petrovsky for the XXVI IUGG GA.

Reinhard Hüttl and the Executive Board of GFZ are gratefully acknowledged for making it possible to establish an IUGG Secretariat at Potsdam staffed with a scientific position. This was a long felt need of IUGG that was fulfilled during the present quadrennium.

It is a pleasure to acknowledge the support and interest of ICSU President Y. T. Lee (2011-2014) on many IUGG related issues and his sensitivity, warmth and the time he invested on these issues.

I must acknowledge the support provided by the National Geophysical Research Institute, Hyderabad and National Disaster Management Authority, New Delhi for running the IUGG President's Office.

Harsh Gupta

## QUADRENNIAL REPORT OF THE VICE-PRESIDENT

### IUGG

As a member of IUGG's Bureau and Executive Committee (EC), I participated in all the Bureau and EC meetings held in Melbourne, Australia (2011), Lauterbad, Germany (2012), Prague, Czech Republic (2013) and Baku, Azerbaijan (2014).

At the request of the IUGG President, I represent IUGG at the 2013 Scientific Assembly of the IAG in Potsdam, Germany. In this Assembly, IAG celebrated its 150<sup>th</sup> Anniversary, and I delivered a welcome address on behalf of IUGG at the opening ceremony. The event was hosted, and expertly organized, by the GFZ (GeoForschungsZentrum Potsdam), which has also been hosting IUGG's Secretariat since 2012.

I also represented IUGG at the 68<sup>th</sup> Executive Committee Meeting of the International Union of Geological Sciences (IUGS), held in January 2015 in Vancouver, Canada. The IUGG-IUGS relationship was on the agenda of that meeting. After a very fruitful discussion, the IUGS President, Prof. Roland Oberhänsli, committed to strengthening the ties between the two Unions, by expanding future collaborative activities, including exploring the possibilities of holding joint sessions and conferences, and/or organizing a joint General Assembly. At the same meeting, Prof. Patrick Mc Keever, Chief of UNESCO's Earth Sciences and Geohazard Risk Reduction section, welcomed further collaboration between IUGG and UNESCO, including possible future involvement of IUGG in the International Geoscience Programme (IGCP).

I have organized and will be the convener of Union Symposium 11 (U11) at the 2015 XXVI IUGG General Assembly (GA) in Prague. U11 is the Early Career Scientists Symposium, which is specifically designed to attract, and highlight the contributions of, young scientists to geodesy and geophysics. Twelve invited presentations will be made, ten of which will be from the winners of the IUGG Early Career Scientist Award who will share their experiences, successes, expectations, suggestions and/or concerns on the future of geosciences.

In regards to IUGG committees, I prepared terms of reference for the new Outreach Committee, which will be chaired by the Vice-President. The committee's main task is to organize and manage IUGG's communication, promotion, public information and general outreach activities, including communication and possible collaboration with IUGG-related sectors of the industry. I was also an ex-officio member of the Status and Bylaws Committee, which worked on

revising IUGG's constitution towards improving the decision making and voting procedures by the Council, the eligibility of individual scientists for election in various leadership positions, and membership issues.

In my position as Vice-President I also had to oversee the activities of IUGG's Commissions and the Working Group on History (WGH). A brief report on the work of the Commissions and the WGH follows.

### Report on the activities of the IUGG Commissions

All Union Commissions were very active during the past four years. Although there have been some administrative and personnel changes, below I am briefly summarizing only their main scientific activities and achievements.

The newest Union Commission is the one on Climatic and Environmental Change (CCEC). It was established by the IUGG EC in 2012 to promote the scientific understanding of climatic and environmental change, and provide a focus for scientific expertise in climate and environment-related areas for all IUGG disciplines and Associations. During the past quadrennium, CCEC was very successful in achieving its main tasks. These were: to prepare an IUGG position statement for the new ICSU Program, Future Earth; to advance the Weather, Climate and Food Security (WeatCliFS) initiative; and to act as the IUGG liaison for the World Meteorological Organization (WMO) Global Framework for Climate Services. The Commission held its inaugural meeting and Future Earth workshop in Beijing in April 2014. The workshop concentrated on research activities relevant to geophysicists, with presentations by the Presidents of the International Union of Food Science and Technology (IUFoST), the International Society of Photogrammetry and Remote Sensing (ISPRS), and the Executive Director of Future Earth. The workshop also identified scientific activities that could be used to foster linkages between the geodetic and geophysical communities, such as water resources (IAHS/IAG), sea level rise (IAPSO/IACS), climate extremes and food (IAMAS/IAVCEI), East Asia and the monsoon (IAMAS/IAHS), space weather and sustainability (IAGA / IAMAS), and urban risks. CCEC also co-organized and will be convening Union Symposium U1 at the IUGG GA in Prague on "Future Earth and Sustainability".

The Union Commission on Mathematical Geophysics (CMG) continued to focus on the organization and co-organization of workshops and conferences on Mathematical Geophysics. In the last quadrennium, these were as follows: CMG biennial Meeting in Edinburgh, Scotland, June 18-21, 2012; two research

workshops as a part of global program Mathematics of the Planet Earth on “Statistics and Triggering of Earthquakes”, August 30-September 1, 2013 in Banff, Canada, and on “Dynamics of Seismicity, Earthquake Clustering and Patterns in Fault Networks” in October 9-11, 2013 in North Carolina, USA; education and capacity-building workshop on “Mathematics of Climate Change, Related Hazards and Risks”, July 29-August 2, 2013 in Guanajuato, MEXICO; and CMG biennial Meeting in Merida, Mexico, June 2-6, 2014. CMG is working on organizing the next CMG biennial meeting in the summer of 2016 in Paris, France. NSF support will be sought to support the participation by early-career scientists in this meeting. The Union Symposium U3 on “Mathematics and Observations of Earth Systems” at the 2015 IUGG GA is co-organized will be convened by the CMG.

The Union Commission on Geophysical Risk and Sustainability (the GeoRisk Commission, GRC) is promoting scientific studies for the reduction of risk from natural hazards and is providing hazard data to public officials for reducing death toll and destruction. In 2013, GRC updated their Terms of Reference and in 2014 launched their new web site (<http://www.iugg-georisk.org/>). The GRC organized the 1<sup>st</sup> GRC Conference on “Extreme Natural Hazards and Their Impacts”, December 8-11, 2012 in Orange, California, USA, and the 2<sup>nd</sup> GRC Conference on “Improving Geophysical Risk Assessment, Forecasting, and Management”, 18-21 November, 2014 in Madrid, Spain. Both conferences were well attended and included panel discussions on topics like “Disaster Risks: Communication between Science and Society” and “The Risk of Extreme Geohazards: How prepared is a globally interdependent society?” The 3<sup>rd</sup> GRC Conference is planned for 2016. During the IUGG GA in Prague, the GRC will hold jointly with IAHS, IRDR, IAVCEI, IAPSO, IACS, IASPEI, IAG, IAGA, Union Symposium U2 on “Integrated Disaster Risk Science: Accounting for Extremes”.

The Union Commission on the Study of the Earth’s Deep Interior (SEDI) cuts across the traditional discipline-oriented bounds of the IUGG Associations, linking in particular with IAG, IAGA, IASPEI and IAVCEI in order to generate the most coherent and consistent picture of the workings of the Earth’s deep interior. SEDI’s main activity has been the organization of a dedicated symposium/workshop every even year. Two such meetings were organized in 2012 and 2014: The 13<sup>th</sup> SEDI Symposium in Leeds, UK, on July 1-6, 2012 and the 14<sup>th</sup> SEDI International Symposium in Kanagawa, Japan, on August 3-8, 2014. The SEDI 2012 Proceedings were published in a Special Issue of Physics of the Earth and Planetary Interiors (Volume 223, Special Issue, 2013). Contributions from the SEDI 2014 symposium are

currently under review and will be published in a special issue of Progress in Earth and Planetary Science. The 15<sup>th</sup> SEDI workshop will be held in Nantes, France, in late July 2016. At the forthcoming IUGG GA in Prague, SEDI is co-organizing and will convene Union Symposium U5 on “New Discoveries in Deep Interiors of Earth and Planets”.

The Union Commission on Data and Information (UCDI) main objective is to enable IUGG’s Associations to deal with data and information issues at the Union level, and engage with similar bodies in other Unions and Societies by supporting and advancing data and metadata standards across the Union and by promoting open access to data and adoption of inter-operable data sets internationally. UCDI represented IUGG at meetings, committees, and task forces of ICSU’s Committee on Data for Science and Technology (CODATA) and World Data System (WGS), and the Research Data Alliance (RDA). In addition, UCDI continued liaisons with international organizations such as IUGS/CGI (Commission on Geoscience Information), IAU/WGAD (Working Group on Astronomical Data), EGU/ESSI (Earth and Space Science Informatics), and AGU/ESSI (Earth and Space Science Informatics). At the 2015 IUGG GA, UCDI is co-organizing and convening the U4 Union Symposium on “Data Science and Analytics in Geodesy and Geophysics – Research and Education Progress and Opportunities.”

The Union Working Group on History (WGH) was established in 2012 with representatives from all IUGG Associations. Its primary tasks were to raise the historical consciousness of IUGG members and to preserve the IUGG scientific and institutional history. The WGH sponsored symposia at Association meetings. In particular, at the joint IAMAS-IACS Assembly in Davos, Switzerland from 8 – 12 July, 2013, it held a symposium entitled “A Century of international Cooperation in Geophysics: Examples from IACS and IAMAS”. The IAG Scientific Assembly in Potsdam, Germany from 1 to 6 September, 2013 featured a special History Session to commemorate the 150<sup>th</sup> anniversary of the IAG. At the IUGG GA in Prague, WGH is co-organizing and convening Union Symposium U9, titled “Revolutions in Earth Sciences: from Different Spheres to a Common Globe.” The WGH is also contributing to the Joint Symposium JA6 “Data on the Edge: Preservation and Utilization of Historical Data in the Geosciences.” It is also worth mentioning that, after an initiative by the IUGG Secretary General (SG), Dr. Alik Ismail-Zadeh, and with input from the WGH, former IUGG SG Dr. Jo Ann Joselyn has agreed to write the commemorative volume for the 2019 centenary of the IUGG. The WGH will identify co-authors to review

scientific progress during the last 100 years for each of the Associations.

### **Involvement in IAG activities**

In addition to the work mentioned above, I have also been contributing to IUGG activities indirectly during the past four years through my work for the International Association of Geodesy (IAG) as its Past President. Besides serving on the IAG EC and attending its meetings, I chaired three of its committees: the Nominations Committee which prepared the nominations and will oversee the election of new officers for the period 2015-2019, the Cassinis Committee, which reviewed the Status and Bylaws and proposed revisions to the IAG Council, and the Selection Committee for the Levallois Medal that is given in recognition of distinguished service to the Association and/or to the science of geodesy in general. In addition, I have been serving on the Coordinating Board of IAG's Global Geodetic Observing System (GGOS) and chairing GGOS's Theme 1: Unified Height Systems.

I was member of scientific and organization committees for several IAG and IAG-sponsored conferences, and I organized and convened several scientific sessions (including some at AGU and EGU annual meetings). I also was a co-author, and co-edited with past IAG President, Prof. Fernando Sanso, of the book "Geoid Determination - Theory and Methods" published in 2013 in Springer's Lecture Notes in Earth

System Sciences series, and contributed two articles on geoid determination to the Encyclopedia of Solid Earth Geophysics (2011) edited by IUGG's President, Dr. Harsh Gupta. IAG was able to secure a geodetic session titled "Seeing Earth in the 'Light' of Gravity: New Views Through Satellite Geodesy" at the 2015 Annual Meeting of the prestigious American Association for the Advancement of Science (AAAS), held in San Jose, California, on Feb 12-16, 2015. I was invited to give a talk there titled "Building on the Geoid to Harmonize Height Systems Globally." At the 2015 IUGG GA, besides the U11 Symposium mentioned earlier, I also co-organized and will co-convene the IAG Symposium G06 "Unified Height System".

### **Acknowledgements**

I would like to acknowledge the leadership and members of the IUGG Commissions and the WGH for their outstanding scientific work and for their prompt reporting. I am also grateful to have worked with all colleagues in the IUGG EC, Bureau and Secretariat, and would like to acknowledge their support and cooperation, and particularly their dedication and individual contributions to the Union. They have made my work easier, and a pleasure and an honour.

Michael Sideris



## QUADRENNIAL REPORT OF THE SECRETARY GENERAL

### Introduction

The International Union for Geodesy and Geophysics (IUGG) is one of the largest international geoscience unions. The Union membership is comprised of the National Adhering Bodies (National Members), which establish National Committees for Geodesy and Geophysics in their countries. The Union is financially supported by National Members that benefit from the knowledge, data, services, and scientific talent that are concentrated within IUGG. Although the Union is not an individual membership organization like the American Geophysical Union (AGU), European Geosciences Union (EGU) or Asian Oceanic Geosciences Society (AOGS), all Earth and space scientists from the Members Countries are members of the Union. Actually, IUGG is a home for all geoscientists worldwide, those who share the Union's mission in advancing, promoting, and communicating knowledge of the Earth and its environment. As a member of the International Council for Science (ICSU), IUGG strongly supports its policy of non-discrimination by affirming the rights and freedom of scientists throughout the world to engage in international scientific activity without limitation by such factors as citizenship, religion, creed, political stance, ethnic origin, race, color, language, age or gender.

IUGG is a union of eight International Associations, each dedicated to a specific scientific discipline, but with overlapping interests and complementary strengths: they are the International Associations of Cryospheric Science (IACS), Geodesy (IAG), Geomagnetism and Aeronomy (IAGA), Hydrological Sciences (IAHS), Meteorology and Atmospheric Sciences (IAMAS), Physical Sciences of the Oceans (IAPSO), Seismology and Physics of the Earth Interior (IASPEI), and Volcanology and Chemistry of the Earth Interior (IAVCEI). At present, there are five Union Commissions and one Union Working Group that are dedicated to particular interdisciplinary topics: Commission on Climatic and Environmental Change (CCEC), Commission on Mathematical Geophysics (CMG), Commission on Geophysical Risk and Sustainability (GRC), Commission on Study of the Earth's Deep Interior (SEDI), Commission on Data and Information (UCDI), and Working Group on History (WGH).

### Union Activities

To meet changing scientific and organizational needs, the International Union of Geodesy and Geophysics started to reshape its structure and activities. Below I present the major activities related to modernization of the Union since 2008.

### The IUGG

- introduced two new categories of Union Membership: *Affiliate Membership* and *Honorary Membership*.
- established *two Union Commissions* on Climatic and Environmental Change and on Data and Information and the *Union Working Group* on History to supplement the existing Union Commissions on Geophysical Risk and Sustainability, on Mathematical Geophysics, and on Structure of the Earth's Deep Interior.
- set up four Union Committee to analyze membership structure of the Union (Membership Issues Committee), to develop *science education policy* (Capacity Building and Education Committee), to develop Union honor programs (Honor and Recognition Committee), and to analyze structure and activities of the Union, relationship between Union Associations and National Members, and to develop a *strategic plan* of the Union (Visioning Committee).
- developed the *Grants Program* to complement its existing program of funding scientific meetings. The Program aims to support projects of importance to the international geophysical and geodetic community, which will explore new scientific ideas and develop future international initiatives. The priority areas of the Program were (i) creation of new knowledge in Earth and space sciences; (ii) dissemination of knowledge, data and information on geophysics and geodesy; (iii) geoscience for sustainable development; (iv) geoscience and policy interface; and (v) geoscience education and outreach in developing countries. IUGG awarded 17 international multi-disciplinary (involving at least two Union Associations and/or Union Commissions) research and outreach projects.
- initiated a *new science education program* and signed agreement with the Abdus Salam International Centre for Theoretical Physics (ICTP) to enhance geophysical and geodetic education and science collaboration. Among other points, the agreement encourages collaboration in organization of advanced schools/workshops in geodesy and geophysics in ICTP or in economically less developed countries; in development of diploma courses related to Earth and space sciences; and in

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Quadrennial Reports of the IUGG Officers

- dissemination of information on educational and scientific meetings. Since 2012 IUGG awarded 24 educational events (advanced schools, workshops, seminars) at ICTP as well as in the economically-less developed countries.
- established *Honor and Recognition program* and introduced three major awards: (i) Early Career Scientist Award, (ii) Union Fellow award, and (iii) the Gold Medal to award Earth and space scientists for outstanding contributions to geodesy and geophysics and for unselfish international cooperation in research.
- enhanced its *publication policy*. In 2012 IUGG signed an agreement with the Cambridge University Press to develop a new series of special publications of the IUGG to publish peer-reviewed books on perspectives and reviews in multidisciplinary research.
- *strengthened its relationship* with United Nations, international, regional and national geoscience organizations.
- NEW WORKING GROUP. IUGG established the Working Group on History of Earth and Space Sciences to raise the historical consciousness of the Union Members and to spearhead the effort to commemorate the IUGG's 100<sup>th</sup> anniversary in 2019.
- SCIENTIFIC ASSEMBLIES. Five Scientific Assemblies of IUGG Associations have been organized this summer around the world: (i) DACA-13, a joint assembly of IACS and IAMAS, *Davos, Switzerland*, 8-12 July; (ii) the IAVCEI Scientific Assembly, *Kagoshima, Japan*, 20-24 July; (iii) the joint scientific assembly of IAHS-IAPSO-IASPEI "Knowledge for the Future", *Gothenburg, Sweden*, 22-26 July; (iv) the IAGA Scientific Assembly, *Merida, Mexico*, 26-31 August; and (v) the IAG Scientific Assembly, *Potsdam, Germany*, 1-6 September. More than 4,000 scientists participated in the assemblies from more than 100 countries.
- SCIENTIFIC MEETINGS. Four IUGG Union Commissions held their major scientific meetings: CMG conferences on mathematical geophysics in Edinburgh, UK (2012), and in Merida, Mexico (2014); SEDI symposia in Leeds, UK (2012), and in Kanagawa, Japan (2014); GRC conferences in Orange, USA (2012), and in Madrid, Spain (2014); and CCEC workshop on Climatic and Environmental Changes in Beijing, China (2014).

Union activities during the past quadrennium are summarized below.

- MEMBERSHIP. The Kingdom of Saudi Arabia and Nicaragua became IUGG Regular Members (pending for Council's ratification of the votes by National Members). Due to mainly financial reasons Albania, Armenia, and Bosnia & Herzegovina moved to Associates. Monaco withdrew from IUGG as its Adhering Body is not involved anymore in the activities related to geosciences. Several scientific organizations became IUGG Affiliate Members (pending for Council's ratification of the votes by National Members): The Commission for the Geological Map of the World (CGMW), the Young Earth Scientists (YES) Network, the American Geosciences Institute, and the International Association for Mathematical Geosciences.
- NEW COMMISSION. IUGG established new Union Commission on Climatic and Environmental Change to promote scientific understanding of climatic and environmental change, to boost research in reducing uncertainties in climate and environmental models, and to define criteria for collaborative trans-disciplinary research on climate and environmental change.
- PUBLICATIONS. IUGG signed a Memorandum of Agreement with the Cambridge University Press to publish a series of works entitled "Special Publications of the International Union of Geodesy and Geophysics". The series will be composed of high-quality books, which will review the present state-of-the-art developments, discoveries and/or perspectives in Earth and space sciences. The first volume of the Special Publication of the IUGG "*Extreme Natural Hazards, Disaster Risks and Societal Implications*" was published by the Cambridge University Press in 2014, and the second volume "*Dynamics and Predictability of Global and Regional High-impact Weather and Climate Events*" is to be published in 2015.
- PROJECTS. IUGG was actively involved in the realization of three ICSU-sponsored projects: "Extreme Natural Hazards and Societal Implications – ENHANS", "Better

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Quadrennial Reports of the IUGG Officers

- Internet Connectivity for Research and Education Institutions in Africa – eGYAfrica”, and “Uniting and networking the magnetic community in the northern Indian Ocean region – MAGNIO”.
- GRANTS. IUGG awarded 9 grants to support scientific and outreach projects of importance to the international geophysical and geodetic community, which will explore new scientific ideas and develop future international initiatives.
  - SPONSORED SCIENTIFIC MEETINGS AND SCHOOLS. IUGG co-sponsored 43 scientific meetings (workshops, symposia, conferences) and 24 science education events worldwide in 2011-2015.
  - COOPERATION. IUGG continued to strengthen cooperation with many International Scientific Unions including those related to Earth and space sciences (GeoUnions) and interdisciplinary bodies of the International Council for Science (ICSU) as well as with other international and intergovernmental organizations such as the United Nations Education, Science and Culture Organization (UNESCO) via the International Hydrological Program (IHP) and the Intergovernmental Oceanographic Commission (IOC), the World Meteorological Organization (WMO), the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO), the Group on Earth Observations (GEO), the International Telecommunication Union (ITU), the International Civil Aviation Organization (ICAO), and with national and regional professional societies with international participation lie the American Geophysical Union (AGU), the Asia-Oceanic Geosciences Society (AOGS), the European Geosciences Union (EGU), and some other international and intergovernmental organizations. Particularly, the IUGG
    - a) IUGG President and I took part in the General Assemblies of the International Council for Science (ICSU) held in Rome, Italy (2011) and in Auckland, New Zealand (2014), and in the meeting of ICSU Scientific Unions in Paris, France, in 2013.
    - b) IUGG participated in several meetings of the ICSU GeoUnions Steering Committee in Rome (2011), Istanbul (2012), Antalya (2013), Paris (2013), and Auckland (2014). I was elected a Vice Chair (2012-2014) and Chair (2014-2016) of the Steering Committee.
    - c) I participated in the General Assembly of the ICSU Scientific Committees on Space Research (COSPAR).
    - d) IUGG became a Participating Member of the Group on Earth Observations (GEO) in January 2014. I represented the Union at the GEO Plenaries X and XI.
    - e) I was invited to join the Scientific Program Committee for the 2015 Science and Technology Conference of the Preparatory Commissions for Comprehensive Nuclear Test-Ban Treaty Organization (CTBTO).
    - f) I attended the Preparatory Committee meeting for the Third U.N. World Conference on Disaster Risk Reduction to deliver a statement at the co-Chairs Forum.
    - g) IUGG took part in drafting the ICSU-ISSC synthesis paper “Disaster Risks Research and Assessment to Promote Risk Reduction and Management”, which states that the urgent need for significant improvements of existing assessment processes by scientific advice on disaster risks to support and catalyze disaster policy development and management across governments. Comprehensive periodic assessments of disaster risks at local to global levels should be undertaken by a high-level, trans-disciplinary body of experts appointed by national governments together with international and inter-governmental scientific organizations dealing with disaster risks.
    - h) I met with UNESCO Assistant Director General for Natural Sciences as well as with heads of several UNESCO sections (namely, the International Hydrological Program, the Intergovernmental Oceanographic Commission, Earth Sciences, and Disaster Risk Reduction) to facilitate the cooperation between the Union, its Associations/Commissions and the UNESCO sections.
    - i) IUGG representatives participated in several events of the World Meteorological Organization (WMO) including Executive Council meetings. Also IUGG became a Member of the Partnership Advisory Committee of the Global Framework on Climate Services (GFCS). Special thanks go to Arthur Askew, a Liaison Officer to WMO, for his voluntary service to IUGG and participation in many important WMO-related events during the last several years. Also IUGG/IAVCEI co-organized joint workshops on Ash Dispersal Forecast and Civil Aviation in 2012 and 2014.
    - j) Together with the *International Mathematical Union* (IMU) and *International Union of Theoretical and Applied Mechanics*

XXVI General Assembly of the International Union of Geodesy and Geophysics  
 Quadrennial Reports of the IUGG Officers

(IUTAM), IUGG organized a summer school in Merida, Mexico, and together with the *American Geophysical Union* (AGU) and IMU a Union session on Mathematics of Planet Earth in San Francisco, USA, in 2013.

k) IUGG endorsed and supported the initiative of the International Geographical Union (IGU) related to “International Year for Global Understanding”. Also IUGG endorsed the “International Decade of Deltas”.

**Membership of the Union**

As of 1 January 2015, IUGG has 70 Member Countries with distribution throughout the world as follows: Europe 31, Asia 18, North and South Americas 11, Africa 8, and Oceania 2. The current membership history is summarized in the table below.

MEMBERS	Dates of ADMISSION & TERMINATION	CATEGORY <sup>(1)</sup>	UNITS <sup>(2)</sup>
ALBANIA	1997-2002, 2003	A	0
ALGERIA	1971-2006		
ARGENTINA	1927	3	3
ARMENIA	2000	A	0
AUSTRALIA	1919	5	7
AUSTRIA	1948	3	3
AZERBAIJAN	2010	1	1
BELGIUM	1919	4	5
BOLIVIA	1960-2000, 2006	A	0
BOSNIA & HERZEGOVINA	2003	A	0
BRAZIL	1922	3	3
BULGARIA	1930	1	1
BURUNDI	1987-1995		
CANADA	1919	6	10
CHILE	1924	2	2
CHINA	1977	6	10
CHINA – Acad. of Sciences in Taipei	1995	4	5
COLOMBIA	1938-1971, 2000	1	1
CONGO D.R. (**)	2004	A	0
COSTA RICA	2010	A	0
CROATIA	1992	1	1
CUBA	1960-1996		
CZECH REPUBLIC	1993	2	2
DENMARK	1923	4	5
DOMINICAN REP.	1957-1971		
EGYPT	1924	2	2
ESTONIA	1991	1	1
ETHIOPIA	1952-2000		
FINLAND	1927	3	3
FRANCE	1919	7	15
GEORGIA	2009	A	0
GERMANY	1951	8	20
GHANA	1957-1987, 2006	A	0
GREECE	1922-2003; 2008	3	3
GUATEMALA	1957-2000		
GUINEA	1987-1995		
HAITI	1956-1971		
HUNGARY	1930	2	2
ICELAND	1967	1	1
INDIA	1947	6	10
INDONESIA	1951	1	1

XXVI General Assembly of the International Union of Geodesy and Geophysics  
 Quadrennial Reports of the IUGG Officers

IRAN	1957	1	1
<i>IRAQ</i>	<i>1983-1996</i>		
IRELAND	1946	2	2
ISRAEL	1951	1	1
ITALY	1919	6	10
<i>IVORY COAST</i>	<i>1975-1996</i>		
JAPAN	1919	8	20
JORDAN	1979	1	1
<i>KENYA</i>	<i>1975-1997</i>		
KOREA	1960	2	2
<i>KOREA /DEM.REP</i>	<i>1967-2000</i>		
<i>LEBANON</i>	<i>1967-2003</i>		
<i>LIBYA</i>	<i>1979-1996</i>		
LUXEMBOURG	1971	1	1
MACEDONIA, F.Y.R.	1995-2001, 2010	1	1
<i>MADAGASCAR</i>	<i>1967-1995</i>		
<i>MALAYSIA</i>	<i>1967-2002</i>		
MAURITIUS	2003	A	0
MEXICO	1922	2	2
<i>MONACO</i>	<i>1967-2013</i>		
<i>MONGOLIA</i>	<i>1995-2001</i>		
MOROCCO	1924	A	0
MOZAMBIQUE	1983	1	1
<i>MYANMAR (BURMA)</i>	<i>1957-2003</i>		
<i>NEPAL</i>	<i>1975-1987</i>		
THE NETHERLANDS	1925	4	5
NEW ZEALAND	1927	1	1
NICARAGUA	2014	1	1
NIGERIA	1971	2	2
NORWAY	1923	4	5
PAKISTAN	1952	2	2
PERU	1925-1979, 2000	A	0
PHILIPPINES	1951	3	3
POLAND	1924	2	2
PORTUGAL	1919	2	2
ROMANIA	1930	1	1
RUSSIA (***)	1992	6	10
SAUDI ARABIA	1971-2001, 2012	2	2
<i>SENEGAL</i>	<i>1960-1995</i>		
<i>SERBIA &amp; MONTENEGRO (*)</i>	<i>1996-2006</i>		
<i>SIERRA LEONE</i>	<i>1967-1983</i>		
SLOVAK REPUBLIC	1993	1	1
SLOVENIA	1994	1	1
SOUTH AFRICA	1924	3	3
SPAIN	1922	5	7
<i>SUDAN</i>	<i>1955-2000</i>		
SWEDEN	1923	4	5
SWITZERLAND	1923	5	7
<i>SYRIA</i>	<i>1948-1995</i>		
<i>TANZANIA</i>	<i>1975-2000</i>		
THAILAND	1923	2	2
<i>TUNISIA</i>	<i>1927-2001</i>		
TURKEY	1949	2	2
UK	1919	8	20
<i>URUGUAY</i>	<i>1924-2000</i>		

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Quadrennial Reports of the IUGG Officers

USA	1919	11	35
VENEZUELA	1975-2008		
VIETNAM	1931	1	1
ZIMBABWE	1967-2000		

- (1) According to IUGG Statute 12a, there are fourteen categories of membership in the Union, numbered 1 to 14, plus a special category, called A (Associate).
- (2) According to IUGG Statute 12b and IUGG By-Law 18 a, for categories 1 to 14, each member country pays annually the number of units of contribution assigned to the category in which it adheres. Associates (Category A) do not pay an annual contribution to the Union.
- (\*) Adhesion in 1996 under the name of the Federal Republic of Yugoslavia, which was changed in 2003 to Serbia & Montenegro. In 2006, Serbia & Montenegro divided, and attempts to confirm membership of either country have been unsuccessful.
- (\*\*) Adhesion in 1991 under the name Zaire, membership terminated in 1997.
- (\*\*\*) Adhesion in 1954 under the name of the USSR

### Affiliate Members of IUGG

American Geoscience Institute (AGI) (since 2014)  
Commission for the Geological Map of the World (CGMW) (since 2014)  
International Association for Geoethics (IAGETH) (since 2014)  
Young Earth Scientist (YES) Network (since 2014)

### Administration

#### The Bureau

The IUGG Bureau consists of the

*President:* Harsh Gupta (India)  
*Vice-President:* Michael Sideris (Canada)  
*Secretary General:* Alik Ismail-Zadeh (Germany/Russia)  
*Treasurer:* Aksel W. Hansen (Denmark)  
*Members:* Isabelle Ansorge (South Africa), Pierre Hubert (France), and Kenji Satake (Japan).

The Bureau met three times during the term: in Lauterbad, Germany (September 2012), in Prague (September 2013), and in Baku (June 2014). In addition, the Bureau held a teleconference meeting in November 2014.

Discussions at the Bureau meetings included the following:

- IUGG Membership. The number of Adhering Bodies and the extent of the arrears in dues has been a topic of concern at each meeting. Efforts to encourage dues payments have been discussed and actions taken with varying degrees of success.
- IUGG Financial Health. The state of the budget has been considered at each meeting accounting for comments from the Chair of the Finance Committee; the state has been found satisfactory. A draft budget for the 2016-2019 term was discussed at the Baku meeting.

- IUGG Associations, Association Scientific assemblies and Association's activity. A significant concern was the behavior of the IAVCEI officers who demanded changes in the IUGG membership. The Bureau agreed to conduct a survey related to individual membership of the Union and requested Union Association and National Members to respond on the questionnaire and to express their opinions on the individual membership and related topics. Based on the survey the IUGG President decided to call for an extraordinary meeting of the Executive Committee to resolve the tensions between the Union and one of the Union Associations.
- IUGG's relationship with ICSU, including the ICSU interdisciplinary bodies, Regional Offices, Grants Programme, new initiative on Future Earth as well as programs on data and information (WDS) and disaster risks (IRDR).
- IUGG relationship with GeoUnions, joint programs, statements, and projects.
- Review of IUGG Union Commissions including their Terms of Reference.
- Review of the Union Committees on Capacity Building and Education, Honors and Recognition, Membership Issues, and Visioning, including their Terms of Reference.
- IUGG cooperation with international, intergovernmental, regional and national geoscience organizations.
- International Lithosphere Program (ILP): review of the ILP activity and administration (jointly with IUGS).

- IUGG support of young scientists, in particular, nominations of persons to attend the Young Earth Scientist Conference in Beijing in 2009, Union Symposium “Early Career Scientists in Geophysics” in Melbourne in 2011.
- Educational program and policy
- Publication program
- The 2015 General Assembly, including the chairs and members of the Nominations Committee, Statutes and By-Laws Committee, the Resolutions Committee, and Site Comparison Committee.

### **The Executive Committee**

The IUGG Executive Committee (EC) consists of the Bureau, the immediate past President of IUGG (Dr. T. Beer, Australia) and the Presidents of the Associations. Association Secretaries-General and the Chair of the IUGG Finance Committee are always invited to attend the meetings, with voice but without vote. The Executive Committee met twice

- in Melbourne, Australia, July 2011
- in Prague, Czech Republic, September 2013

The extra-ordinary meeting of the IUGG Executive Committee will be held in Vienna, Austria, on 18 April 2015 to consider several urgent topics related to IUGG membership, relationship between the Union Associations and National Members, Associations activities, and some other topics.

Decisions at the Executive Committee meetings included the following:

- Endorsed the applications for IUGG Membership (the Kingdom of Saudi Arabia, and Nicaragua).
- Recommended the IUGG Council to approve the request of Albania, Armenia and Bosnia & Herzegovina to become Associate Members and to invite the Scientific Centre of Monaco to re-consider its decision on withdrawal from IUGG.
- Endorsed the application for Affiliate Membership.
- Established the Union Commission on Climatic and Environmental Change.
- Established the Union Working Group on History.
- Approved the book proposal related to 100-years history of IUGG.
- Adopted the Terms of Reference for Union standing and ad-hoc Committees and approved the membership of the committees.
- Endorsed the decision of the IUGG Bureau to request the IUGG Capacity Building and

- Education Committee to develop a Science Education Policy of the Union.
- Set up an ad-hoc working group to develop an action plan for visioning and a strategic plan of IUGG for 2016-2023.
- Adopted new IUGG Honor and Recognition Program.
- Approved the Memorandum of Understanding between IUGG and the Local Organizing Committee for the XXVI IUGG General Assembly.
- Appointed Dr. Christophe Cudennec (France) as the IUGG liaison to the International Hydrological Program of UNESCO, because Dr. P. Hubert (France) stepped down from the position of the IUGG liaison.
- Endorsed active participation of IUGG in the Future Earth Programme of ICSU.
- Endorsed IUGG cooperation with GeoUnions. Namely, endorsed the decision of the IUGG Bureau on the co-sponsorship of the International Year for Global Understanding, a program of IGU. Recommended development of cooperative scientific links between IUGG and IUGS on the IUGS initiative “Resourcing Future Generations” and on joint congresses.

### **IUGG Secretariat**

The Statutes and By-laws provide that the daily affairs of the Union are managed by an elected Secretary General who attends to correspondence, circulates information, preserves the records, prepares reports of the Union’s activities, and arranges meetings of the General Assembly, the Council, the Executive Committee and the Bureau, including preparing and distributing the agendas and the minutes of all their meetings. Additional activities of the Secretariat:

- Produced the monthly IUGG E-Journal, the annual Yearbook, and the annual Report.
- Maintained, redesigned and expanded the IUGG webpage.
- Conducted ballots by correspondence concerning the Union admission.
- Issued the calls for support of meetings and inter-disciplinary projects, and facilitated the awards.
- Facilitated the work of the IUGG Commissions and Committees.
- Revised the Guidelines on IUGG Administration.
- Maintained close cooperation with the ICSU Secretariat and with GeoUnions Officers and promoted joint activities of IUGG with other international organizations.

- Supported the Scientific Programme Committee and the Local Organizing Committee in preparations for the 2015 General Assembly.

The office of the IUGG Secretariat moved in 2013 from Karlsruhe to Potsdam and is located now at the German Research Centre for Geosciences in Potsdam (GFZ-Potsdam). The Secretariat is managed by the IUGG Secretary General and the Assistant Secretary General / Executive Secretary. The German Research Foundation (DFG) supports the IUGG Secretariat and some business trips of the Secretary General. IUGG is very thankful for this generous support from GFZ-Potsdam and DFG.

#### IUGG Electronic Journal

The E-Journal, an informal newsletter, was published and distributed monthly keeping IUGG Member National Committees informed about the activities of IUGG, its Associations and Commissions, and the actions of the IUGG Secretariat. Also the journal publishes feature articles, news from the International Council for Science (ICSU) and the GeoUnions, news and reports related to IUGG scientific programs and co-sponsored scientific meetings, about awards and honors bestowed on IUGG scientists as well as obituaries, and a meeting calendar (<http://www.iugg.org/publications/ejournals/>).

#### IUGG Yearbook

The IUGG Yearbook is a reference document of IUGG members, administrative officers, and Association and Union Commission officers that is updated annually and distributed free of charge. Each issue endeavors to update the contact information for hundreds of persons who are actively participating in IUGG scientific activities. Information is compiled throughout the year until end December. The Yearbooks are published and posted at the IUGG website at the beginning of the year (<http://www.iugg.org/publications/yearbooks/>).

#### IUGG Annual Report

The IUGG Annual Report summarizes the activities of the Union, IUGG Associations and Union and Inter-Unions Commissions. The Annual Reports are published and posted at the IUGG website ([http://www.iugg.org/publications/reports/annual\\_rep.php](http://www.iugg.org/publications/reports/annual_rep.php)).

#### IUGG Website

The IUGG website (<http://www.iugg.org>), in English and French, is maintained by the IUGG Web-master Dr. Dmitry Krupsky and gets permanently updated.

#### IUGG on Facebook

To learn more about IUGG and to keep interested individuals updated on Union's activities and the IUGG General Assembly 2015, the IUGG Secretariat launched an IUGG Facebook page on 11 October 2013 (<https://www.facebook.com/InternationalUnionGeodesyGeophysics>). Currently, more than 2,500 people are following IUGG on Facebook. Thank you for your support!

#### IUGG Central Electronic Library (CEL)

The IUGG Secretariat together with the library at the Albert Einstein Science Park, Potsdam, Germany, initiated a project to develop a web-based IUGG Central Electronic Library (CEL) to (i) archive, (ii) present, and (iii) publish IUGG related documents at one single platform. IUGG-related documents include reports, yearbooks, newsletters, conference abstracts, oral/poster presentations etc. originating from the IUGG and its Union Associations, Union Commissions, Committees, Liaisons, Research Programs, and Science Education Events. Such an electronic library will increase the visibility of IUGG activities and will offer a new platform to present and publish scientific output.

#### IUGG Web-Conferencing Software

The Secretariat adopted a web-conferencing software for the IUGG, which supports real-time communication among IUGG Bureau and Executive Committee Members across geographically dispersed locations through: text-based instant messages, voice and video chat, online presentations, web conferences, and desktop sharing enables participants to increase communication, reduce travel expenses and conserve time, increase productivity, and accelerate the decision-making process. The first teleconference of the IUGG Bureau was successfully conducted in November 2014.

#### IUGG Exhibition Booth

To further increase the visibility of the IUGG and to promote the IUGG General Assembly 2015, the IUGG Secretariat together with C-IN, the professional conference organizer of the General Assembly, organized an exhibition booth at the EGU General Assembly 2014, Vienna, Austria, the AOGS Annual Meeting 2014, Sapporo, Japan, and the AGU Fall Meeting 2014, San Francisco, USA. The IUGG Brochure has been updated and re-designed. The new brochure can be downloaded from the IUGG website (<http://www.iugg.org/about/brochure.pdf>).



XXVI General Assembly of the International Union of Geodesy and Geophysics  
Quadrennial Reports of the IUGG Officers

Travel of the Secretary General

Presence of IUGG officers at business and scientific meetings of IUGG, Union Associations, Union Commissions, National Committees, and sister

geoscience organizations help to strengthen the links between IUGG bodies and other organizations. During the quadrennium, I attended the following meetings:

<b>2011</b>	2-6 April	General Assembly of the European Geosciences Union (EGU)	Vienna, Austria **
	13-15 April	Meeting of the Austrian National Committee for IUGG	Vienna, Austria **
	3-7 May	International Conference "Geoinformaiton for Disaster Management" (ISPRS-GI4DM 2011)	Antalya, Turkey **
	12-14 May	Scientific Panel, IGU initiative on International Year on Global Understanding	Jena, Germany **
	8-10 June	CTBTO Conference on Science and Technology	Vienna, Austria **
	23 June – 12 July	IUGG General Assembly	Melbourne, Australia
	19-22 September	General Assembly of the International Union of Radio Sciences (URSI)	Istanbul, Turkey **
	25 September - 1 October	General Assembly if the International Council for Sciences (ICSU)	Rome, Italy *
	20 October	Meeting of Scientific Executive Director and Spokesman of the Helmholtz Centre Potsdam – GFZ German Research Centre for Geosciences	Potsdam, Germany
	29 October – 5 November	International Conference “Integrated Research on Disaster Risk” (IRDR)	Beijing, China *
	16-19 November	World Science Conference	Budapest, Hungary
	27-30 November	European Science Foundation-COST High-Level Research Conference "Extreme Geohazards"	Sant Feliu de Guixols, Spain **
	3-9 December	Fall Meeting of the American Geophysical Union (AGU)	San Francisco, USA *
	<b>2012</b>	20-25 February	International Workshop on Earthquake and Volcanic Hazards and Risks in Asia-Pacific Region(G-EVER)
23-26 April		General Assembly of the European Geosciences Union	Vienna, Austria **
27-29 April		Meeting of the ICSU GeoUnions	Istanbul, Turkey
15-18 May		International conference "Moldavian Risk - From Global to Local Scale"	Bacau, Romania **
11-12 June		Meeting of the Science Program Committee of the CTBTO Science & Technology Conference 2013	Vienna, Austria **
9 July		Opening of the IUGG Secretariat at GFZ-Potsdam	Potsdam, Germany
11 July		Meeting with the UNESCO Assistant Director General for Natural Sciences	Paris, France **
15-21 July		Bilateral Presidential US-Russian Symposium on Geohazards in the North Pacific region	Moscow, Russia **
12-17 August		General Assembly of the Asia-Oceania Geosciences Society (AOGS)	Singapore *
19-22 August		General Assemblby of the European Seismological Commission (ESC) of IASPEI	Moscow, Russia *
1-8 December		AGU Fall Meeting	San Francisco, USA *
9-12 December		IUGG GeoRisk Commission Conference	Orange, USA *
<b>2013</b>		21 January	Meeting with the President of the German Adhering Body
	20 February	Meeting of the UNESCO Chief of Unit a.i., Cross-Cutting Thematic Unit on Disaster Risk Reduction	Paris, France **
	21-22 March	Meeting of the Science Program Committee for CTBTO Science and Technology Conference 2013	Vienna, Austria **

XXVI General Assembly of the International Union of Geodesy and Geophysics  
 Quadrennial Reports of the IUGG Officers

	7-12 April	EGU General Assembly	Vienna, Austria *
	27-30 April	ICSU Unions Meeting	Paris, France *
	13-19 May	AGU Joint Meeting of the Americas	Cancun, Mexico *
	30 May- 2 June	Meeting with the Local Organizing Committee of the 26 <sup>th</sup> IUGG General Assembly	Prague, Czech Republic
	16-19 June	CTBTO Science and Technology Conference 2013	Vienna, Austria **
	7-13 July	DACA-13: Scientific Assembly of IACS and IAMAS	Davos, Switzerland
	21-26 July	Joint Scientific Assembly of IAHS-IAPSO-IASPEI	Gothenburg, Sweden *
	2-4 September	U.N. OOSA Conference on Disaster Risk Management	Vienna, Austria
	19-24 September	IUGG Bureau, Executive Committee and Scientific Program Committee meetings	Prague, Czech Republic
	30 September - 5 October	International Conference "Geophysical observatories, multifunctional GIS and data mining"	Kaluga, Russia *
	12-15 November	Meeting of the IRDR Scientific Committee	Sanya, China
	17-19 November	Meeting of the ICSU GeoUnions	Antalya, Turkey
	7-14 December	AGU Fall Meeting	San Francisco, USA *
<b>2014</b>	8-11 January	50 <sup>th</sup> anniversary of the Indian Geophysical Union	Hyderabad, India
	13-16 January	GEO-X Plenary	Geneva, Switzerland
	27 April -3 May	EGU General Assembly	Vienna, Austria *
	31 May - 6 June	IUGG CMG symposium	Merida, Mexico *
	8 - 14 June	IUGG Bureau Meeting	Baku, Azerbaijan
	14-16 July	PremCom1 meeting of the U.N. World Conference on Disaster Risk Reduction	Geneva, Switzerland
	2-10 August	COSPAR General Assembly	Moscow, Russia *
	23-28 August	General Assembly, ESC-IASPEI	Istanbul, Turkey *
	30 August – 4 September	General Assembly of ICSU	Auckland, New Zealand *
	20-22 October	Science Program Committee Meeting of the CTBTO	Vienna, Austria
	24-27 October	First CNC-IUGG Conference on Future Earth	Beijing, China **
	13-14 November	GEO-XI Plenary	Geneva, Switzerland
	17-21 November	IUGG GRC Conference	Madrid, Spain *
	14-19 December	AGU Fall Meeting	San Francisco, USA *
<b>2015</b>	24 February	Scientific Program Committee Meeting of the 26 <sup>th</sup> IUGG General Assembly	Prague, Czech Republic

\* *Travel paid (in full or partially) by the German Research Foundation (DFG) via the special travel grant to the IUGG Secretary General.*

\*\* *Travel paid (in full or partially) from other sources.*

### Acknowledgements

It has been an honor and a privilege to serve IUGG in this office since July 2007. I have benefited enormously from the guidance and assistance of the members of the IUGG Executive Committee during the past eight years, especially President Tom Beer, President Harsh Gupta, and Treasurer Aksel Hansen. I am thankful to all Bureau Members for their cooperation and support. Also I am very grateful to the Association Presidents and Secretaries General for their contribution to our joint work for IUGG and Union Associations.

The office of the Secretary General has been hosted by the Karlsruhe Institute of Technology (2008-2012) and by the GFZ-Potsdam (since 2012). The position of the

Assistant Secretary General (ASG) was financially supported by grants from the German Research Foundation (DFG) and by GFZ. The GFZ's generous offer permitted the hire of a full time ASG / Executive Secretary, who helped to manage the Union. It has been my pleasure to work with Ms. Simone Oswald (2008-2012) and with Dr. Franz Kuglitsch (since 2012), whose support of the duties of the Secretariat cannot be underestimated. I have appreciated Simone's and Franz's talent, punctuality, discipline, language skills, humor, and friendship. I have benefited from the extraordinary experience of working with excellent scientists to promote the mission and goals of IUGG and Earth and space sciences worldwide.

Alik Ismail-Zadeh

## QUADRENNIAL REPORT OF THE TREASURER

### Introduction

This report will be presented for the Council at the upcoming XXVI IUGG General Assembly in Prague. It contains a financial part and some statistical information about the status of the members of IUGG. Accounting and budget spreadsheets are enclosed as 3 attachments:

- The final accounting of the 2008 – 2011 quadrennium (year by year + accumulated) compared to the budget, (attachment 1).
- A preliminary accounting for the present quadrennium 2012 – 2015 (year by year + accumulated), (attachment 2).
- The 2012-2015 budget from Melbourne 2011, (attachment 3).

This procedure for reporting on the finances is a continuation of what was done at the General Assembly in Melbourne in 2011 and earlier.

With the General Assemblies normally taking place in the middle of the last year of a budget period it is not possible to give a full report on the finances of the quadrennium. Instead, it is accepted to present it at the next GA together with a preliminary accounting for the present quadrennium. Therefore in Prague the final accounting for the quadrennial report for 2008 – 2011 will be shown.

At the time of writing the preliminary report for 2012-2015 includes the year 2015 budget as a substitute for the accounting for the same year. But I also show a half-year accounting for 2015. In Prague in July it will be possible to present a better estimate of the accounting for 2015.

The budget for the period 2012 to 2015 is given in attachment no. 3. At the Bureau meeting in Prague, 2013, the Melbourne budget was slightly adjusted.

### The final accounting for 2008 - 2011

As already stated at the GA in Melbourne the undesired accumulation of funds from the previous two 4-yr periods continued after 2007. This is clearly seen in the final accounting for the whole period 2008-2011. All in all, the balance at the end of the period was more than USD 300,000 higher than anticipated in the budget from Perugia in 2007. (see attachment 1). It was therefore decided in Melbourne to budget with a deficit for the present 4-yr period 2012-2015.

### The preliminary accounting for the years 2012 - 2015

### Income:

The first 3 years of the budget period 2012 – 2015 show lower income than given in the budget, due to less subscription paid the members and the fact that the interest has been zero.

After a short pause due to the international economical crisis in 2008-2010 the price of 1 unit is again going up. The price in 2015 is USD 1,905. Very close to the budget value.

Since 2004/2005, I have used a US Labor Department inflator index for September as the basis for calculation of the price of 1 unit for the following year. In 2009, the index went down leading to a lower price of 1 unit in 2010. But in 2011 and later the index has increased at a rate close to 2%/yr. Therefore, this inflation rate is used to construct the budget for the coming period too. Only one country has withdrawn from IUGG in the present quadrennium. One or two more will maybe leave the union soon. Two new members have been admitted in the same period. A few paying members have moved to A-membership in contrast to one country that has decided to move to paying status from A-membership. Greece has paid a major part of its long term debt at the same time asking for a lowering of its category as of 2014.

Therefore, IUGG has now 70 members (January 1st, 2015), please see later for details.

In 2008 the Royal Society in London introduced a program to assist African countries in participating in the activities of unions like IUGG. This resulted in payments of dues for 3 former A-members of IUGG. However now after 7 years we must notice that none of these countries have been able to pay dues in the present period.

After a long time with a gradually decreasing number of units paid by the members we experienced a rather stable period around 2008-2011, but it appears that we now again may loose members. For instance in 2014 we have only received dues equivalent to 253 units, out of a total of 282 units.

### Expenditures

If we compare budget and accounting line by line we notice a reasonably good resemblance between the two set of numbers: e.g. travel expenses and line 14 symposia.

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Quadrennial Reports of the IUGG Officers

We have a small overspending in lines 12.1 and 12.2. In contrast we see a clear underspending in lines 18.3 and 18.4.

During the period, the ICSU program eGY-Africa terminated and a new one was initiated MAGNIO. IUGG is officially responsible for ICSU grants, but all money goes directly to the principal investigator. Please, notice that some major spending items in 2015 are associated with the GA in Prague, but they have not yet been paid.

**Balance:**

Based on the above analysis it is expected that the total assets of IUGG as a union will be close to USD 5000.000 by the end of 2015. Which is close to one years turn over.

The US dollar has varied a lot during the last quadrennium, as usual one can say. This gives very variable buying power in different countries. It has been discussed if IUGG should change its basic currency to Euro, but no convincing arguments for a change have been put forward.

In general, one can say that the economical situation of IUGG is sound and that the net balance allows IUGG some flexibility.

However, it is very important that IUGG will be able to keep its present members in the union and at the same time attract new members. The problem of keeping the members in the union is serious and needs the full attention of the union and the member countries.

As Treasurer of IUGG, I want to thank every body I have been in contact with concerning IUGG business. In particular, I will send many thanks to Secretary General Alik Ismail-Zadeh and his assistant Franz Kuglitsch, with whom I have almost daily correspondence. Also thanks to the President Harsh Gupta and all other members of the Bureau, the Presidents and Secretary Generals/Treasurers of the Associations.

And also thanks to the Finance Committee. During the last few years my son has helped me in running the daily administration. Taking up a permanent job as geologist he had to stop earlier this year.

Aksel Walløe Hansen

Appendix:

- 1) Membership statistics

Attachments:

- 1) final accounting 2008 – 2011
- 2) preliminary accounting 2012 – 2015
- 3) budget 2012 – 2015 approved in Melbourne 2011, adjusted in Prague 2013

**Quadrennial Report of the Treasurer (2011-2014): Appendix 1)**

**Membership statistics**

In the following a summary of the relevant membership information is given.

First of all as of January 1<sup>st</sup>, 2015, IUGG has 70 member countries (1 up compared to 2011). IUGG has lost 1 member since early 2011, but we have welcomed 2 new members.

Monaco has left the union. New Members are Nicaragua and Saudi Arabia.

Recently, Greece has applied for a change to cat. 2. Costa Rica has moved to paying status in cat 1.

Morocco, DR Congo, Ghana, Armenia, Albania, Bosnia & Herzegovina have moved to A-membership.

The 70 members represent a total of 279 units. 10 members are A-members.

In early 2015 we have received full payments from 46 members representing a total of 244 units for 2014. The missing units are distributed over 14 members in various degrees of observer status.

**Membership table  
 2014/2015**

**1) Payments for 2014 and member distribution 2015**

Category	Units in Category	Number countries	Number of units	Paid 2014 numbers	(May 2015) units
A	0	10	0		
1	1	20	20	14	14
2	2	15	30	11	22
3	3	6	18	4	12
4	5	6	30	5	25
5	7	3	21	3	21
6	10	5	50	4	40
7	15	1	15	1	15
8	20	3	60	3	60
9	25				
10	30				
11	35	1	35	1	35
12	40				
13	45				
14	50				
Total		70	279	46	244 (number of units from paid-up members only)
USD (2015 values)			531.495		

The total amount of dues in arrears is USD 89,365. Over time, it is a substantial amount of money that is not paid by members in arrears with their dues and withdrawing without paying their debt.

## Status of IUGG Members, May 1, 2015

<b>Member Country</b>	<b>Category</b>			<b>Member Country</b>	<b>Category</b>		
<b>10 adhering bodies in</b>	<b>A</b>			<b>6 adhering bodies in</b>	<b>3</b>	<b>18 units</b>	
Bolivia				Argentina			
Peru				Austria			
Mauritius				Brazil	observer, 2015		
Georgia				Finland			
Albania	new in 2013			Philippines		observer, 2011	
Armenia	new in 2013			South Africa			
D.R. Congo		new in 2014					
Ghana	new in 2014			<b>15 adhering bodies in</b>	<b>2</b>	<b>30 units</b>	
Morocco	new in 2014			Chile			
Bosnia & Herzegovina		new in 2014		Czech Republic			
				Egypt	observer, 2014		
<b>1 adhering body in</b>		<b>11</b>	<b>35 units</b>	Greece	wishes to move to Cat 2		
USA				Hungary			
				Ireland			
<b>3 adhering bodies in</b>	<b>8</b>	<b>60 units</b>		Korea, South			
Germany				Mexico			
Great Britain				Nigeria	observer, 2015		
Japan				Pakistan	observer, 2015		
				Poland			
<b>1 adhering body in</b>		<b>7</b>	<b>15 units</b>	Portugal			
France				Saudi Arabia		new in 2013	
				Thailand	observer, 2015		
<b>5 adhering bodies in</b>	<b>6</b>	<b>50 units</b>		Turkey			
Canada							
China				<b>20 adhering bodies in</b>	<b>1</b>	<b>20 units</b>	
India				Azerbaijan			
Italy				Bulgaria	observer, 2012		
Russia	observer, 2015			Colombia			
				Costa Rica	new in Cat 1 in 2015		
<b>3 adhering bodies in</b>	<b>5</b>	<b>21 units</b>		Croatia			
Australia				Estonia			
Spain				Iceland			
Switzerland				Indonesia			
				Iran	observer, 2012		
<b>6 adhering bodies in</b>	<b>4</b>	<b>30 units</b>		Israel			
Academia Sinica				Jordan	observer, 2015		
Belgium	observer, 2015			Luxembourg			
Denmark				Macedonia	observer, 2013		
Netherlands				Mozambique			
Norway				Nicaragua	new in 2013, observer		
Sweden				New Zealand			
				Romania	observer, 2015		
				Slovak Republic			
				Slovenia			
				Vietnam			

XXVI General Assembly of the International Union of Geodesy and Geophysics  
 Quadrennial Reports of the IUGG Officers

**Quadrennial Report of the Treasurer (2011-2014): Attachment 1**

**IUGG Accounting and Budget, 2008 - 2011, Final**

**to be used at GA, Prague 2015**

in US dollars

	BUDGET				Budget 2008-2011	Accounting 2008-2011	ACCOUNTING			
	2008	2009	2010	2011			2008	2009	2010	2011
-										
RECEIPTS										
1. Membership Subscription	431.500	440.600	449.700	459.000	1.780.800	1.955.385	438.122	536.479	452.266	528.518
2. ICSU grant						39.526			39.526	
3. Assembly Surcharge				20.000	20.000	40.869	33.159			7.710
5. Sales of Publications	200	200	200	200	800	364	153	119	64	28
6. Miscellaneous										
a. Interest	12.500	12.500	12.500	12.500	50.000	21.915	16.483	5.563	-131	0
b. Gain on exchange						15.800		5.168	10.633	0
c. Other						1.782		115	0	1.667
d. Associations, surcharge						276.064	191.753			84.311
-	-	-	-	-	-	-	-	-	-	-
7. Total Receipts	444.200	453.300	462.400	491.700	1.851.600	2.351.706	679.669	547.444	502.357	622.235
8. Balance on 1/1	754.800	686.450	648.800	661.650	#####	<b>747.055</b>	747.055	784.511	883.918	854.089
-	-	-	-	-	-	-	-	-	-	-
EXPENDITURES										
11. Administration										
11.1 Personnel	20.000	20.000	20.000	20.000	80.000	71.474	29.120	13.779	14.831	13.744
11.2 Equipment	5.000	5.000	5.000	5.000	20.000	3.073	1.463	1.610	0	0
11.3 Supplies	5.000	5.000	5.000	5.000	20.000	9.123	2.904	4.412	0	1.807
11.4 Communications	8.000	8.000	8.000	8.000	32.000	19.693	78	0	5.799	13.816
11.5 Travel, Administration	50.000	60.000	35.000	70.000	215.000	219.177	50.556	60.683	21.306	86.632
11.6 Miscellaneous	1.000	1.000	1.000	5.000	8.000	60.292	3.282	22.502	12.994	21.515
11.6a Miscellaneous, ENHANS						23.025			18.590	4.435
11.6b Miscellaneous, associations						217.529	191.753			25.776
11.7 Travel, representation	5.000	5.000	5.000	10.000	25.000	21.413	8.570	4.449	4.798	3.595

XXVI General Assembly of the International Union of Geodesy and Geophysics  
 Quadrennial Reports of the IUGG Officers

in US dollars	BUDGET				Budget 2008-2011	Accounting 2008-2011	ACCOUNTING			
	2008	2009	2010	2011			2008	2009	2010	2011
12. New initiatives	50.000	50.000	25.000	25.000	150.000	90.344	10.000	5.418	64.926	10.000
13. General Assemblies										
13.1 Organization				10.000	10.000	10.135	0	0		10.135
13.2 Travelgrants				30.000	30.000	42.369		0		42.369
14. Symposia	20.000	20.000	20.000	5.000	65.000	68.109	19.500	21.001	19.607	8.000
15. Annual allocations						0				
15.1a Associations	238.600	211.000	215.600	220.200	885.400	990.830	223.075	238.761	298.384	230.610
15.1b WCRP, EMSEV	4.700	4.700	4.700	4.700	18.800	23.866	6.190	5.932	5.855	5.890
15.2 Intr. of IACS	20.000	20.000	20.000	20.000	80.000	22.980	22.980	0	0	0
16. Dues and Grants					0	0				
16.1 ICSU	17.000	17.000	17.000	17.000	68.000	89.406	21.899	25.372	20.157	21.978
17. Union					0	0				
17.1 GeoRisk, SEDI, CMG	30.000	24.000	28.000	24.000	106.000	55.874	14.000	10.000	19.874	12.000
17.2 Inter-Union Science (FAGS, ILP)	27.000	29.000	29.000	29.000	114.000	85.032	27.000	27.000	16.032	15.000
18. Countries in Need					0	0				
18.1 Travel grants	0	0	0	60.000	60.000	56.435		0	0	56.435
19. Miscellaneous					0	0				
19.1. Miscellaneous	0	0	0	0	0	0	0	0	0	0
19.2. Professional services	3.000	3.000	3.000	3.000	12.000	19.200	4.193	4.437	6.824	3.746
19.3. Fees	2.000	2.000	2.000	2.000	8.000	11.402	3.662	2.682	2.209	2.849
19.4. Loss on exchange	0	0	0	0	0	11.339	1.988	0	0	9.351
20. Contingencies	6.250	6.250	6.250	6.250	25.000	0	0	0	0	0
-	-	-	-	-	-	-	-	-	-	-
21. Total Expenditures	512.550	490.950	449.550	579.150	2.032.200	2.222.120	642.213	448.038	532.186	599.683
22. Balance on 31/12	686.450	648.800	661.650	574.200	#####	<b>876.641</b>	784.511	883.918	854.089	876.641
-	-	-	-	-	-	-	-	-	-	-



XXVI General Assembly of the International Union of Geodesy and Geophysics  
Quadrennial Reports of the IUGG Officers

**Quadrennial Report of the Treasurer (2011-2014): Attachment 2**

**2012 - 2015 PRELIMINARY REPORT**

**FINANCIAL REPORT, PRAGUE, 2015**

US dollars	BUDGET				2012-2015	2012-2015	ACCOUNTING			BUDGET	1. half year	
	2012	2013	2014	2015			2012	2013	2014	2015	2015	
<b>RECEIPTS</b>	No. Of units	275	275	275	275	paid units	271	270	253		89	
	Price of 1 unit	1.800	1.835	1.870	1.900		1815	1850	1875	1905		
<b>1. Membership Subscription</b>		495.000	504.600	514.200	522.500	2.036.300	1.888.024	429.172	499.163	437.189	522.500	293.266
<b>2. Contracts with ICSU</b>		30.000				30.000	65.707	25.707	0	40.000		0
<b>3. Assembly Surcharge</b>					20.000	20.000	20.000	0	0	0	20.000	0
<b>4. Sales of Publications</b>		200	200	200	200	800	1.268	0	0	1.068	200	0
<b>5. Miscellaneous</b>							0					0
a. Interest		12.500	12.500	12.500	12.500	50.000	12.500	0	0	0	12.500	0
b. Gain on exchange							10.347	8.361	1.985	0		0
c. Other							0	0	0	0		0
d. Cash in hand							1.000	0	0	1.000		1.000
<b>6. Total Receipts</b>		537.700	517.300	526.900	555.200	2.137.100	1.998.846	463.241	501.148	479.257	555.200	294.266
<b>8. Balances on 1/1</b>		766.600	708.700	638.500	588.100	#####	876.641	876.641	831.029	733.088	674.276	673.276
<b>EXPENDITURES</b>												
<b>11. Administration</b>												
11.1 Personnel		20.000	20.000	20.000	20.000	80.000	66.784	18.086	14.632	14.067	20.000	2.707
11.2 Equipment		5.000	5.000	5.000	5.000	20.000	7.996	0	2.908	88	5.000	0
11.3 Supplies		5.000	5.000	5.000	5.000	20.000	5.000	0	0	0	5.000	0
11.4 Communications		8.000	8.000	8.000	8.000	32.000	32.423	12.497	11.212	714	8.000	0
11.5 Travel, Administration only		50.000	65.000	50.000	70.000	235.000	255.452	43.757	93.994	47.701	70.000	13.889
11.6 Miscellaneous		1.000	1.000	1.000	5.000	8.000	8.691	242	2.434	1.015	5.000	300
11.6a Surcharge							58.384	58.384				0
11.7 Travel, representation		15.000	15.000	15.000	30.000	75.000	65.014	26	12.662	22.326	30.000	4.846

XXVI General Assembly of the International Union of Geodesy and Geophysics  
 Quadrennial Reports of the IUGG Officers

US dollars	BUDGET				2012-2015	2012-2015	ACCOUNTING			BUDGET	1. half year
	2012	2013	2014	2015			2012	2013	2014	2015	2015
-											
<b>12. New Initiatives</b>											
12.1 Education and outreach	30.000	30.000	30.000	30.000	120.000	102.043	20.000	30.043	22.000	30.000	20.000
12.2 Science	30.000	30.000	30.000	30.000	120.000	157.055	57.000	28.309	41.746	30.000	19.239
<b>13. General Assemblies</b>											
13.1 Organization				10.000	10.000	24.123	0	0	14.123	10.000	254
13.2 Travel				60.000	60.000	60.000	0	0	0	60.000	2.976
<b>14. Symposia</b>	30.000	30.000	30.000	0	90.000	85.239	29.960	23.338	31.941	0	0
<b>15. Annual allocations</b>											
15.1 Annual allocations	240.600	247.500	252.300	257.100	997.500	951.550	181.464	306.763	206.223	257.100	255.176
<b>16. Dues and Grants</b>											
16.1 ICSU	25.000	25.000	25.000	25.000	100.000	103.878	24.936	26.501	27.441	25.000	23.117
<b>17. ICSU grants</b>											
17.1 MAGNIO/eGY-Africa	30.000				30.000	62.130	7.879	14.138	40.113		
<b>18. Union activities</b>											
18.1 GRC, SEDI, CMG, UCIDI	18.000	18.000	18.000	18.000	72.000	70.000	24.000	12.000	16.000	18.000	0
18.2 Inter-Union Science (ILP)	15.000	15.000	15.000	15.000	60.000	60.928	15.000	15.000	15.928	15.000	0
18.3 Liaison Officers	30.000	30.000	30.000	30.000	120.000	48.056	13.289	0	4.766	30.000	0
18.4 International Scientific Programs	25.000	25.000	25.000	25.000	100.000	34.667	0	3.000	6.667	25.000	0
18.5 New commissions (CCEC)	5.000	5.000	5.000	5.000	20.000	20.000	0	0	15.000	5.000	0
<b>19. Countries in need</b>											
19.1 Travel Grants, General Assemblies	0	0	0	90.000	90.000	90.000	0	0	0	90.000	0
<b>20. Fees</b>											
20.1 Professional services	5.000	5.000	5.000	5.000	20.000	5.000	0	0	0	5.000	0
20.2 Bank fees	3.000	3.000	3.000	3.000	12.000	10.599	2.332	2.156	3.111	3.000	627
<b>21. Contingencies</b>	5.000	5.000	5.000	5.000	20.000	5.000				5.000	0
<b>22. Loss on exchange</b>									7.100		6.696
-	-	-	-	-	-	-	-	-	-	-	-
<b>23. Total Expenditures</b>	595.600	587.500	577.300	751.100	2.511.500	2.390.010	508.852	599.089	538.069	751.100	349.826
<b>24. Balances on 31/12</b>	708.700	638.500	588.100	392.200	392.200	#####	831.029	733.088	674.276	478.376	617.716
-	-	-	-	-	-	-	-	-	-	-	-

Quadrennial Report of the Treasurer (2011-2014): Attachment 3

**IUGG Budget 2012 - 15, approved July 6, 2011, Melbourne,  
 Changed per October 2012**

Based on discussions at Bureau meetings in Cairo, 2010, and in  
 Melbourne

Approved by Finance Committee and Executive Committee in Melbourne, 2011

All figures, except the value and number of units, are in thousands of US dollars

Year	2011	2012	2013	2014	2015	Total 2012- 2015
Estimated unit value	\$1.750	\$1.800	\$1.835	\$1.870	\$1.900	\$1.851
Estimated number of units	<b>275</b>	275	275	275	275	<b>1100</b>
<b>INCOME</b>						
1. MEMBERSHIP DUES	481,3	495,0	504,6	514,2	522,5	2036,3
2. ASSEMBLY SURCHARGE					20,0	20,0
3. SALES OF PUBLICATIONS, ETC		0,2	0,2	0,2	0,2	0,8
4. MISCELLANEOUS (interest)		12,5	12,5	12,5	12,5	50,0
5. ICSU GRANTS		30,0				30,0
<b>6. TOTAL INCOME</b>		<b>537,7</b>	<b>517,3</b>	<b>526,9</b>	<b>555,2</b>	<b>2137,1</b>
7. BALANCE 1/1		766,6	708,7	638,5	588,1	
<b>EXPENDITURES</b>						
11. ADMINISTRATION		104,0	119,0	104,0	143,0	470,0
11.1 Personnel		20,0	20,0	20,0	20,0	80,0
11.2 Equipment		5,0	5,0	5,0	5,0	20,0
11.3 Supplies		5,0	5,0	5,0	5,0	20,0
11.4 Communication		8,0	8,0	8,0	8,0	32,0
11.5 Travel, organizational		50,0	65,0	50,0	70,0	235,0
11.6 Miscellaneous		1,0	1,0	1,0	5,0	8,0
11.7 Travel, representative		15,0	15,0	15,0	30,0	75,0
12. NEW INITIATIVES		60,0	60,0	60,0	60,0	240,0
12.1 Education and outreach		30,0	30,0	30,0	30,0	120,0
12.2 Science		30,0	30,0	30,0	30,0	120,0
13. ASSEMBLIES		0,0	0,0	0,0	70,0	70,0
13.1 Organization		0,0	0,0	0,0	10,0	10,0
13.2 Travel Grants		0,0	0,0	0,0	60,0	60,0
14. SYMPOSIA		30,0	30,0	30,0	0,0	90,0
14.1 Symposia		30,0	30,0	30,0	0,0	90,0
15. ASSOCIATIONS		240,6	247,5	252,3	257,1	997,5
15.1 Allocations		240,6	247,5	252,3	257,1	997,5

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Quadrennial Reports of the IUGG Officers

16. DUES	25,0	25,0	25,0	25,0	100,0
16.1 ICSU	25,0	25,0	25,0	25,0	100,0
17. ICSU GRANTS	30,0				30,0
17.1 eGY-Africa	30,0				30,0
18. UNION ACTIVITIES	93,0	93,0	93,0	93,0	372,0
18.1 GRC, SEDI, CMG, UCDI	18,0	18,0	18,0	18,0	72,0
18.2 Inter-Union Science (ILP)	15,0	15,0	15,0	15,0	60,0
18.3 Liaison Officers	30,0	30,0	30,0	30,0	120,0
18.4 International Scientific Programs	25,0	25,0	25,0	25,0	100,0
18.5 New commissions	5,0	5,0	5,0	5,0	20,0
19. COUNTRIES IN NEED	0,0	0,0	0,0	90,0	90,0
19.1 Travel Grants, General Assemblies	0,0	0,0	0,0	90,0	90,0
20. FEES	8,0	8,0	8,0	8,0	32,0
20.1 Professional Services	5,0	5,0	5,0	5,0	20,0
20.2 Bank Fees	3,0	3,0	3,0	3,0	12,0
21. CONTINGENCIES	5,0	5,0	5,0	5,0	20,0
<b>22. TOTAL EXPENDITURES</b>	<b>595,6</b>	<b>587,5</b>	<b>577,3</b>	<b>751,1</b>	<b>2511,5</b>
23. BALANCE 12/31	708,7	638,5	588,1	392,2	

The shaded lines under EXPENDITURES represent subtotals for each line of expenditures

18.1 GRC	8	8	8	8
SEDI	4	4	4	4
CMG	4	4	4	4
UCDI	2	2	2	2
SUM	18	18	18	18
12.1 ICTP	20	20	20	20
grant programme	20		20	
12.2 grant programme	60		60	
History group	5			

## QUADRENNIAL REPORTS OF THE ASSOCIATIONS

### QUADRENNIAL REPORT OF THE INTERNATIONAL ASSOCIATION OF CRYOSPHERIC SCIENCES

#### INTRODUCTION

The International Association of Cryospheric Sciences (IACS) is the eighth and youngest Association of the International Union of Geodesy and Geophysics (IUGG). IACS is concerned with snow and ice science and provides expert advice on cryospheric issues to governmental and non-governmental organisations. Most snow and ice research within IUGG was previously covered within the International Commission on Snow and Ice (ICSI), a commission of the International Association of Hydrological Sciences (IAHS). The IUGG Council voted to establish IACS at the IUGG General Assembly in Perugia, Italy in 2007. This is hence the second Quadrennial report of IACS as an independent Association, the first having covered the period from 2007-2011.

The objectives of IACS are to:

- promote studies of cryospheric subsystems of the Earth solar systems,
- encourage research in the above subjects by members of the cryospheric community, national and international institutions and programmes, and individual countries through collaboration and international co-ordination,
- provide an opportunity on an international basis for discussion and publication of the results of the above research,
- promote education and public awareness on the cryosphere, and
- facilitate the standardisation of measurement or collection of data on cryospheric systems and of the analysis, archiving and publication of such data.

#### ADMINISTRATION

The business of IACS is managed by a Bureau of elected officers. Members of the present Bureau were elected at the Plenary Administrative Session in Melbourne in 2011 and membership has remained stable during this second quadrennium. They have been President (Ian Allison, Australia – until July 2013 whence he became immediate Past-President), President-Elect (Charles Fierz – until July 2013 whence he became President), Secretary General (Andrew Mackintosh, New Zealand), three Vice-Presidents (Andres Rivera, Chile; Olga Solomina, Russia; Xiao, Cunde, China) and the heads of five disciplinary Divisions (Glaciers and Ice Sheets, Cecilie Rolstad-Denby, Norway; Snow

and Avalanches, Ethan Greene, USA; Marine and Freshwater Ice, Hiroyuki Enomoto, Japan; Planetary and Other Ices of the Solar System, Ralf Greve, Japan; and Cryosphere, Atmosphere and Climate, Valérie Masson-Delmotte, France). The President, President Elect/Immediate Past President, and Secretary General make up the IACS Executive (EC). Most internal business of the Association and interaction with other scientific agencies is conducted by email. In addition, the EC conducts monthly teleconferences, which bureau members are invited to join. The Bureau meets in person once per year. Bureau meetings (BM) during this quadrennium were held in Melbourne, Australia (BM07), Sanya, China (BM08), Davos, Switzerland (BM09) and Tokyo Japan (BM10). Minutes of these meetings are available on the IACS website, [www.cryosphericciences.org](http://www.cryosphericciences.org). Plenary meetings with the IACS stakeholders, the cryospheric science community, were held in Melbourne, Australia in 2011 and Davos, Switzerland, in 2013.

The President and the Secretary General of IACS participated actively in the IUGG Executive Committee meetings in Melbourne, Australia in 2011, and in Prague, Czech Republic in 2013.

The current four-year term of most Bureau members finishes in July 2015, and a “nominating panel” of members independent of the Bureau (Kumiko Goto-Azuma, Japan; Martin Sharp, Canada; Danny Marks, USA) was established in October 2014 to identify suitable candidates for election to the Bureau. The nominating panel’s role is to ensure that candidates for the IACS Bureau provide a good coverage of world regions and cryospheric disciplines. The new slate of candidates will be circulated to National Committees at least three months prior to its Plenary Administrative Session, to be held in Prague on Friday 26<sup>th</sup> June, 2015.

IACS facilitates the transfer of research methods and explores new avenues in cryospheric science through Standing Groups and Working Groups devoted to a theme or subject and composed of experts in the particular field of study. IACS Standing Groups include

#### IACS partnerships and collaborations

The IACS Bureau is proactive in keeping our partnerships alive, by keeping in regular email contact via specific liaisons, and by attending meetings and visiting the offices of our partners.

There is not space to detail all of these activities, but below we list the partners that we have been active with during the last quadrennium;

- World Climate Research Programme Climate and Cryosphere Project (CliC; [www.climate-cryosphere.org/](http://www.climate-cryosphere.org/)).
- Association of Polar and Early Career Scientists (APECS; [www.apecs.is/](http://www.apecs.is/)).
- International Permafrost Association (IPA; [ipa.arcticportal.org/](http://ipa.arcticportal.org/)).
- Scientific Committee on Antarctic Research (SCAR; [www.scar.org/](http://www.scar.org/)).
- International Arctic Science Committee (IASC; [www.iasc.info/](http://www.iasc.info/)).
- World Meteorological Organisation Global Cryosphere Watch ([globalcryospherewatch.org/](http://globalcryospherewatch.org/)).
- International Glaciological Society (IGS; [www.igsoc.org/](http://www.igsoc.org/)).
- International Commission on Snow and Ice Hydrology (International Association of Hydrological Sciences, ICSIH).

## ACTIVITIES

### Standing Groups

GAPHAZ, the Standing Group on Glacier And Permafrost HAZard in mountains organized a one-day “retreat” Workshop 14 September 2014 in Torino, Italy. GAPHAZ also launched a new website (<http://www.gaphaz.org>).

The Global Terrestrial Network of Glaciers (GTN-G) Standing Group and its daughter organisation the World Glacier Monitoring Service organised a number of glacier monitoring sessions at major conferences including the European Geosciences Union (EGU) in 2013 and 2014, and the American Geophysical Union (AGU) in 2014. WGMS has now also organised two summer schools (see below).

In June 2014, an advisory board consisting of C.R. Denby, L.M. Andreassen, A. Arendt, J.G. Cogley, A. Gardner and V. Ryabinin formally evaluated GTN-G. This included a site visit to the National Snow and Ice Data Center (NSIDC) in Boulder, USA. The report was very supportive of GTN-G activities but also made useful recommendations.

The IAVCEI/IACS Joint Commission on Volcano-Ice Interactions organised the Third International Conference on Volcano-Ice Interactions on Earth and Other Planets’, held at the U.S. Geological Survey office in Anchorage, Alaska, USA between 18-22 June 2012. In addition, this joint commission organised a large number of individual sessions at major conferences. Please see their website for more information

([http://volcanoes.dickinson.edu/iavcei\\_iacs\\_viic/events2012.html](http://volcanoes.dickinson.edu/iavcei_iacs_viic/events2012.html)).

## ACTIVITIES

### Working Groups

IACS working groups active in this quadrennium include;

- ‘Mass balance terminology and methods’ (2008-2012). This working group ended its successful term with publication of the *‘Glossary of Glacier and Mass Balance Terms* (edited by Graham Cogley and WG members) published by IHP/UNESCO as IACS Contribution No. 2.
- ‘Flow law for polycrystalline ice’ (2010-2014). This WG ended its term in 2014, but its leaders are currently working on a paper to be submitted to an international peer reviewed journal in 2015.
- ‘MICROSNOW; From quantitative stratigraphy to microstructure-based modelling of snow’ (2012–2016). This WG has organised a number of workshops (see below), and is currently very active.
- ‘Randolph Glacier Inventory and infrastructure for glacier monitoring’ (2014-2018) and ‘Glacier thickness estimation’ (2014-2018). These two new working groups now have a presence on the IACS website (<http://www.cryosphericciences.org/workingGroups.html>) and will host their first symposia at IUGG Prague (Sessions C01 and C02; <http://www.iugg2015prague.com/iacs-symposia.htm>).

### Conferences and Symposia

DACA-13, the Davos Atmosphere and Cryosphere Assembly 2013, “Air, Ice & Process Interactions”

IACS and IAMAS held their joint scientific assembly DACA-13 on 8-12 July 2013 in Davos, Switzerland. More than 950 participants from 52 countries and five continents were welcomed by Charles Fierz and Andrew Mackintosh (IACS President Elect and Sec.-Gen.), Athena Coustenis and Hans Volkert (IAMAS President and Sec.-Gen.), and Alik Ismail-Zadeh (IUGG Sec.-Gen.). Scientifically, the assembly covered numerous fields of atmospheric and cryospheric sciences, enriched by snow hydrology, oceanography, natural hazards, economy and risks, and the history of science. These made up an attractive programme consisting of 21 mostly joint Symposia featuring several sessions each. More than 350 posters were on display for the whole week while dedicated poster sessions facilitated deeper discussions with

the presenters in attendance. Four distinguished scientists delivered well-attended end-of-day keynote lectures, also open to the Davos public: Thomas Stocker started with the topic “Climate change: Making the best use of scientific information”, Valérie Masson-Delmotte introduced us to “Water stable isotopes and climate in Greenland, from present-day atmospheric monitoring to glacial-interglacial ice core records”, Ronald B. Smith presented “Global aspects of orographic precipitation”, and Georg Kaser closed the scientific part of the assembly talking about “The cryosphere after AR5: more knowledge but also more uncertainty”.

The assembly was highly rated by the attendees. The quality of both talks and posters was generally regarded as excellent and the environment of Davos and its Congress Centre allowed for easy exchanges between colleagues. Indeed, many sessions brought together scientists that would not have otherwise met, and the question “When will the next DACA conference be held?” was often heard. It was a great pleasure to see many early career scientists (ECS) attending the conference. In addition, the Association of Polar Early Career Scientists (APECS) organized a successful workshop that for the first time considered the needs of early career cryospheric scientists in the Alpine area. Further social events included the Festa Cryospherica at the famous *Schatzalp Hotel*, and the Conference Dinner with over 500 diners in the plenary hall, entertained by a group of traditional musicians. During the latter Joyce Penner (IAMAS Vice President) and Andrew Mackintosh read out together a resolution of thanks to the hosts that had been passed by both associations. All guests warmly applauded the joint organizing team and the considerable group of student helpers.

Since 2009, the Swiss National Organizing Committee (SNO) chaired by Heini Wernli had meticulously planned this event, strongly supported by the two local Davos institutes, the Physikalisches-Meteorologisches Observatorium Davos / World Radiation Center (PMOD/WRC with Local Organizing Committee chair Werner Schmutz) and the WSL Institute for Snow and Avalanche Research (SLF with Scientific Programme Committee chair Michael Lehning). Several generous sponsors helped in staging this event: the Swiss Academy of Sciences, MeteoSwiss, the Federal Office for the Environment, the Canton of Grisons as well as WMO (WCRP, WWRP) and IUGG by awarding travel grants in addition to those provided by IAMAS and IACS.

*IACS also supported the following workshops, symposia and summer schools between 2011-2015:*

#### IACS Working Group workshops:

- First International Snow Grain Size Workshop; Measurement and Applications was held in Grenoble, France from 2-5 April, 2013.
- Intercomparison of Snow Grain Size Measurements Workshop, 9-14 March 2014 in Davos, Switzerland.
- Microstructure in Snow Microwave Radiative Transfer (MICROSNOW), 6-8 August 2014, University of Reading, UK.

#### Conferences supported by IACS:

- International Partnerships in Ice Core Sciences (IPICS), held in Giens, France, from 1-5 October 2012.
- Third International Conference on Volcano-Ice Interactions on Earth and Other Planets, held at the U.S. Geological Survey office in Anchorage, Alaska, USA between 18-22 June 2012
- International Conference on Cryosphere: Changes, Impacts and Adaptation held between 10-12 November 2012 in Sanya, China.
- IAG/IACS symposium on “Reconciling observations and models of elastic and viscoelastic deformation due to ice mass change” that took place in Ilulissat, Greenland, 30 May-2 June 2013 ([www.dtu.dk/subsites/iag.aspx](http://www.dtu.dk/subsites/iag.aspx)).
- Symposium on “Physics, chemistry and mechanics of snow”, in Yuzhno-Sakhalinsk, Russia, 23-28 September 2013
- International Symposium on Sea Ice in a Changing Environment, Hobart, Tasmania, Australia, 10- 14 March 2014 ([seaice.acecrc.org.au/igs2014/](http://seaice.acecrc.org.au/igs2014/)).
- Model-data workshop for the Late Pleistocene evolution of the Greenland and Antarctic ice sheets, 22-24 May 2014, Grenoble, France (<http://www.physics.mun.ca/MOCA/IceSheetModelandData2014.html>).
- International Workshop on Calving, 1-2 June 2014, Grenoble, France (<http://www-igge.obs.ujf-grenoble.fr/calving2014/theme.html>).
- *Special Session on Cryosphere Science*, XIX Geological Congress of Argentina, 2-6 June 2014, Cordoba, Argentina.

#### Summer schools supported by IACS

- World Glacier Monitoring Service (WGMS) on ‘measurement and uncertainty assessment of glacier mass

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Quadrennial Reports of the IUGG Associations and Union Commissions

balance' in Tarfala, Sweden from 9-11 July 2012.

- WGMS summer school on 'Mass Balance Measurements and Analysis' in Zermatt, Switzerland, 2-7 September 2013.
- Second International Summer School in Glaciology University of Alaska, Fairbanks Glaciology Summer School, McCarthy, Alaska, USA from 10-20 June 2012.
- Third International Summer School in Glaciology University of Alaska, Fairbanks Glaciology Summer School, McCarthy, Alaska, USA, 6-16 August 2014.

### FUTURE ACTIVITIES

IACS is looking ahead to the 26th IUGG General Assembly in Prague. IACS will lead Union Symposium U10 (Ian Allison, lead convener) at IUGG Prague. IACS is involved in a number of other union and joint symposia, as well as 17 IACS symposia. In addition to the scientific activities, the following important bureau activities will be carried out in Prague:

- IACS will hold its Plenary Administrative Session on Friday 26th June (6-8 pm), where the new Bureau will be confirmed. The current four-year term of most Bureau members finishes in July 2015
- We have established an IACS Early Career Scientist Prize, for the best cryospheric publication by an early career

scientist in the calendar year (first year will be 2014). The Selection Committee will announce the winner late-March 2015 and the 2015 Prize will be formally presented during the IACS Plenary Administrative Session.

- The IACS dinner known as *Festa Cryospherica* will be held at Bastion Restaurant in Prague, immediately following the Plenary Administrative Session.
- IACS will hold its open Bureau meeting on Wednesday 24th June in the evening (6-8 pm).
- IACS will hold its annual Bureau meetings in Prague. The closed bureau meetings will be held on Monday 22nd June and Monday 29th June.
- IACS will hold its open Bureau meeting on Wednesday 24th June in the evening (6-8 pm).
- IACS are co-sponsoring an event by the Association of Polar Early Career Scientists (APECS) in the evening of Saturday 27th June.

Planning has commenced for a Joint IACS/International Glaciological Society (IGS)/World Climate Research Programme Climate and Cryosphere (CliC) Assembly in Wellington, New Zealand, February 2017.

Charles Fierz, IACS President  
Andrew Mackintosh, IACS Secretary General



## QUADRENNIAL REPORT OF THE INTERNATIONAL ASSOCIATION OF GEODESY

### INTRODUCTION

The objective of the IAG is to study all geodetic problems related to Earth observation and global change. This includes the establishment of reference systems, determination of the Earth gravity field, monitoring Earth rotation, positioning of surface points, and studies of crustal deformation, mass transport and sea level changes. To accomplish the objectives, IAG is divided into four Commissions, fourteen Scientific Services, the Global Geodetic Observing System (GGOS), the Communication and Outreach Branch (COB), and the Inter-Commission Committee on Theory (ICCT). The administration is supervised by the Council and operated by the Bureau, the Executive Committee and the Office. The outreach is done by the COB. All these entities are in steady contact and inform about their activities through the IAG Newsletter and the bi-annual IAG Reports (Travaux de l'AIG).

### ADMINISTRATION

#### IAG Council

The Council met twice during the IUGG General Assembly 2011 in Melbourne, Australia, and once at the IAG Scientific Assembly 2013 in Potsdam, Germany. The list of national correspondents forming the IAG Council was regularly updated in contact with the IUGG Secretary General. The Council was informed by e-mail about activities of the Bureau and the Executive Committee.

#### IAG Executive Committee (EC)

The Executive Committee is composed by the IAG President, immediate Past-President, Vice-President, Secretary General, the four Commission Presidents, the Chairperson of GGOS, the President of the COB, three representatives of the Services, and two members at large. Seven EC meetings were held during the legislative period from 2011 to 2014: Melbourne, Australia, July 2011, San Francisco, CA/USA, December 2011, Singapore, August 2012, Vienna, Austria, April 2013, Potsdam, Germany, September 2013, Vienna, Austria, April 2014, and San Francisco, CA/USA, December 2014. The meeting summaries were published by e-mail in the IAG Newsletter in IAG's Journal of Geodesy (Springer-Verlag) and are available online in the IAG Homepage (<http://www.iag-aig.org>) and in the IAG Office Homepage (<http://iag.dgfi.badw.de>).

Main agenda items at the EC meetings were the regular reports of the Commissions, Services, GGOS, ICCT, COB, the Editor in Chief of the

Journal of Geodesy, and the Editor of the IAG Symposia Series (both at Springer). They were followed by the discussion on specific scientific issues, changes in the structures of GGOS and Services, and IAG publications. Other important topics were the IAG Scientific Assembly 2013, the preparation of the IAG Symposia during the IUGG General Assembly 2015, the discussion of the bi-annual IAG Reports (Travaux de l'AIG), sponsoring of symposia, and the links to other organizations, e.g. FIG, GEO, JBGIS, IHO, ISO, and UNOOSA (see below).

#### IAG Bureau

The IAG Bureau, consisting of the President, the Vice-President and the Secretary General, held monthly teleconferences and met regularly before each EC meeting. The President and Secretary General participated in the IUGG Executive Committee Meetings. The Bureau members represented IAG at various international scientific meetings and in several anniversaries, e.g., the 150<sup>th</sup> anniversary of the Swiss Geodetic Commission, Zürich, Switzerland, 10 June 2011, the 150<sup>th</sup> anniversary of the Arc Measurement in the Kingdom of Saxony, Dresden, Germany, 1 June 2012, the 150<sup>th</sup> anniversary of the Central European Arc Measurement, Vienna Austria, 14 September 2012, the 150<sup>th</sup> anniversary of the Austrian Geodetic Commission, Vienna, Austria, 7 November 2013.

### ACTIVITIES

#### IAG Office

The IAG Office assists the Secretary General in the administrative organization of all IAG business, meetings and events. This includes the budget management, the record keeping of the individual IAG membership, and the preparation and documentation of all Council and Executive Committee meetings with detailed minutes for the EC members and meeting summaries published in the IAG Newsletters and the IAG Homepage. Important activities were the preparation and execution of the IAG Scientific Assembly 2013 together with the celebration of the 150<sup>th</sup> IAG anniversary and the IAG symposia of the IUGG General Assembly 2015, the edition of the Geodesist's Handbook 2012 as the organisational guide of IAG with the complete description of the IAG structure (reports, terms of reference, documents), and the Mid-Term Reports 2011–2013 (Travaux de l'AIG Vol. 38). The accounting of the Journal of Geodesy and the IAG Symposia series, both published by Springer, were supervised.

Travel grants for young scientists to participate in IAG sponsored symposia were handled.

### **Communication and Outreach Branch (COB)**

The task of the COB is the IAG public relation in particular by maintaining the IAG Homepage and publishing the monthly Newsletter online and in the Journal of Geodesy. It also keeps track of all IAG related events by the meetings calendar. The IAG newsletter is sent to all IAG Officers, individual members, the Presidents and Secretaries General of the IUGG Associations and liaison bodies. The COB prepared, printed and distributed a new IAG leaflet and a big IAG brochure and participated in the preparation of the Geodesists' Handbook 2012.

### **Commissions and Inter-Commission Committee**

The four IAG Commissions (Reference Frames, Gravity Field, Earth Rotation and Geodynamics, Positioning and Applications) and the Inter-Commission Committee on Theory established their structure and scientific programme for the period 2011 – 2015 (published in the Geodesists' Handbook 2012) and coordinated their implementation. They reported regularly to the EC and prepared the mid-term reports 2011 – 2013 for publication in the IAG Reports (Travaux de l'AIG). Each Commission maintained its individual Homepage and held several symposia, workshops and other meetings (see below). All of them organized a symposium at the IAG Scientific Assembly 2013.

### **Services**

There are fourteen IAG Services which may be split into three general fields: geometry (IERS, IDS, IGS, ILRS, and IVS), gravity (IGFS, ICGEM, IDEMS, IGeS, and BGI) and combination (IAS, BIPM, ICET, and PSMSL). All of them maintain their own Homepages and data servers and hold their administrative meetings (Directing Board or Governing Board, respectively). They published their structure and programme 2011 – 2015 in the Geodesists' Handbook 2012, and the progress reports 2011 – 2013 in the IAG Reports (Travaux de l'AIG). Most of the Services held international meetings (see below).

### **Global Geodetic Observing System (GGOS)**

The GGOS is IAG's observing system to monitor the geodetic and the global geodynamic properties of the Earth as a system. A complete new structure was set up during a retreat in 2011 and implemented in 2012. It includes a Consortium composed by representatives of the Commissions

and Services, the Coordinating Board as the decision-making body, the Executive Committee, and the Science Panel. The scientific work of GGOS is structured by Themes, Working Groups and Bureaus. The outreach is done by the GGOS Portal, Webpages ([www.ggos.org](http://www.ggos.org)), an exhibit booth, brochures and books. Several retreats were held in the following years for updating the structure.

### **Coordination with other organisations**

IAG maintains close cooperation with several organizations outside IUGG. There were frequent meetings with the Advisory Board on the Law of the Sea (ABLOS, together with IHO), Group on Earth Observation (GEO, with IAG as a participating organization), International Standards Organization (ISO, TC211 Geographic Information / Geomatics), Joint Board of Geospatial Information Societies (JBGIS), United Nations Offices for Outer Space Affairs (UN-OOSA, with participation in Space-based Information for Disaster Management and Emergency Response, UN-SPIDER, and International Committee on Global Navigation Satellite Systems, ICG), and the United Nations Global Geospatial Information Management (UN-GGIM).

### **Meetings**

Important meetings of IAG components and sponsored IAG meetings were in 2011 – 2014:

- 20th EVGA Meetg. & 12th VLBI Analysis Workshop, Bonn, Germany, March 29-31, 2011;
- 1st International Workshop "The Quality of Geodetic Observation and Monitoring Systems" (QuGOMS), Garching/Munich, Germany, 13-15 April 2011;
- Third Conference "Earth Observation for Global Changes (EOGC2011)", Munich, Germany, 13-15 April 2011;
- 17th International Workshop on Laser Ranging and 23rd General Assembly of the International Laser Ranging Service (ILRS), Bad Kötzing, Germany, 15-20, May 2011;
- Sub-Commission 1.3a "EUREF" Symposium, Chisinau, Republic of Moldova, 25-28 May 2011;
- 2nd GIA Modeling Training School, Gävle, Sweden, 13-17 June 2011;
- Sub-Commission 1.3b "SIRGAS" General Meeting, Heredia, Costa Rica, 8-10 August 2011;
- International Workshop on GNSS Remote Sensing for Future Missions and Sciences, Shanghai, China, 7-9 August 2011;

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Quadrennial Reports of the IUGG Associations and Union Commissions

- 3rd International Colloquium “Scientific and Fundamental Aspects of the Galileo Programme, Copenhagen, Denmark, 31 August – 2 September 2011;
- Internat. Symposium on Deformation Monitoring, Hong Kong, China, 2-4 November 2011.
- IGS Workshop on GNSS Biases, Bern, Switzerland, 18-19 January 2012;
- IVS VLBI2010 Workshop on Technical Specifications (TecSpec), Bad Kötzing/Wetzell, Germany, 1-2 March 2012;
- 7th IVS General Meeting "Launching the Next-Generation IVS Network", Madrid, Spain, 12-13 March 2012;
- Symposium and Workshop on PPP-RTK and Open Standards, Frankfurt am Main, Germany, 12-14 March 2012;
- IERS Global Geophysical Fluids Center (GGFC) Workshop, Vienna, Austria, 20 April 2012;
- EUREF 2012 Symposium, Saint Mandé, France, 6-8 June 2012;
- IGS Analysis Center Workshop, Olsztyn, Poland, 23-27 July 2012;
- IAG Symposium at the AOGS-AGU (WPGM) Joint Assembly, Singapore, Singapore, 13-17 August 2012;
- International Symposium on Space Geodesy and Earth System (SGES2012), Shanghai, China, 19-20 August 2012;
- WEGENER 2012 Symposium, Strasbourg, France, 17-20 September 2012;
- 17th International Symposium on Earth Tides and Earth Rotation (ETS 2012), Cairo, Egypt, 24-28 September 2012;
- 20 Years of Progress in Radar Altimetry, Venice, Italy, 24-29 September 2012;
- IDS Workshop, Venice, Italy, 25-26 September 2012;
- 7th IAG-IHO ABLOS Conference, Salle du Ponant, Monaco, 3-5 October 2012;
- European VLBI Network (EVN) Symposium, Bordeaux, France, 9-12 October 2012;
- Workshop on Reflectometry using GNSS and Other Signals, Prudue University, West Lafayette, IN, USA, 10-11 October 2012;
- International Symposium on Gravity, Geoid and Height Systems GGHS 2012, Venice, Italy, 10-12 October 2012;
- Sub-Commission 1.3b “SIRGAS” Meeting 2012, Concepción, Chile, 20-31 October 2012;
- International VLBI Technology Workshop, Westford, Massachusetts, USA, 22-24 October 2012;
- International Technical Laser Workshop “Satellite, Lunar, and Planetary Laser Ranging: Characterizing the Space Segment”, Frascati, Italy, 5-9 November 2012;
- 21st European VLBI for Geodesy and Astrometry Workshop, Helsinki, Finland, 6-8 March 2013;
- 17th Int. Symposium on Earth Tides “Understand the Earth”, Warsaw, Poland, 15-19 April 2013;
- Internat. Symposium on “Mobile Mapping Technology”, Tainan, Taiwan, 30 April – 2 May 2013;
- Seventh IVS Technical Operations Workshop, Westford, Massachusetts, USA, 6-9 May 2013;
- IERS Workshop on Local Ties and Co-locations, Paris, France, 21-22 May 2013;
- IAG Sub-Commission 1.3a “EUREF” Symposium 2013, Budapest, Hungary, 29-31 May 2013;
- International Symposium on “Reconciling Observations and Models of Elastic and Viscoelastic Deformation due to Ice Mass Change”, Ilulissat, Greenland, 30 May – 2 June 2013;
- GNSS Precise Point Positioning: Reaching Full Potential, Ottawa, Canada, 12-14 June 2013;
- VIII Hotine-Marussi Symposium, Rome, Italy, 17-21 June 2013;
- Int. Conference on “Earth Observations and Societal Impacts”, Tainan, Taiwan, 23-25, June 2013;
- International Symposium on Planetary Sciences (IAPS2013), Shanghai, China, 1-4, July 2013;
- IAG Scientific Assembly, Potsdam, Germany, 1-6 September 2013;
- 2nd Joint Int. Symposium on Deformation Monitoring, Nottingham, UK, 9-11 September 2013;
- IAG Third Symposium on “Terrestrial Gravimetry: Static and Mobile Measurements (TGSM-2013)”, St Petersburg, Russian Federation, 17-20 September 2013;
- Scientific Developments from Highly Accurate Space-Time Reference Systems, Observatoire de Paris, Paris, France, 16-18 September 2013;
- ITU/BIPM Workshop on “The Future of the International Time Scale”, Geneva, Switzerland, 19-20 September 2013;
- 2nd International VLBI Technology Workshop, Seogwipo, South Korea, 10-12 October 2013;

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Quadrennial Reports of the IUGG Associations and Union Commissions

- IAG Subcommittee 1.3b “SIRGAS” Symposium, Panama City, Panama, 24-26 October 2013;
  - 18th International Workshop on Laser Ranging, Fujiyoshida, Japan, 9-15 November 2013;
  - European VLBI Network Technical and Operations Group (EVN TOG) Meeting, Bad Koetzing, Germany, 23-24 January 2014;
  - International VLBI Service for Geodesy and Astrometry (IVS) General Meeting, Shanghai, China, 2-7 March 2014;
  - European Reference System (EUREF) Symposium, Vilnius, Lithuania, June 04-06, 2014;
  - International GNSS Service (IGS) Workshop "Celebrating 20 Years of Service", Pasadena, CA, USA, 23-27 June 2014;
  - 3rd International Gravity Field Service (IGFS) General Assembly, Shanghai, China, 30 June - 6 July 2014;
  - International Symposium on Geodesy for Earthquake and Natural Hazards (GENAH 2014), Matsushima, Miyagi, Japan, 22-27 July 2014;
  - 18th WEGENER General Assembly: Measuring and Modelling our Dynamic Planet  
Leeds, UK, 1-4 September 2014;
  - Journées 2014 "Systemes de reference spatio-temporels", Pulkovo Observatory, St. Petersburg, Russia, 22-24 September 2014;
  - 12th European VLBI Network (EVN) Symposium, Cagliari, Italy, 7-10 October 2014;
  - Reference Frames for Applications in Geosciences (REFAG2014), Luxembourg, Luxembourg, 13-17 October 2014;
  - International DORIS Service (IDS) Workshop, Konstanz, Germany, 27-28 October 2014;
  - International Laser Ranging Service (ILRS) Technical Workshop, 27-31 October 2014, Greenbelt, MD, USA;
  - Third International VLBI Technology Workshop, Groningen/Dwingeloo, The Netherlands, 10-13 November 2014;
  - PECORA 19 Fall Meeting (ASPRS, IAG, ISPRS) “Sustaining Land Imaging: Unmanned Aircraft Systems (UAS) to Satellites”, Denver, Colorado, USA, 17-20 November 2014;
  - Sub-Commission 1.3b “SIRGAS” Symposium, La Paz, Bolivia, 24-26 November 2014;
  - 11th International Symposium on Location-Based Services, Vienna, Austria, 26-28 November 2014.
- The following IAG Schools were held 2011 – 2014:
- SIRGAS School “Geodetic Reference Systems”, Heredia, Costa Rica, 3-5 August 2011;
  - GNSS School, Hong Kong, China, 14-15 May 2012;
  - Internat. Summer School “Space Geodesy & Earth System”, Shanghai, China, 21-25 August 2012;
  - SIRGAS School “Real Time GNSS Positioning”, Concepción, Chile, Oct., 24-26, 2012;
  - EGU-IVS Training School for the Next Generation Geodetic and Astrometric VLBI, Helsinki, Finland, 2-5 March 2013.
  - 11th School of the International Geoid Service: Heights and Height Datum, Loja, Ecuador, 7-10 October 2013.
  - SIRGAS School “Reference Systems, Crustal Deformation and Ionosphere Monitoring”, Panama City, Panama, 21-23 October 2013.
  - SIRGAS School “Vertical Reference Systems”, La Paz, Bolivia, 20-22 November 2014.

### Publications

The Journal of Geodesy, the official IAG scientific periodical with an Editor in Chief approved by the IAG Executive Committee, was continuously published with monthly issues in Springer-Verlag. In the IAG Symposia proceedings Series, the following volumes were published in:

- 136: Geodesy for Planet Earth; Proceedings of the IAG Scientific Assembly 2009 (2012);
- 137: VII Hotine-Marussi Symposium on Mathematical Geodesy 2009 (2012);
- 138: Reference Frames for Applications in Geosciences; Symposium of Commission 1 (2013);
- 139: Earth on the Edge: Science for a sustainable Planet; Proceedings General Assembly 2011 (2014);
- 140: Quality of Geodetic Observation and Monitoring Systems Workshop 2011 (online 2014).

Reports of all IAG components were published in the Travaux de l’AIG Vol. 37 (2011) and 38 (2013).

**Awards, anniversaries, obituaries**

The following medals and prices have been awarded:

- Levallois Medal to Ruth Neilan, USA (2011);
- Bomford Prize to Johannes Boehm, Austria (2011);
- Young Author Award to Elizabeth Petrie, UK (2011);
- Young Author Award to Thomas Artz (2013);
- Young Author Award to Manuela Seitz (2013).
- 53 Travel Awards to young scientists for participation in 15 IAG sponsored symposia.

The following anniversaries were celebrated with IAG participation:

- 150<sup>th</sup> anniversary of the Swiss Geodetic Commission, Zürich, Switzerland, 10 June 2011;

- 150<sup>th</sup> anniversary of the Arc Measurement in the Saxony, Dresden, Germany, 1 June 2012;
- 150<sup>th</sup> anniversary of the Central European Arc Measurement, Vienna Austria, 14 September 2012;
- 150<sup>th</sup> anniversary of the Austrian Geodetic Commission, Vienna, Austria, 7 November 2013;

Obituaries were written for former IAG officers and outstanding geodesists who passed away:

- 2011: A. Bjerhammar, Sweden; I. Fejes; Hungary; A. Finkelstein, Russia, S. Henriksen, USA;
- 2012: K.-P. Schwarz;
- 2014: C. C. Tscherning.

Chris Rizos, IAG President  
Hermann Drewes, IAG Secretary General

## QUADRENNIAL REPORT OF THE INTERNATIONAL ASSOCIATION OF GEOMAGNETISM AND AERONOMY

### INTRODUCTION

Outstanding frontiers of research in geomagnetism and aeronomy in the period 2011-2014 have included a wide range of new results, in diverse domains of Association activities. As we move out of a prolonged period of exceptionally low solar activity, space weather issues have been extensively considered, especially given mankind's increasing dependence on satellite technology; alongside this, radiation belt studies, and studies of the Earth's electromagnetic environment, are crucial. Other highlights include results from studies related to the understanding of solar processes, solar-terrestrial interactions - including those that influence climate, and coupling processes that link aeronomic and geomagnetic phenomena from the fringe of geospace through many steps to the Earth's core. The success of the "Decade of Geopotential Research" in securing continuous low-Earth orbit satellite mapping of the magnetic field, culminated with the launch of ESA's Swarm mission in November 2013. Other successes to highlight are the new remarkable contributions in modelling the temporal evolution of the magnetic field at the core-mantle boundary, the progress in understanding its origin and behaviour through numerical dynamo simulations, the greatly improved observation, modelling, and mapping of the field at and near the Earth's surface – used for geophysical exploration and direction-finding, palaeomagnetic contributions to solving geological and tectonic problems, the use of mineral magnetic properties to monitor environmental effects, the rapid expansion in the use of electromagnetic induction for both resource exploration and revealing the structure and composition of the crust and mantle, and the major advances in instrumentation, data acquisition, and sharing of information and services, often in real-time or near-real time. Underpinning much of this success has been the development and application of techniques pioneered in climate studies, such as data assimilation, empirical orthogonal functions, principal component analysis, and ensemble Kalman filtering, to geomagnetic research.

These examples of results in different research fields cover much, though not all, of the science of the Association. Important applications will hopefully result in the future in terms of improved risk assessments and forecasts of catastrophic events. Finally, the Swarm constellation satellite mission is well under way and will provide a community focus for research in the coming years.

### ADMINISTRATION

#### New leadership of IAGA

During the IUGG meeting, the Conference of Delegates elected a new Executive Committee for the quadrennium 2011-2015. The new leaders for the Divisions and Commissions and their Working Groups were appointed by the Executive Committee and confirmed by the Conference of Delegates.

### ACTIVITIES

#### Assemblies

##### 2011: The XXVth IUGG General Assembly

The year 2011 was marked by the XXV IUGG General Assembly in Melbourne, Earth on the Edge: Science for a Sustainable Planet. The number of IAGA registrants (536) was smaller than at the previous IUGG meeting in Perugia (669). However, the IAGA presence was remarkable, as IAGA scientists were involved in organising 4 Union symposia, and led 5 Inter-Association symposia; the IAGA-only part of the meeting consisted of 16 symposia, sub-divided into several parts, spanning the full range of IAGA science interests.

##### 2013: The XIIth IAGA Scientific Assembly

The IAGA 2013 Scientific Assembly took place August 26-30, 2013 in Mérida, Mexico, under the motto "Living on a magnetic planet". The meeting was attended by 459 participants from 43 countries, a smaller number than expected and probably caused by the economic restrictions in the USA and southern Europe. 871 papers (609 oral and 262 posters) were presented in 51 sessions organized by the five IAGA Divisions and the two Inter-divisional Commissions. In Merida, it was a pleasure to recognise the achievements of IAGA scientists at all stages of their careers at the Opening and Awards ceremony. The Assembly, full of exciting scientific results, was held in a framework of social interaction not only between the scientists, but also with the city's inhabitants and the great cultural atmosphere of the region. The IAGA Executive Committee members and the National Delegates warmly thanked the Local Organising Committee and particularly its Chair, Harald Böhnell, for the meeting organization.

### Topical meetings

Over the four-year period 2011-2014, IAGA sponsored 21 topical meetings covering large parts of the IAGA science. Many were interdisciplinary, often involving co-sponsorship by other IUGG Associations. The meetings were well distributed geographically to make them available to a larger number of scientists. The IAGA financial contributions were directed mainly at helping young and needy scientists attend.

### IAGA medals and awards

*IAGA Shen Kuo Award for Interdisciplinary Achievements:* In 2013, the first recipient of the Shen Kuo medal was Jean-Louis Le Mouél.

*The IAGA Medal in Recognition of Valued Service to the IAGA Community:* The recipients of this award were: in 2009 Bengt Hultqvist and in 2013 Evgeny Kharin and Michel Menvielle.

*Honorary Member of IAGA:* In 2013 the IAGA Conference of Delegates unanimously elected four honorary members: Charles Barton, Bengt Hultqvist, David J. Kerridge, Masaru Kono.

*Recipients of the IAGA Young Scientist Award:* Ten young scientists received the YSA, offered to young scientists who have made outstanding contributions at specialist meetings and workshops for which IAGA is a major sponsor, over the period 2011-2014:

[http://www.iugg.org/IAGA/iaga\\_pages/honors/young\\_science\\_award.html](http://www.iugg.org/IAGA/iaga_pages/honors/young_science_award.html)

### Publications

For the first time, IAGA has published a set of books, in cooperation with Springer Science and Business Media B.V. This 'IAGA Special Sopron Book Series' presents the state-of-the-art of the research of the 5 divisions of IAGA in their broadest sense: (I) Internal Magnetic Fields, (II) Aeronomic Phenomena, (III) Magnetospheric Phenomena, (IV) Solar Wind and Interplanetary Field, and (V) Geomagnetic Observatories, Surveys and Analyses. They were edited by former Secretary-General Bengt Hultqvist. The five book volumes are available.

IAGA News 48-51, containing information about IAGA activities and the Executive Committee decisions have been distributed annually, and can be found on the IAGA website ([http://www.iugg.org/IAGA/iaga\\_pages/pubs\\_products/public\\_relation.html](http://www.iugg.org/IAGA/iaga_pages/pubs_products/public_relation.html)).

Moreover, older IAGA Newsletters, originally published as hard copies, are all now scanned and available on the IAGA website. This is a nice realisation of the plan to put together all volumes and to have the complete IAGA memory, since 1963, on-line. Similarly, there is much valuable historical information, such as tables of geomagnetic indices and the International Geomagnetic Reference Field models, in the series of IAGA Bulletins; as copies of these are tracked down, they are also being made available via the website.

Kathryn Whaler, IAGA President  
Mioara Manda, IAGA Secretary General

## QUADRENNIAL REPORT OF THE INTERNATIONAL ASSOCIATION OF HYDROLOGICAL SCIENCES

### INTRODUCTION

IAHS promotes the study of all aspects of hydrology through discussion, comparison, and publication of research results; and through the initiation of research that requires international cooperation. IAHS Press publishes the Hydrological Sciences Journal, the Red Book Series, the Benchmark Paper series, and other specialised publications. IAHS maintains strong connections with the International Hydrological Programme of UNESCO, with the Hydrology and Water Resources Programme of the World Meteorological Organisation (WMO), with UN-Water as well as with other partners of the NGO and UN spheres.

The following International Commissions and working groups of IAHS initiate and conduct conferences, symposia, workshops, courses, publications and research programmes:

- International Commission on Continental Erosion (ICCE)
- International Commission on the Coupled Land-Atmosphere System (ICCLAS)
- International Commission on Groundwater (ICGW)
- International Commission on Remote Sensing (ICRS)
- International Commission on Snow and Ice Hydrology (ICSIH)
- International Commission on Statistical Hydrology (ICSH)
- International Commission on Surface Water (ICSW)
- International Commission on Tracers (ICT)
- International Commission on Water Quality (ICWQ)
- International Commission on Water Resources Systems (ICWRS)
- Working Group on Precipitation
- Working Group on Education and capacity building
- Working Group on Monitoring the XXIth Century (MOXXI) set up in 2013
- The decadal initiative PUB closed in 2013
- The decadal initiative Panta Rhei set up in 2013

### ACTIVITIES

The main IAHS events have been at the IUGG General assembly in Melbourne, 2011; and at the IAHS-IAPSO-IASPEI joint Scientific Assembly in Gothenburg, 2013. Over 2013-2015, intense preparation of the IUGG general assembly in Prague have been led.

The IAHS 90th Anniversary meeting has been held in Delft, The Netherlands in October 2012.

At this occasion the PUB – Prediction in Ungauged Basins decade has been wrapped up, followed by the publication of two major books (Blöschl et al., 2013 by Cambridge University Press and Pomeroy et al., 2013 by the Canadian Water Resources Association) and one milestone synthesis article (Hrachowitz et al., 2013 in Hydrological Sciences Journal).

A deep and inclusive process has been followed over 2012 to shape the 2013-2022 Scientific Decade, finally called “Panta Rhei – Everything flows”. Under the chairmanship of an officer designated by the Bureau, helped by a task force and by IAHS officers, the worldwide consultation and the synthesis were mainly based on an online blog and some key physical meetings during 2012 Conferences. The decade has been officially launched at the Gothenburg 2013 Scientific assembly and through an agenda setting community article published in Hydrological Sciences Journal (Montanari, 2013) and develops across major hydrological conferences and publications since then.

Many other conferences have been organized by the IAHS International commissions, and several other have received the IAHS patronage over the four years. A retrospective overview of these is available at the IAHS website.

The Hydrological Sciences Journal has increased the number of issues in an annual volume, up to 12, in the frame of a publishing agreement with Taylor and Francis. The editorial board is annually renewed.

IAHS Press has published 27 Red Books over the four years, 3 being in preparation for the Prague Assembly. This series is the oldest one in the discipline, dating back to 1924. A publishing agreement has been signed with Copernicus to relaunch this series as an open access proceeding journal – PIAHS from 2015. Four volumes of the “Benchmark Papers in Hydrology” Series have been published and one special publication. The whole catalogue, including online archives are available at the IAHS website.

The [www.iahs.info](http://www.iahs.info) website has been renewed in 2013. Three issues of the newsletter are disseminated every year, as well as individual alerts now thanks to the e-news tools associated to



XXVI General Assembly of the International Union of Geodesy and Geophysics  
Quadrennial Reports of the IUGG Associations and Union Commissions

the website and the individual free membership database.

Relations are very strong with the UNESCO International Hydrological Programme and its secretariat, as well as with the WMO Commission of Hydrology and its secretariat. We have participated to intergovernmental meetings and bureau/Advisory groups of these, and co-convened scientific / capacity building events. We have also contributed to the UN-Water meetings and activities, including the regular World Water Development Reports, or the events of the 2013 – International Year of Water Cooperation.

The IAHS-UNESCO-WMO International Hydrology Prize has been jointly bestowed every year. Since 2014, the Prize is made of two different medals, namely the Dooge and the Volker medals. IAHS also bestows the annual Tison Award to young scientist (below 41) for papers published in any IAHS publication.

All information about IAHS activities are available on the WEB at [www.iahs.info](http://www.iahs.info)

Gordon Young, IAHS Past President (2011-2013)  
Hubert Savenije, IAHS President  
Christophe Cudennec, IAHS Secretary General

## QUADRENNIAL REPORT OF THE INTERNATIONAL ASSOCIATION OF METEOROLOGY AND ATMOSPHERIC SCIENCES

### INTRODUCTION

IAMAS is the specialized association of the International Union of Geodesy and Geophysics (IUGG) which deals with all aspects of the gaseous envelope around the Earth and other planets. The main research work is carried out, coordinated and communicated in IAMAS's ten International Commissions (IC), which are in alphabetical order the ICs on Atmospheric Chemistry and Global Pollution (ICACGP), on Atmospheric Electricity (ICAE), on Climate (ICCL), on Clouds and Precipitation (ICCP), on Dynamical Meteorology (ICDM), on the Middle Atmosphere (ICMA), the International Ozone Commission (IOC), the ICs on Planetary Atmospheres and their Evolution (ICPAE), on Polar Meteorology (ICPM), and the International Radiation Commission (IRC). All ICs, and IAMAS as a whole, take a leading part within the global communication and discussion of latest research results in a wide range of scientific meetings that are open to all scientists.

### ADMINISTRATON

The current IAMAS Bureau was elected during the IUGG/IAMAS assembly in Melbourne in 2011. The Officers of the Bureau for the period 2011-2015 are:

- Dr. Athena COUSTENIS (France), President
- Prof. Guoxiong WU (China), Past-President
- Prof. Joyce PENNER (USA), Vice-President
- Dr. Hans VOLKERT (Germany), Secretary-General
- Prof. John TURNER (UK), Vice-President
- Ms. Zheng (Jenny) LIN (China), Assistant Sec.- Gen.

The five Members-at-large of IAMAS are:

- Prof. E. Hugo BERBERY (Argentina/USA)
- Dr. Colin PRICE (Israel)
- Dr. Vladimir KATTSOV (Russia)
- Prof. Tetsuzo YASUNARI (Japan)
- Prof. Daren LU (China)

During the IAMAS-IACS-assembly in Davos Switzerland, in 2013 (DACA-13), the IAMAS Executive Committee (EC) re-appointed Hugo Berbery as the financial auditor to monitor the IAMAS finances. Hugo will continue to serve in this position and report to the EC during IUGG/IAMAS 2015 in Prague.

The IAMAS Bureau continued working in an open and cooperative fashion as during the previous quadrennium. Besides communication by email, IAMAS Bureau members have regular telephone conferences. In this way, the Bureau members can quickly process commissions' requests, provide necessary support to science activities, and innovate policies, regulations and notices that can promote and coordinate international atmospheric and climate research. IAMAS's ten commissions also report to the Bureau annually. Through their involvement in international research, IAMAS/IUGG members are well represented in the atmospheric science community. Since 2012, information to the commissions and the national correspondents has been distributed by Info-Emails (cf. [www.IAMAS.org/NewsLetters](http://www.IAMAS.org/NewsLetters)).

Between the assemblies in odd years, the Bureau met face-to-face at the workplaces of its President in Paris, France, in 2012 and its Secretary-General in Oberpfaffenhofen near Munich, Germany, in 2014 (cf. snapshots in [www.IAMAS.org/gallery](http://www.IAMAS.org/gallery)).

### ACTIVITIES

Hereafter a brief selection of the IAMAS activities is reported; the full compilation of commission reports will be posted on [www.IAMAS.org/Reports](http://www.IAMAS.org/Reports).

#### IAMAS Joint Assembly DACA-13

IAMAS held its Joint Assembly with IACS from 8-12 July 2013 in Davos, Switzerland (Davos Atmosphere and Cryosphere Assembly or DACA-2013; see the still living website [www.daca-13.org](http://www.daca-13.org)). The assembly attracted about 1000 participants - over 60% with IAMAS affiliation - from 52 countries on five different continents and covered numerous fields of atmospheric and cryospheric sciences, enriched by snow hydrology, oceanography, natural hazards, economy and risks, and the history of science. The broad programme consisted of 21 mostly joint symposia featuring several sessions each. More than 350 posters were on display for the whole week while dedicated poster sessions facilitated deeper discussions with the presenters in attendance. During the opening ceremony the First IAMAS early career scientist medal was bestowed upon James Screen (UK). More details are given in the September issue of the IUGG Electronic Journal (cf. [www.iugg.org/publications/ejournals/IUGGej1309.pdf](http://www.iugg.org/publications/ejournals/IUGGej1309.pdf)).

**Highlights of the International Commissions within IAMAS activities are:**

**ICACGP** ([www.icacgp.org](http://www.icacgp.org))

The highlight was the 13<sup>th</sup> quadrennial ICACGP symposium over 22-26 September 2014 in Natal, Brazil, attracting over 400 participants from 49 countries. Under the topical theme “Changing Chemistry in a Changing World”, the emphasis was put on current knowledge and understanding of the chemical, physical and biogeochemical processes, which determine atmospheric composition and behavior, their modification by anthropogenic activity and related feedbacks. More details about the programme and illustrative photos can be found under <http://igac-icacgp2014.org/>. In 2012 the commission cosponsored the IGAC Science Conference, held 17-21 September in Beijing, China; cf. details under [www.igac2012.org](http://www.igac2012.org).

**ICAE** (<http://icae.jp>)

The 15<sup>th</sup> quadrennial ICAE conference took place 15-20 June 2014 in Norman, Oklahoma, USA, attracting more than 200 participants. During the business meetings new commission officers and members were elected, who will start their service after IUGG-2015 in Prague. During the entire period regular and detailed ICAE newsletters appeared in May and November, which are available from <http://icae.jp/newsletters>.

**ICCL** ([www.iccl-iamas.net](http://www.iccl-iamas.net))

The commission organized an expert assessment workshop on decadal climate variability, which took place in Beijing, China in April 2013. A detailed meeting summary entitled “Decadal climate Variability and cross-scale interactions: ICCL expert assessment workshop” was prepared and published in the Bull. Amer. Meteorol. Soc. (<http://journals.ametsoc.org/doi/abs/10.1175/BAMS-D-13-00201.1>).

**ICCP** ([www.iccp-iamas.org](http://www.iccp-iamas.org))

The 16<sup>th</sup> quadrennial ICCP conference took place 30 July – 3 Aug. 2012 in Leipzig, Germany, attracting some 550 participants. More details about the programme and extended abstracts can be found under <http://iccp2012.tropos.de>; a special issue in *Atmospheric Research* contains a preface and 15 research articles ([www.sciencedirect.com/science/journal/01698095/142](http://www.sciencedirect.com/science/journal/01698095/142)). The 8<sup>th</sup> WMO international cloud modeling workshop ([www.atmos.washington.edu/~andream/workshop2012](http://www.atmos.washington.edu/~andream/workshop2012)) took place during the previous week. ICCP formed a working group on geo-engineering whose members formulated a Statement on Radiation Management Climate engineering ([www.iccp-iamas.org/pdf/ICCP\\_RadiationManagementStatement.pdf](http://www.iccp-iamas.org/pdf/ICCP_RadiationManagementStatement.pdf)). ICCP's permanent Committee on

Nucleation & Atmospheric Aerosols (CNAA) held its 19<sup>th</sup> international conference in Fort Collins, Colorado, USA during the period 24–28 July 2013 (<http://chem.atmos.colostate.edu/icnaa>).

**ICDM** (<http://icdm.atm.ucdavis.edu>)

The commission organized an international workshop “Dynamics and predictability of high impact weather and climate events” in Aug. 2012 in Kunming, China, which brought together 140 students and experts from China and abroad (<http://icdm2012.csp.escience.cn>). A book based on the invited presentations is to appear in the *IUGG special Publication Series* with *Cambridge University Press*. Commission members and the IAMAS Secretary General were much involved in organizing the first World Weather Open Science Conference convened by the World Meteorological Organization; in August 2014 it assembled 1000 participants from meteorological services, research laboratories, university institutes, and from end-users in Montreal, Canada ([www.wwosc2014.com/welcome\\_e.shtml](http://www.wwosc2014.com/welcome_e.shtml)).

**ICMA** ([www.icma-iamas.org](http://www.icma-iamas.org))

In the traditionally alternating sequence the commission sponsored a number of symposia at the IAGA assembly in 2013, taking place in Merida, Mexico. Recent workshops organized or cosponsored by ICMA members include the 5<sup>th</sup> international HEPPA workshop in May 2014 in Baden-Baden, Germany ([www.imk-asf.kit.edu/english/1486.php](http://www.imk-asf.kit.edu/english/1486.php)) and the 13<sup>th</sup> quadrennial solar-terrestrial physics symposium in October 2014 in Xi'an, China (<http://stp13.csp.escience.cn>).

**IO3C** (<http://ioc.atmos.illinois.edu>)

The 13<sup>th</sup> Quadrennial Ozone Symposium took place at the end of August 2012 in Toronto, Canada, attracting more some 300 participants. The first copies of IAMAS Publication Series No. 2 were distributed; it was compiled by the former commission secretary Rumen Bojkov and entitled *International Ozone Commission: history and activities* (download from [www.iamas.org/Pdfs/IAMAS-PubSer-No2.pdf](http://www.iamas.org/Pdfs/IAMAS-PubSer-No2.pdf)). Recently commission members contributed to the WMO/UNEP 2014-Assessment on the state of the ozone layer (download from [http://ozone.unep.org/en/scientific\\_assessment\\_2014.php](http://ozone.unep.org/en/scientific_assessment_2014.php)).

**ICPAE**

(<http://icpae.physics.ox.ac.uk/Welcome.html>)

The commission sponsored several special issues in the journal *Planetary and Space Sciences* and contributed to organizing and advertising various meetings worldwide. It organized the *Titan Through Time* workshop in April 2014 in Laurel,

Maryland, USA, which attracted 65 international experts of Titan's atmosphere over seasonal, astronomical and geological timescales. ICPAE members celebrated the tenth anniversary of Cassini-Huygens' arrival in the Saturn system in July 2014, and were deeply involved in responding to ESA's Cosmic Vision and NASA's Discovery-class calls for future mission concepts, including spacecraft to explore Venus, Saturn's interior and the ice giants Uranus and Neptune. ESA's first large-class (L1) mission, the Jupiter Icy Moons Explorer (JUICE) was formally adopted in November 2014 to enter the detailed design phase; it has ICPAE members on many of the science teams.

**ICPM** ([www.icpm-iamas.aq](http://www.icpm-iamas.aq))

The commission organized a workshop *Atmospheric Model Parameterizations in the Polar Regions* in July 2012 in Boulder, Colorado, USA. It also contributed to the Open Science Conference of ICSU's Scientific Committee on Antarctic Research (SCAR) held 23 August – 3 September 2014 in Auckland, New Zealand ([www.scar2014.com](http://www.scar2014.com)).

**IRC** ([www.irc-iamas.org](http://www.irc-iamas.org))

The regular quadrennial International Radiation Symposium took place 6–10 Aug. 2012 in Berlin, Germany, attracting more than 500 participants. More details about the programme, abstracts and a gallery of photos can be found under [www.irs2012.org](http://www.irs2012.org). Detailed proceedings were published electronically in May 2013 (<http://scitation.aip.org/content/aip/proceeding/aipc/p/1531>). Commission members also contributed to

the formulation of the *Statement of Radiation Management for Climate Engineering* ([www.irc-iamas.org/calendar/news.php?id=69](http://www.irc-iamas.org/calendar/news.php?id=69))

**FUTURE ACTIVITIES**

After the regular change in the Bureau's composition following IUGG-2015 in Prague, IAMAS aims to continue to promote - thanks to the voluntary work its members - promising ideas and concepts, collaborations, fruitful meetings and more, as it has undertaken since its inception in 1919 (cf. the detailed account by founding president Napier Shaw in Volume 49 the *Quarterly Journal of the Royal Meteorological Society*, published in 1923, <http://onlinelibrary.wiley.com/doi/10.1002/qj.49704920507/pdf>). IAMAS has always been interested in extended fruitful exchanges with the other IUGG Associations and this has led to several very successful joint meetings. Always seeking to improve and enhance its impact in the relevant research fields, to assist in the distribution of knowledge and in forging solid cooperations around new projects, IAMAS will continue, within IUGG, to actively pursue its goals and through its Commissions to serve as well as possible its scientific community.

Athena Coustenis, IAMAS President  
Hans Volkert, IAMAS Secretary-General

## QUADRENNIAL REPORT OF THE INTERNATIONAL ASSOCIATION FOR THE PHYSICAL SCIENCES OF THE OCEANS

### INTRODUCTION

IAPSO has the prime goal of "promoting the study of scientific problems relating to the oceans and the interactions taking places at the sea floor, coastal, and atmospheric boundaries insofar as such research is conducted by the use of mathematics, physics, and chemistry." IAPSO works mainly through 1) biennial scientific assemblies; 2) working groups; 3) Commissions; 4) Services and 5) website information. Of special importance to IAPSO is to involve scientists and students from developing countries in the activities.

IAPSO maintains formal liaison with other scientific commissions and committees. These include the ICSU's Scientific Committee on Oceanic Research (SCOR), and UNESCO's Intergovernmental Oceanographic Commission (IOC).

For more information see <http://iapso.iugg.org/>

### ADMINISTRATION

The IAPSO office has been situated at Gothenburg University, Sweden since July 2007, and the day-to-day business has been managed by the Secretary General (SG) Johan Rodhe, Sweden. The Bureau of IAPSO comprises of the President, Eugene Morozov, Russia, the Past President, Lawrence Mysak, Canada, the SG, Johan Rodhe, and the Treasurer, Fred Camfield, USA. The SG has been responsible for the IAPSO website.

In 2013, there were three IAPSO business meetings and meeting of the EC during the Assembly in Gothenburg. The other IAPSO discussions were maintained by means of e-mail communication.

### Members of IAPSO Executive Committee (EC) for 2011-2015

- President: Dr. Eugene Morozov (Russia)
- Secretary General: Prof. Johan Rodhe (Sweden)
- Past President: Prof. Lawrence Mysak (Canada)
- Treasurer: Dr. Fred Camfield (USA)
- Vice Presidents: Dr. Isabelle Ansonge (South Africa), Dr. Denise Smythe-Wright (UK)
- EC Members: M.Sc. Silvia Blanc (Argentina) Prof. Toshiyuki Hibiya (Japan) Dr. Chris Meinen (USA) M.App.Sc. Ken Ridgway (Australia) Dr.

Satheesh Shenoi (India) Dr. Stefania Sparnocchia (Italy).

### ACTIVITIES

Three of IUGG's constituent Associations, IAHS, IAPSO and IASPEI, met for a Joint Scientific Assembly in Gothenburg, Sweden, during the week 22 – 26 July 2013. The title of the Assembly, "Knowledge for the Future", was chosen in order to highlight the importance of improved knowledge in hydrology, oceanography and seismology in addressing the challenges posed by climate change and the risks of natural disaster events. The Assembly attracted 1087 participants from 66 different countries. More than 300 registered as IAPSO scientists.

The Assembly's opening day was marked by a joint plenary session with a lecture from each Association: James Mori (Japan), IASPEI, Kathryn Kelly (United States), IAPSO and Kuniyoshi Takeuchi (Japan), IAHS. The plenary lectures were followed by a formal Opening Ceremony and a reception hosted by the City of Gothenburg.

Each Association offered a broad programme of lectures and posters, with up to 11 parallel sessions at any one time. The lecture programme was organized into 48 Association symposia (11 IAPSO), together with 9 joint symposia focusing on areas such as land-ocean interactions, advanced applied statistics, and tsunamis. 2 of the joint symposia were organized by IAPSO and the rest were co-sponsored by IAPSO. This programme was complemented by two afternoon poster sessions.

### Some highlights from the Association's programmes

IASPEI's Milne lecture on the history of British seismology was delivered by Roger Musson (United Kingdom). The IAPSO Prince Albert I Medal was presented to Arnold L. Gordon (United States), who then delivered the Albert I Memorial Lecture describing his research on the Indonesian Throughflow, the link between the Pacific and Indian Oceans. Deltas were a significant focus of the IAHS programme, including a plenary lecture by Efi Foufoula-Georgiou (United States). Several other prizes and medals were awarded during the week.

From the fall of 2013 the main activity has been to participate in the planning of IUGG2015 General

Assembly in Prague This includes to organize a number of symposia: 13 IAPSO symposia, 5 IAPSO-lead Association-Joint symposia, 1 Union symposium. In addition IAPSO co-sponsors 6 Joint and 7 Union symposia.

**Symposia Convened by IAPSO (only IAPSO Conveners and Co-conveners are noted)**

- P01 General Topics on the Physical Science of the Oceans. Convener: I. Ansorge (South Africa), Co-conveners: I. Halo (South Africa/Mozambique), J. Durgadoo (Germany)
- P02 Physics and Biogeochemistry of Semi-Enclosed and Shelf Seas. Convener: K. Schroeder (Italy), Co-conveners: H. Burchard (Germany), L. Demina (Russia), K. Ridgway (Australia)
- P03 Ocean Mixing. Convener: T. Hibiya (Japan), Co-conveners: T. McDougall (Australia), L. Arneborg (Sweden)
- P04 Oceanic Boundary Current Systems. Convener: J. McClean (USA), Co-conveners: S. Pierini (Italy), W. Cai (Australia), S. Waterman (Canada)
- P05 Southern Hemispheric Forcing of the MOC and Carbon Cycle in Past, Present, and Future Climate Change. Convener: L. Beal (USA), Co-conveners: G. Marino (Australia), K. Kohfeld (Canada), M. Krug (South Africa), S. Dong (USA)
- P06 The Southern Ocean: where Ocean, Ice and Atmosphere Meet. Convener: K. Heywood (UK). Co-conveners: A. Wåhlin (Sweden), A. Thompson (USA), R. Tarakanov (Russia)
- P07 Chemical Trends and Impacts on Ecosystems. Convener: D. Smythe-Wright (UK), Co-conveners: E. Yakushev (Norway)
- P08 MOC and Deep Currents. Convener: C. Meinen (USA), Co-conveners: E. Morozov (Russia), E. Frajka-Williams (UK), S. Drijfhout (Netherlands)
- P09 The North Atlantic and Climate Change. Convener: S. Josey (UK), Co-conveners: S. Gulev (Russia), B. Hansen (Faroe Islands), S. Lozier (USA), P. Myers (Canada), F. Perez (Spain)
- P10 Sub-Mesoscale Eddies. Convener: M. Sokolovskiy (Russia), Co-conveners: X. Carton (France), K. Koshel (Russia), Y. Cotroneo (Italy)
- P11 Wind Waves, Including Extreme Waves. Convener: F. Qiao (China). Co-conveners: E. Pelinovsky (Russia), A. Babanin (Australia), C. Guan (China)
- P12 Indian Ocean Expedition I to Indian Ocean Expedition 2 - Five Decades of

Indian Ocean Oceanography: Challenges in Physics and Biogeochemistry of Indian Ocean. Convener: S. Shenoi (India), Co-conveners: M. McPhaden (USA); Y. Masumoto (Japan); R. Hood (USA)

- P13 Internal waves dynamics in world oceans: from remote sensing, in situ monitoring to numerical modeling. Convener: X. Chen (China), Co-conveners: L. Qiang (China), R. Grimshaw (UK)
- U7 The Potential for Carbon- and Climate-Engineering to Offset Global Change. Convener: Tim Kruger, Oxford, U.K.
- JP1 Sea Level Change and Variability: Past, Present and Future. Convener: G. Mitchum, USA. Co-conveners: P. Woodworth, UK
- JP2 The Potential for Carbon- and Climate-Engineering to Offset Global Change. Convener: T. Kruger, U.K.
- JP4 Satellite Oceanography and Climatology. Convener: A. Kostianoy, Russia, Co-conveners: S. Vignudelli, Italy, J. Benvenist, Italy
- JP5 Tsunamis. Convener: V. Titov, USA, Co-conveners: S. Tinti, Italy
- JP6 Acoustical Oceanography. Convener: Silvia Blanc, Argentina

**Joint symposia Co-convened by IAPSO (only IAPSO Co-conveners are reported)**

- JC1 Sea Ice in the Arctic and Southern Oceans. Co-conveners: G. Bjork, Sweden, A. Marchenko, Norway
- JM1 Earth Systems Dynamics, Predictability and Probabilistic Forecasting. Co-conveners: G. Swaters, Canada
- JM2 Climate Variability and Earth Systems Modelling. Co-conveners: R. Marsh, U.K., S. Xie, USA, B. Qiu, USA
- JM4 Data Assimilation in Geophysical Sciences. Co-conveners: K. Belyaev, Russia, L. Bertino, Norway, I. Fenty, USA
- JS6 Array Techniques for Monitoring the State of the Earth. Co-conveners: Silvia Blanc, Argentina, S. Shenoi, India
- JV3 Geophysical Imaging and Monitoring of Volcanoes. Co-conveners: B. Levin, Yuzhno-Sakhalinsk, Russia

The planning for the Assembly in 2017 was started. This will be a joint assembly with the International Association of Geomagnetism and Aeronomy (IAGA) and International Association of Meteorology and Atmospheric Sciences (IAMAS). It will take place in Cape Town, South Africa.

### Working groups

SCOR is an important partner of IAPSO, and IAPSO co-finances SCOR working groups of relevance to IAPSO. In 2011 the IAPSO President attend the annual meeting of the Scientific Committee on Oceanic research (SCOR) in Helsinki (Finland). In 2012 the IAPSO Vice-President D. Smythe-Wright and SG J. Rodhe visited the SCOR meeting in Halifax (Canada), In 2013 the IAPSO President E. Morozov visited the SCOR meeting in Wellington (New Zealand). In 2014 the IAPSO President E. Morozov and SG J. Rodhe visited the SCOR meeting in Bremen (Germany). The SCOR meetings review the progress of current SCOR working groups, evaluate proposed new WGs, and decide which of them will be funded. A number of international SCOR-related scientific programs were discussed. Details can be found at the SCOR website ([www.scor-int.org](http://www.scor-int.org)). IAPSO decided to support financially WG “Chemical Speciation Modelling in Seawater to Meet 21st Century Needs (MARCHEMSPEC)”. The work of this joint SCOR/IAPSO WG will be an important part of the IAPSO activity.

Working groups are usually formed of not more than 10 scientists from different countries to deliberate on a narrowly focused topic and report their work in a peer-reviewed publication, book, manual, or database. Working groups are expected to complete their tasks in 4 years or less. Information about SCOR activity and WGs is at the IAPSO webpage.

The following SCOR working groups (WGs), which have received funding from IAPSO, have been active during this period and have published important books and/or special journal issues:

- SCOR/IAPSO WG 127 “The Thermodynamics and Equation of State of Seawater” (Chaired by T.J. McDougall) was reorganized into a special IACS-IAPSO Commission on Seawater.
- SCOR/IAPSO WG 133 “Ocean Scope” (Co-chaired by Tom Rossby and Kuh Kim
- SCOR/WCRP/IAPSO WG 136 “The Climatic Implications of the Greater Agulhas System” continued their activity. (Co-chaired by L. Beal and A. Biastock)

### IAPSO Commissions and Services

- Commission on Mean Sea Level and Tides (CMSLT), hosted by the Proudman Oceanographic Laboratory, UK. President: Simon Holgate. Website: <http://www.psmsl.org/>

- Joint Committee on the Properties of Seawater, JCS (with SCOR and IAPWS), Chair: Prof. Rich Pawlowicz, website: [www.teos-10.org](http://www.teos-10.org)
- Tsunami Commission (Joint with IASPEI and IVACEI). Chair: Dr. Vasily V. Titov. Website: [www.iaspei.org/commissions/JCT.html](http://www.iaspei.org/commissions/JCT.html)
- GeoRisk Commission (Joint with IAMAS, IAHS, IASPEI and IAVCEI). Website: [www.iugg-georisk.org/](http://www.iugg-georisk.org/)
- Permanent Service for Mean Sea Level, hosted by Proudman Oceanographic Laboratory, UK. Contact: Dr. Lesley Richard. Website: [www.pol.ac.uk/psmsl/](http://www.pol.ac.uk/psmsl/)
- IAPSO Standard Seawater Service, hosted by OSIL, Havant, Hampshire, UK. Director: Paul, Ridout; Website Website [www.osil.co.uk](http://www.osil.co.uk)

The working groups commissions and services report to IAPSO. These reports are posted on the IAPSO website <http://iapso.iugg.org/working-groups>

### Prince Albert 1 Medal

IAPSO and Monaco Royal Family established the Prince Albert I Medal for excellence in physical and/or chemical oceanography in honour Prince Albert I. The precursor of IAPSO was established in 1919 thanks to the vision and passion for the oceans of His Most Serene Highness Prince Albert I of Monaco. He became the first President.

The year before the biennial assemblies, IAPSO selects a winner of the Prince Albert I Medal.

Professor Arnold L. Gordon from Lamont-Doherty Earth Observatory, USA was selected in 2013 as the winner of the Prize for “his outstanding work on ocean dynamics”. During the Assembly in Gothenburg he was awarded with the medal and presented a memorial lecture on the currents in the Indonesian straits (Indonesia throughflow).

Professor Toshio Yamagata from the Institute for Global Change Research, Tokyo (Japan) was the winner in 2014 in recognition of his fundamental contributions to our knowledge of the ocean physics. The medal will be awarded to him in Prague and he will present a memorial lecture.

### Eugene LaFond Medal

This Medal, created in honour of Eugene LaFond who was a former SG of IAPSO, is awarded to a scientist from a developing world country for a paper presented at an IAPSO Assembly.

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Quadrennial Reports of the IUGG Associations and Union Commissions

In 2011, the IAPSO EC decided to present the LaFond medal to Towhida Rashid from Bangladesh for her presentation about the sea level change in the Holocene.

In 2013, the medal was awarded to Issufo Halo, a student of the Cape Town University, originally from Mozambique.

Eugene Morozov, IAPSO President  
Johan Rodhe, IAPSO Secretary General



## QUADRENNIAL REPORT OF THE INTERNATIONAL ASSOCIATION OF SEISMOLOGY AND PHYSICS OF THE EARTH'S INTERIOR

### INTRODUCTION

IASPEI promotes the study of problems relating to earthquakes, the propagation of seismic waves, and the internal structure, properties, and processes of the Earth.

Comprehensive minutes of the past Quadriennium and other information are posted on the IASPEI website, <http://www.iaspei.org/>.

### ACTIVITIES

#### IASPEI 2011 General Assembly at Melbourne (Australia)

*Assembly.* IASPEI participated to the conference with more than 400 (395 officially registered as IASPEI) delegates, of which 78 supported financially with grants. The scientific program included 18 IASPEI and 13 Inter-Association symposia with IASPEI participation.

Two resolutions passed at the General Assembly in Melbourne encourage the creation of two more regional Commissions of IASPEI: the African Seismological Commission and the Latin American Seismological Commission to foster more cooperation within these two regions and the organization of regular IASPEI regional meetings.

*Statutes.* After several years of preparation and discussion, revised IASPEI Statutes have been unanimously approved in Melbourne during the IUGG General Assembly. Changes mainly reflect the changes in practice related to shorter scientific assemblies, the possibilities offered by modern internet era tools, and clarifications of language to avoid ambiguity.

#### IASPEI 2013 Scientific Assembly at Gothenburg (Sweden)

The 37th IASPEI General Assembly was organized as a Joint Assembly of the three Associations IAHS, IAPSO and IASPEI in July 2013 in Gothenburg, Sweden. The 454 participants from 48 countries contributed to the success of the assembly by presenting 330 contributions and 200 posters within 36 symposia. 75 participants were supported with grants by IASPEI.

During the Opening Plenary, the first IASPEI medal was awarded to Robin Adams. In addition, two keynote lectures were presented by IASPEI President Domenico Giardini on GEM and by Roger Musson on the History of British Seismology. A third keynote lecture was given in

the afternoon during the Joint Plenary by James Mori on drilling the plate boundary in the source region of the 2011 Tohoku-Oki earthquake.

On Friday, July 26, a round table discussion was held on "The role of scientists in the communication of risk: lessons from L'Aquila and international perspectives". Domenico Giardini presented an overview on the actual status of the L'Aquila case while Kenji Satake (Japan) and David Jackson (USA) explained how authoritative information to administrations and the public are organized in their countries in the case of an earthquake crisis. All three presentations were followed by a lively debate, for which the allocated time window in the assembly program proved to be too short.

The next IASPEI Scientific Assembly, after the General Assembly in connection with the IUGG 2015 one in Prague, Czech Republic, will be held in Kobe, Japan, in August 2017.

#### Asian Seismological Commission (ASC) meetings ASC2012, Ulaanbaatar, Mongolia

The 9th General Assembly of ASC was held in Ulaanbaatar, Mongolia, from September 17 to 20, 2012, under the motto "International Scientific Cooperation for Prevention and Mitigation of Seismic Disaster". About 300 scientists (115 foreign) from 20 countries participated to the conference and made 87 oral and 50 poster presentations. The excellent premises were kindly provided by the Mongolian Government. In particular, the opening session was held in the Mongolian Parliament. The Young Scientist Training Course which took place in the days before the conference, was sponsored by the Young Scientist grant of Deputy Prime Minister of Mongolia and IASPEI. Eight foreign and eleven Mongolian participants took part to the course.

#### ASC2014, Makati City, The Philippines

The 10th General Assembly of ASC, with theme "Working together towards an earthquake-resilient Asia", was held at the Dusit Hotel, Makati City, Philippines from 18-20 November 2014 with 156 participants from 21 different countries. The Assembly was organized by the Philippine Institute of Volcanology and Seismology (PHIVOLCS) in cooperation with the Geological Society of the Philippines (GSP). The combined financial support from the Seismological Society of Japan (SSJ) and IASPEI enabled the conference to award full/partial support to 31 travel grantees from 11 countries. In addition to the formal opening ceremonies, a press

briefing was also held on 18 November, with panelists Gary Gibson, Domenico Giardini, and Renato U. Solidum Jr. Eight invited talks were delivered in the plenary sessions and 133 papers were presented in the parallel sessions during the assembly. A 5-day Pre-Conference Training - “*Contributions of Seismology to Earthquake Risk Mitigation*” was held from 12-16 November and conducted by 2 invited trainers - Dr. Gary Gibson and Dr. Mark Quigley. Five special talks about monitoring, hazards and risk assessment and public awareness and preparedness in the Philippines were invited from PHIVOLCS. A total of 21 young scientists from various Asia and Oceania countries attended. The training was supported with funds from the Government of the Philippines. The ASC flag was officially turned over by Dr. Solidum to Brian Kennett of the Australian National University, representing Australia, the ASC 2016 host.

The next 2016 ASC conference will be in Australia.

### **European Seismological Commission (ESC) meetings**

#### *ESC2012, Moscow, Russia*

The 33rd General Assembly of ESC was held in Moscow, Russia, from August 19 to 24, 2012, on the premises of the Russian Academy of Sciences. 548 people from 51 countries representing all five inhabited continents of our planet participated to the Assembly. The Assembly motto “*Seismology without Boundaries*” proved its value to the full.

In the framework of the ten topics into which the scientific program of the Assembly was built there were 39 scientific symposia with 845 scientific presentations – 490 oral and 355 poster presentations. Some symposia were organized in cooperation with the Seismological Society of America and with the Asian Seismological Commission.

In the week following the ESC GA, the 9th International Young Seismologists Training Course “*Modern Methods of Seismological Data Processing and Interpretation*” was held in Obninsk. Ten lecturers presented a series of lectures to 19 female and 17 male participants from 15 countries. All of them were very satisfied with the course and received personal certificates of attendance.

#### *ESC2014, Istanbul, Turkey*

The 34th General Assembly of ESC was organized at the Istanbul Convention & Exhibition Centre (ICEC), in Istanbul, Turkey, from 24 to 29 August 2014, jointly with the 15th European Conference on Earthquake Engineering of the European Association of Earthquake Engineering (EAEE), in

the framework of the Second European Conference on Earthquake Engineering and Seismology (2ECEES). About 1000 participants from 76 different countries presented 1550 contributions. There were also 13 Keynote Lectures and 40 Theme Lectures. There are two new ESC Titular Member countries: Azerbaijan Republic, represented by Gurban Yetirmishli; and Georgia, with Observer status, represented by Tamaz Chelidze. The week before the General Assembly (20-23 August 2014) the 2nd Young Seismology and Engineers Training Course on ‘Ambient noise measurements’ took place at the Istanbul Technical University at Maçka. There were eight lecturers at the course with 25 participants from more than 10 countries.

The next 2016 ESC conference will be in Trieste, Italy.

### **The Latin American and Caribbean Seismological Commission (LACSC) meetings**

Following the resolution passed at the General Assembly in Melbourne the Latin American and Caribbean Seismological Commission (LACSC) of IASPEI was formed at a meeting in Lima, Peru, on September 24, 2012, during the Seismology Symposium of the Geological Congress of Peru. M Assumpcao, IASPEI Exec member, attended the meeting and took an active role in the LACSC formation.

#### *LACSC2014, Bogota, Colombia*

LACSC held its first General Assembly in Bogota, Colombia, during July 23-25. More than 230 participants from 25 different countries presented 242 papers. Three simultaneous sessions had 149 oral presentations. 93 posters were displayed in the Exhibit Hall. The meeting fully accomplished the main LACSC goals: to establish in the Latin American community a framework for discussions, collaborations, and new acquaintances, besides motivating seismology students and young scientists. 65 students accounted for 27% of the papers. Very few no-shows were noticed in the oral sessions. Partial travel support from IUGG and IASPEI was given to 24 students and young scientists.

The next LACSC Regional Assembly will be held in Costa Rica in 2016.

### **The African Seismological Commission (AfSC) meetings**

The African Seismological Commission (AfSC) was launched on the 22 January 2014 during an Africa-Array workshop held at WITS University in Johannesburg, South Africa. The meeting was well attended and an attendance register was circulated in order to build a contact database of all interested

parties. There were representatives from 21 African countries at the meeting: Algeria, Ethiopia, Madagascar, Ghana, Malawi, Zimbabwe, Zambia, Angola, Egypt, Senegal, Morocco, Libya, Nigeria, Cameroon, DR Congo, Tanzania, Mozambique, South Africa, Cape Verde Republic, Botswana and Rwanda. The meeting was opened by the IASPEI President, Domenico Giardini, and Secretary General/Treasurer, Peter Suhadolc. Due to the small number of IUGG members within Africa, the adopted statutes are valid temporarily and will be reassessed in 2018.

#### **Other major initiatives with IASPEI Participation**

##### *Symposium on the Effects of Surface Geology on Seismic Motion*

The 4th International IASPEI/IAEE Symposium on the Effects of Surface Geology on Seismic Motion (ESG4) was held at the University of California Santa Barbara from August 23 - 26, 2011, and organized by Ralph Archuleta. It included six plenary sessions.

##### *IASPEI-IAG-IAGA Monitoring crustal deformation and the ionosphere by GPS in the Caribbean project*

In the frame of the IUGG Grants Program, the project *Monitoring crustal deformation and the ionosphere by GPS in the Caribbean* was given a grant for the term 2012-2014. This project is further sponsored by IASPEI, IAG, and IAGA. The main objective of this initiative is to invite the Caribbean countries to participate actively in geodetic and geophysical projects going on in the Central and South American region, in order to enable the use of the acquired data for practice and science in their countries, and to promote geosciences. This includes capacity building activities providing the basis for profound education and sustainable development as well as the establishment of international and interdisciplinary contacts to participate in research projects at regional and global scales. According to this, a capacity building called *School on Reference Systems, Crustal Deformation and Ionosphere Monitoring* was carried out in Panama City, from October 21 to 23, 2013. 145 participants from 28 countries attended the School. An extension of the Project duration was approved by IUGG.

##### *Global Earthquake Model (GEM)*

The GEM program, initiated by the OECD in 2009 and managed by the Secretariat located in Pavia (Italy), completed its first 5-year implementation phase in 2013, and is moving now to more engineering aspects of seismic hazard and risk in its second phase, initiated in 2014. The open-access OpenQuake software for hazard and risk

assessment has been released and is available online to the scientific community. Five GEM Global Components have been completed in 2013-2014 with the participation of IASPEI experts and producing new global standards of high interest for the whole IASPEI community:

- the *ISC-GEM Global Instrumental Earthquake Catalogue*, with more than 20,000 events covering 110 years of seismic history in a highly homogenous way (IASPEI organized the Scientific Advisory Board),
- the *Global Geodetic Strain Rate model*,
- the global database of active faults and seismic sources (*Faulted Earth*),
- the *Global Earthquake History* database and
- the compilation of *Global Ground-Motion Prediction Equations*.

GEM will complete a global hazard model by end 2015, including also the results of regional projects such as SHARE (Europe), EMMIE (Middle-East) and EMCA (Central Asia). Domenico Giardini, IASPEI President and GEM founding member, attended several Board meetings on behalf of IASPEI.

#### **Other IASPEI-supported meetings**

IASPEI has sponsored (on its own or via an IUGG grant) the following workshops/symposiums:

- *Session S4.6 of Seismotectonics and Seismic Hazards in Africa*, a session at the CAG23, 7 - 14 January, 2011, Johannesburg, South Africa, was sponsored by IASPEI. IASPEI support went to a student from the Ethiopia Geophysical Observatory.
- International Symposium on "*Advances in Earthquake Science-2011*" held at the Institute of Seismological Research, Raisan, Gandhinagar, India, on January 22-24, 2011, with 169 attendees of whom 15 supported by IASPEI/IUGG funds. Organized by the Institute of Seismological Research, Department of Science & Technology, Government of Gujarat.
- 12th International Workshop on *Modeling of Mantle Convection and Lithospheric Dynamics*, held in Groß Dölln (Germany) on August 20-25, 2011 with around 120 attendees. It was organized by GFZ under the auspices of the Commission on Earth structure and Geodynamics.
- International Symposium on *Geophysical Imaging with Localized Waves*, held at Sanya, Hainan Island, China on August 2011. It was organized by Ru-shan Wu

- under the auspices of the Task Group on Seismic Scattering and Heterogeneity, IASPEI Commission on Seismological Observation and Interpretation.
- International Course on “*Theory and Practice on the waveform inversion to compute the seismic moment tensor, Point- and complex-source modeling using program ISOLA*”. Held on September 2-10, 2011 in Costa Rica and organized by Ronnie Quintero (National University and Seismological and Volcanological Observatory of Costa Rica). 21 participants from Latin America attended the workshop, three of them sponsored with IASPEI funds.
  - *The Magmatic Rifting and Active Volcanism Conference* was held in Addis Ababa, Ethiopia, 11-13 January 2012. More than 200 scientists from across the planet gathered to discuss their latest findings on the causes and impact of magmatic rifting and active volcanism in a variety of tectonic settings.
  - ECGS 2012: *Earthquake source physics on various scales*. This workshop was organized by the European Center for Geodynamics and Seismology and held during three days, from 3 October 2012 until 5 October 2012, at the Alvisse Parc Hotel in Luxembourg City.
  - *Latin American Seismology Symposium*. Held in Peru, it was the venue where the Latin American and Caribbean Seismological Commission (LACSC) was formed.
  - The 13th International Workshop on *Modelling of Mantle and Lithosphere Dynamics*, held in Norway at Klækken Hotel in the vicinity of Oslo. 95 scientists attended the workshop, among which 32 graduate students and 17 postdoctoral researchers, from Europe, North America and Japan. Thirteen keynote speakers gave overviews and discussed latest developments in subduction dynamics, plume dynamics, numerical techniques, surface and deep processes and dynamics of planetary interiors.
  - IRIS Seismological Workshop *Managing Waveform Data and Related Metadata for Seismic Networks*, Kuwait, January 14-18, 2013. More information can be found at [http://www.iris.edu/workshops/2013/kuwait\\_metadata/](http://www.iris.edu/workshops/2013/kuwait_metadata/).
  - The International Workshop *Training course in full waveform inversion for moment tensors and multiple source models* was held at Brasilia University in December, 2013, organized by the

Seismological Observatory. 20 Latin American geoscientists from eight different countries attended the course.

- *Mega earthquakes and tsunamis in subduction-zones: forecasting approaches and implications for hazard assessment*, Rhodes, Greece, 6-8 October 2014.
- Special Symposium – *Four paradigms in predicting extremes: Legacy of Vladimir I. Keilis-Borok*, Merida, Yucatan, Mexico, 2-4 June 2014.

### Scientific Programmes, Projects, Publications

The IDEA (International Digital Earthquake Archives) project of the Committee for Preservation of WWSSN and Historical Seismograms (also called simply *Seismoarchives: Seismogram Archives of Significant Earthquakes of the World*), under the guidance of Willie Lee, has achieved significant progress in this quadriennium. IRIS is archiving the scanned seismograms.

Several projects have been completed and are in progress, among the latter: *Project for the preservation, by scanning, of the old Batavia seismograms*, funded by the Earth Observatory of Singapore (EOS) in cooperation with the Meteorological, Climatological and Geophysical Agency of Indonesia (BMKG).

The IUGG-funded IASPEI-ISC Project Networking of world seismologists (*Improving Geophysical Science Link to the Society during Natural Extreme Events, Especially in Developing Countries*) was completed within this quadriennium. IASPEI and ISC have developed and are maintaining a worldwide registry of seismologists & geophysicists willing to serve as a point of contact in countries with and without affiliation to IUGG. This registry is available for scientific & research institutions, governmental bodies, charitable and relief organizations and media following natural extreme events such as earthquakes and tsunamis.

### Publications

#### *IASPEI New Manual of Seismological Observatory Practice (2nd edition) on the Web*

Some 2,000 hard copies of the first printed edition of the IASPEI New Manual of Seismological Observatory Practice (NMSOP 2002) are currently in use in more than 100 countries at seismological observatories, data and analysis centers, in teaching, research, and field applications, used as basic material in national and international seismology training courses, or by private enterprises and individual scientists.

In 2014, a rigorously updated and amended electronic second edition, NMSOP-2, was completed and put online, thanks to the efforts of Peter Borman. This version, as well as future ones, are professionally maintained, further developed and edited by the GFZ German Research Centre for Geosciences under a long-term commitment, the auspices of IASPEI and its Commission on Seismological Observation and Interpretation (CoSOI). All versions, including the slightly corrected 2009 electronic version of the first edition, are freely available and downloadable via <http://nmsop.gfz-potsdam.de>. This Website is mirrored by IASPEI (<http://www.iaspei.org/projects/NMSOP.html>) and the ISC (<http://www.isc.ac.uk/standards>).

With some 2000 pages of texts and figures, plus linked sources of information, NMSOP-2 is the largest seismology E-book available to date.

The following publications are available from the IASPEI Secretariat. IASPEI on approval distributes free copies of its publications to institutional libraries in less developed countries.

- *IASPEI: Cooperation for Better Understanding of the Earth* (26-page brochure).
- *International Handbook of Earthquake and Engineering Seismology (Part A and B)*, a two-volume comprehensive review, a state-of-the-art reference for seismologists, earthquake engineers, geologists, and geophysicists. For more information, consult <http://www.academicpress.com/quake>.

### **IASPEI Newsletter**

The IASPEI Newsletter is distributed regularly as pdf file attachment to e-mails. The Newsletters are also available for downloading from the website. Apart from reports on IASPEI and its Commissions activities, it contains also special articles about anniversaries of several important seismologists of the past and obituaries for prominent scientists. 17 issues were distributed worldwide in the quadrennium 2011-2014.

### **IASPEI Website**

IASPEI has its own website [www.iaspei.org](http://www.iaspei.org). In 2011 the domain moved from the USA to a new server at BGS, UK (maintained by the webmaster Alice Walker), whereas in late 2014 the website was moved from the BGS in Edinburgh to the ISC in Thatcham (UK). The new IASPEI webmaster is now Przemek Ozgo. A complete restyling the website is to be accomplished within 2015.

### **IASPEI Medal**

IASPEI has decided to award no more frequently than biennially an IASPEI Medal for outstanding service in furthering the aims of IASPEI. The first IASPEI medal was awarded to Robin Adams during the IASPEI Scientific Assembly in Gothenburg, Sweden (2013).

Domenico Giardini, IASPEI President  
Peter Suhadolc, IASPEI Secretary General

## QUADRENNIAL REPORT OF THE INTERNATIONAL ASSOCIATION OF VOLCANOLOGY AND CHEMISTRY OF THE EARTH'S INTERIOR

### ADMINISTRATION

#### Members

In 2011, the number of IAVCEI individual members was 714, 74 of them being Life Members, while in 2014 the number of IAVCEI individual members was 2174, 82 of them being Life Members, 1676 non-donor members, and 498 donor members.

#### Webpage

In the period 2011-2014, the IAVCEI web page has been updated several times, adapting it to the corresponding evolution of the associations and constantly updating its contents.

#### Newsletters

Thirteen issues of the newsletter "IAVCEI News" have been published through the website, during the 2011-2014 period, two in 2011, four in 2012, four in 2013 and three in 2014

#### IAVCEI Executive Committee activities

During the 2011-2014 period, the Executive Committee of IAVCEI has conducted the following activities:

Election of new Executive Members for the period 2011-2015 resulting elected the following IAVCEI members:

President: Ray Cas (Australia)  
Past-President: Setsuya Nakada (Japan)  
Secretary General: Joan Martí (Spain)  
Vice-President: Stephen Self (USA/UK)  
Vice-President: Hugo Delgado (México)  
Member: Patricia Mottes (Equador)  
Member: Karoly Nemeth (New Zealand)  
Member: Greg Valentine (USA)  
Member: Hiroshi Shinohara (Japan)  
Editor-in-Chief Bulletin of Volcanology: James White

- Revision and updating of the IAVCEI Statutes and by-Laws, which were approved by the IUGG Council during the IUGG GA held in Melbourne in June/July.
- Meetings of the past EC and the new EC during the IUGG GA held in Melbourne in June/July.
- Revision of IAVCEI Finances, funding support, and potential funding sources and strategies.

- Publication in the IAVCEI website of the new regulation to become member, in which the obligation of contributing with a membership has been removed
- The President (past and new) and the SG participated in the IUGG EC meetings held in Melbourne (Australia) in June/July where IUGG matters for the next period were discussed.
- A revision of the IAVCEI Commissions and Working Groups has been conducted by the two Vice-Presidents and approved by the EC, in which active commissions have been identified and several inactive commissions have been deactivated.
- The Editorial Board of Bulletin of Volcanology has been completely reorganised.
- Informal meetings of EC members who attended the different IAVCEI meetings organised during this period attended to discuss IAVCEI matters and future plans.
- Full revision of IAVCEI Finances, funding support, and potential funding sources and strategies.
- Official EC meeting during the IAVCEI Scientific Program for the Scientific Assembly that was held in Kagoshima (Japan) in June 2013.
- Preparation of the Scientific Program for the IAVCEI GA to be held in Prague 2015 during the IUGG GA.
- Nomination process (2014-2015) for new members of the EC for the period 2015-2019.
- Discussion on the current state of IAVCEI and its relationships with IUGG:
  - o Adoption of the Principle of Freedom of Participation in Learned Societies
  - o Submission of Proposal to Modernise IUGG and ICSU to IUGG and ICSU, focussing on adoption of self governance of the associations
  - o Agreement to modernise and completely revise IAVCEI Statutes
  - o Agreement of the need to reintroduce compulsory individual membership fees along the lines of the AGU membership fee structure, to ensure the dramatic decline in financial reserves between end 2013 and 2014 is arrested

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Quadrennial Reports of the IUGG Associations and Union Commissions

- Conducted plebiscite on the future affiliation be IAVCEI and IUGG should differences between the two organisations on the right to self-governance not be resolved. Remarkably 664 members voted in this voluntary plebiscite and even more remarkably 90% voted to leave IUGG if necessary if the differences were not resolved by the Prague IUGG GA.
- Call for nominations for Wager Medal and George Walker Award to be presented at IAVCEI 2015 GA.

#### Foreseen activities for 2015

- Election of the new EC members for the period 2015-2019
- Publication of 4 IAVCEI newsletters
- Revision of Statutes and By Laws
- The senior members of the IAVCEI EC will draft new statutes for IAVCEI that accurately reflect the current governance practices of IAVCEI, which will be submitted to the members of IAVCEI at the IAVCEI Awards and Business meeting at the IAVCEI GA during the IUGG2015 GA in Prague in 2015.

#### IAVCEI awards

During the IAVCEI Scientific Assembly 2013 held in Kagoshima, Japan, on July 20-24, 2013, we celebrated the awarding ceremony.

#### IAVCEI Medal Awardees

- Kraft Medal: Shigeo Aramaki (Japan)
- Thorarinsson Medal: Barry Voight (USA)
- Wager Medal: Antonio Costa (Italy) and Fidel Costa (Singapore)
- George Walker Award: Heather Wright (USA)

#### New IAVCEI Honorary members:

- Prof. Servando de la Cruz-Reyna (Mexico)
- Prof. Sergei Fedotov (Russia)
- Prof. Grant Heiken (USA)
- Prof. Izumi Yokoyama (Japan)

#### Meetings, workshops and courses

During the 2011-2014 period, IAVCEI supported activities including a large number of workshops, conferences, meetings, and summer schools, all supported by at least one of the IAVCEI associations or directly by its EC. These are:

- IAVCEI General Assembly, held during the XXV-IUGG General Assembly, Melbourne, Australia, 28 June – 7 July 2011
- Workshop on Submarine and emergent volcanic arcs and associated volcano-sedimentary basins: facies models, petrology and volcano-tectonics, 2-7 May, 2011, Cabo de Gata, Spain <http://www.ija.csic.es/cabodegata>
- The XVIII. Congress of INQUA (International Union for Quaternary Research) Bern (Switzerland), 21-27 July 2011
- CONFERENCE ON REMOTE NATURAL HAZARDS AND ENVIRONMENTAL CHANGE, 28 - 29 July 2011, National University of Singapore, Singapore
- VOLCANO OBSERVATORY BEST PRACTICES WORKSHOP: ERUPTION FORECASTING, Erice, Italy, 11-15 September, Sponsored by IAVCEI
- 11th Field Workshop on Volcanic Gases Kamchatka, Russia, September 2011. Organised by the Commission on Volcanic Gases
- IAVCEI - IAS 4th International Maar Conference: a multidisciplinary congress on monogenetic volcanism 2012: Auckland, New Zealand, 20 – 24 February, 2012 Auckland, New Zealand <http://www.cvent.com/events/4th-international-maar-conference/event-summary-8da8b43ec50c46f3ad4276879992c4aa.aspx?i=90ac4a22-0aa2-4d9f-a5df-63c4c154bbb9>
- 1st International Congress on management and awareness in protected volcanic landscapes 21-25 May, 2012, Olot, Spain, [http://www.volcandpark1.com/images/documents/abstracts\\_vp\\_2012.pdf](http://www.volcandpark1.com/images/documents/abstracts_vp_2012.pdf)
- AGU Chapman Conference on Volcanism and the Atmosphere, 11– 15 June 2012, Selfoss, Iceland, <http://www.agu.org/meetings/chapman/2012/bcall/program/index.php>
- 4th International Workshop on Collapse Calderas (Vulsini, Italy), 23 – 29 September 2012, Vulsini, Italy, [http://www.iavcei.org/documents/CCW2012\\_ABSTRACT\\_BOOK.pdf](http://www.iavcei.org/documents/CCW2012_ABSTRACT_BOOK.pdf)
- EMSEV-2012 in Japan, 1-5 October 2012, Japan <http://www.emsev-iugg.org/gotemba/>
- Hopi Buttes Volcanic Field Workshop: Interpreting maar-diatreme volcanism using base to top exposures, syn-eruptive surface deposits and country-rock strata,

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Quadrennial Reports of the IUGG Associations and Union Commissions

- 21– 27 October 2012, New Zealand, <http://www.otago.ac.nz/geology/calendar/hoپی buttes 2012/index.html>
- Cities on Volcanoes 7, Colima 2012, 18-23 November 2012, Mexico, [www.citiesonvolcanoes7.com](http://www.citiesonvolcanoes7.com)
- BASALT: Link between rift, tectonism and intracontinental volcanism – May 2013, Saxony, Germany, [www.senckenberg.de/basalt2013](http://www.senckenberg.de/basalt2013), Sponsored by the IAVCEI Commission on Monogenetic Volcanism and Volcanogenic Sediments
- International workshop Pan-American Advanced Studies Institute: Magma-Tectonic Interactions in the Americas, León, Nicaragua, 5-17 May 2013
- 8th Workshop on Volcanic Lakes, Japan 2013, Aso volcano, Kumamoto and Noboribetsu spa, Hokkaido Japan, 25th July to 31st July 2013, <http://www.sc.u-tokai.ac.jp/ohbalab/English/CVL2013/index.html>
- IAVCEI Scientific Assembly - 2013: Forecasting Volcanic Activity: reading and translating the messages of nature for society (Kagoshima, Japan) Date: 20-24 July, 2013, Venue: Kagoshima Public Access Center, Kagoshima City, Japan, <http://www.iavcei2013.com>
- 2nd VOBP – Volcano Observatory Best Practices workshop “Communicating Hazards”, Erice, Sicily, 2 – 6 November, 2013
- 2nd workshop on Ash Dispersal Forecast and Civil Aviation, (with support and sponsoring from Univ. of Geneva, IAVCEI, IUGG, WMO, ICAO and U.K. Met. Office), WMO headquarters, 18-20 November 2013. <http://www.unige.ch/sciences/terre/minerale/CERG/Workshop2.html>
- 2nd International Conference on Active Volcanism & Continental Rifting with special focus on the Kivu rift zone (AVCOR2013), 12-14 November 2013, Hotel Serena, Gisenyi, Rwanda
- Course: Italian Association for Volcanology (AIV) 2013 International School in Volcanology: The Explosive Volcanism of Mafic-Alkaline Magmas
- 2nd International Post-graduate Course of Volcanology, Olot, Girona, Spain, 14-27 October 2013, [http://www.gvb-csic.es/CURSO/CURSO\\_OLOT/Home.html](http://www.gvb-csic.es/CURSO/CURSO_OLOT/Home.html)
- XX Central Andes Volcanological Field Course, Universidad Nacional de Salta, Salta, Argentina, 11-21 November 2013, <http://www.unsa.edu.ar/~geonorte/cursos/curvol2013.htm>
- 1st International Workshop on Volcano Geology, 7-11 July 2014, Madeira, Portugal [http://www.iavcei.org/IAVCEI\\_meetings/MADEIRA/Workshop\\_Volcano\\_Geology/Welcome.html](http://www.iavcei.org/IAVCEI_meetings/MADEIRA/Workshop_Volcano_Geology/Welcome.html)
- Tephra 2014 - Maximizing the potential of tephra for multidisciplinary science, 3-7 August 2014, Portland State University, Portland, Oregon, USA, <http://www.geohazards.buffalo.edu/documents/Tephra2014.shtml>
- Cities on Volcanoes 8, 9-13 September 2014, Yogyakarta, Indonesia, [www.citiesonvolcanoes8.com](http://www.citiesonvolcanoes8.com)
- 12th Field Workshop on Volcanic Gases, 17-25 November 2014, Atacama, Chile, <http://iavcei12.campoalto.cl/>
- Georisk 2014: “IMPROVING GEOPHYSICAL RISK ASSESSMENT, FORECASTING, AND MANAGEMENT”, 18-21 November 2014, Madrid, Spain, <http://www.georisk2014.com>
- 5th International Maar Conference (Mexico), 17-22 November 2014, Queretaro, Mexico <http://maar2014.geociencias.unam.mx/>
- 5th V Collapse Caldera Workshop "Caldera Volcanism and Society", 7-11 December 2014, Taupo, New Zealand
- 3<sup>rd</sup> Course: Italian Association for Volcanology (AIV) 2014 International School in Volcanology: The Explosive Volcanism of Mafic-Alkaline Magmas
- 3<sup>rd</sup> International Post-graduate Course of Volcanology, Olot, Girona, Spain, 13-26 October 2014, [http://www.gvb-csic.es/CURSO/CURSO\\_OLOT/Home.html](http://www.gvb-csic.es/CURSO/CURSO_OLOT/Home.html)
- XX1 Central Andes Volcanological Field Course, Universidad Nacional de Salta, Salta, Argentina, 11-21 November 2014, <http://www.unsa.edu.ar/~geonorte/cursos/curvol2014.htm>

**Forthcoming meetings, workshops and courses in 2015**

- 4th INTERNATIONAL POST-GRADUATE COURSE IN VOLCANOLOGY (in Spanish), 12-25 October 2015, Olot, Spain, e-mail: [agevertraver@gmail.com](mailto:agevertraver@gmail.com), website: <http://www.gvb-csic.es/CURSO/Home.html>



XXVI General Assembly of the International Union of Geodesy and Geophysics  
Quadrennial Reports of the IUGG Associations and Union Commissions

- IAVCEI General Assembly - 2015  
(Prague, Czech Republic), June 22 - July  
2, 2015, Prague Congress Centre, website:  
<http://www.iugg2015prague.com>
- 2<sup>nd</sup> VOLCANDPARK Conference,  
Lanzarote, Canary Islands, Spain, 16-20  
November 2015, organised by the

IAVCEI Commission on Volcano  
Geoheritage and Protected Volcanic  
Landscapes (VGPL),  
<http://www.volcandpark2.com>

Ray Cay, IAVCEI President  
Joan Martí, IAVCEI Secretary General

## QUADRENNIAL REPORTS OF THE UNION COMMISSIONS

### QUADRENNIAL REPORT OF THE IUGG COMMISSION ON CLIMATE AND ENVIRONMENTAL CHANGE

#### INTRODUCTION

The Union Commission on Climatic and Environmental Change (CCEC) was established by the Executive Committee of IUGG in June 2012 in order to promote the advancement of scientific understanding of climatic and environmental change, to boost research in reducing uncertainties in climate and environmental models, to define criteria for collaborative trans-disciplinary research on climate and environmental change, to fulfil the objectives of IUGG and its associations, to provide an all-Union perspective on climatic and environmental change, and to make available the knowledge and insights developed through scientific research to the benefit of society and planet Earth, including consideration of the science of global change, related vulnerability and impacts, and potential responses.

CCEC provides a focus for IUGG scientific expertise in climate and environment related areas across the breadth of all IUGG disciplines and associations. CCEC enables the breadth of IUGG expertise to be brought to bear at the global level through collaborating with, and underpinning the work of ICSU and other international organizations. It also enables the geographic spread of IUGG expertise to be brought to bear at the local level through involvement with national bodies in the organization of meetings and other activities.

#### Objectives

- To build scientific capacity for responsibly addressing the broad, multi-disciplinary issues involved in climatic and environmental change;
- To provide useful information, understanding, and support to the public and governmental organizations;
- To interact and cooperate with outside activities that would benefit from the capabilities and resources of the IUGG Associations; and
- To strengthen links across the Scientific Associations within IUGG, to build new external links to organizations outside IUGG, to strengthen existing links to external organizations and to promote IUGG's contribution to global change research.

#### ADMINISTRATION

The following are current officers of the Commission:

Chair: Tom Beer (Australia)

Vice Chair: Jianping Li (China)

Secretary-Treasurer: Keith Alverson (USA)

Administrative activities during 2012 included approval of a logo and the development of a web site <http://ccec-iugg.org> that was launched on 14 January 2013. Information about CCEC is also available on the main IUGG web page at <http://www.iugg.org/about/commissions/ccec.php>

#### ACTIVITIES

Summarized, the work of CCEC during the past quadrennium was:

1. To prepare an IUGG position statement for the new ICSU Program, Future Earth.
2. To hold the Inaugural CCEC Meeting and Future Earth workshop in Beijing in April 2014.
3. To advance the Weather, Climate and Food Security (WeatCliFS) initiative.
4. To act as the IUGG liaison for the WMO Global Framework for Climate Services.
5. To organise a session (Session U1) at the IUGG General Assembly in Prague, and to hold a business meeting of CCEC at the General Assembly.

#### Future Earth

CCEC prepared a statement on possible IUGG involvement in Future Earth and supplied it to the IUGG Secretariat. The statement is available on the CCEC web site at:

<http://ccec-iugg.org/content/iugg-briefing-document-future-earth>

The statement makes the following points:

- IAMAS has issued a statement in relation to Future Earth.
- IAHS envisages that Panta Rhei could be a Future Earth activity.
- CCEC envisages that WeatCliFS could be a Future Earth activity.

The relationship between IUGG and Future Earth could be undertaken by CCEC being accorded the status of a Future Earth Committee, analogous to a National Committee.

In Appendix 1, the original text prepared by CCEC is given which was supplied to the IUGG Secretariat and which differs slightly from the final version of the IUGG.

### First CCEC Meeting

The first workshop of CCEC brought together scientists from China, the United States, Japan, Denmark, Australia, France, Kenya, Luxembourg, and Turkey gathered at the Institute for Atmospheric Physics of the Chinese Academy of Sciences in Beijing from 11-12 April 2014 to discuss ways to strengthen multi-disciplinary research through internal IUGG linkages; and to examine ways to extend these links to interdisciplinary research by linking in to Future Earth (<http://www.futureearth.info/>) – a new interdisciplinary research program that is being established as a successor to the Earth System Science Partnership.

The first day of the workshop concentrated on research activities with which geophysicists can link with presentations by the Presidents of the International Union of Food Science and Technology (IUFoST), the International Society of Photogrammetry and Remote Sensing (ISPRS) and a Skype presentation by the Executive Director of Future Earth. These global perspectives were complemented by regional perspectives from the Chair of the Chinese Committee of IUGG, and from a member of the Future Earth Science Committee both of whom focused on Asian perspectives of Future Earth. The WMO and UNEP representatives to the meeting pointed out that existence of a recent international research programme, also sponsored by UNESCO, called PROVIA (Programme of Research on Climate Change Vulnerability, Impacts and Adaptation, see <http://www.unep.org/provia/>).

The second day of the workshop concentrated on scientific activities that could be used to foster internal linkages between and within the geodetic and geophysical communities. Though these are relatively straightforward and obvious in relation to meteorology and atmospheric sciences-through climate change; and in relation to the hydrological sciences through Panta Rhei it was noted that disparate fields such as geodesy can have links to hydrology through the ability of satellites such as GRACE accurately to map the gravity field, and hence the total radial mass at a given point on the earth's surface. Changes in the total liquid water content can thus be accurately deduced – though its partition into surface and ground water remains as a field of enquiry.

The participants identified six areas of possible linkages:

- Water Resources (IAHS/IAG)
- East Asia and the Monsoon (IAMAS/IAHS)
- Sea Level Rise (IAPSO/IACS)
- Space Weather and Sustainability (IAGA / IAMAS)
- Climate Extremes and Food (IAMAS/IAVCEI)
- Urban Risks

The workshop was sponsored by CCEC and hosted by the State Key Laboratory of Numerical Modelling for Atmospheric Sciences and Geophysical Fluid Dynamics (LASG), Institute of Atmospheric Physics (IAP); It was proposed and generously co-sponsored by China Association for Science and Technology (CAST), National Natural-Science Foundation of China (NSFC), Chinese Academy of Sciences (CAS), International Union of Geodesy and Geophysics (IUGG), Chinese National Committee for IUGG (CNC-IUGG), International Association of Meteorology and Atmospheric Sciences (IAMAS), The International Commission on Climate (ICCL) and National Basic research Program of China (973 Program).

A report of the meeting was published in EOS as: Beer, T., Li, J-P., and Alverson, K (2014) Strengthening Multidisciplinary Research on Climate and Environmental Change, EOS, Transactions of the American Geophysical Union, 95, 307.

### Weather, Climate and Food Security (WeatCliFS)

CCEC was instrumental in persuading a consortium of international scientific unions to undertake an initiative on weather, climate and food security.

WeatCliFS intends to catalyse an integration of activity of many existing programs on hydrometeorology, on natural hazards and extreme events, on agriculture and food security and on disaster risk reduction to develop a research program through networking. To this end, specially targeted advanced research workshops and symposia were held in each of the geographic areas covered by the ICSU Regional Offices, to draw together experts working on relevant issues. Scientific meetings incorporating WeatCliFS in 2013 and 2014 were:

- AGU Meeting of the Americas, <http://moa.agu.org/2013/>, 14-17 May 2013, Cancun, Mexico

- First Africa Food Security Conference, <http://www.foodsec.aaknet.org/>, 20-21 August 2013, Nairobi, Kenya
- AOGS Annual Meeting, <http://www.asiaoceania.org/aogs2013/>, 24-28 June 2013, Brisbane, Australia
- General Assembly of IUNS, <http://www.icn2013.com/>, 20 September 2013, Granada, Spain
- General Assembly of IUFoST, 17-21 August 2014, Montreal, Canada
- General Assembly of ICSU, 1-3 September 2014, Auckland, New Zealand

At the WeatCliFS session (U52A) of the AGU Meeting of the Americas the quality of the speakers and of their papers was outstanding, and the session was attended by an audience that varied from 50 to 70 people. The paper on Ancient Mayan Agriculture, presented by Mark Pagani, was the highlight of the session.

The WeatCliFS session (IG12) of the AOGS Annual Meeting in Brisbane was convened by James Terry (National University of Singapore) and Tom Beer. Papers were given by Albert McGill, representing IUFoST, the International Union of Food Science and Technology; and Mark Howden of the CSIRO Climate Adaptation Flagship and Tom Beer (CCEC). A panel discussion was held following the three presentations. Audience participation was excellent (about 25 people attended).

At the IUNS 20th International Congress of Nutrition held in Granada, Spain, 15-20 September 2013 the WeatCliFS Session was linked to the IUNS Task Force on Urbanization, Climate Change and Nutrition Insecurity (IUNS Task Force T7-7.4). This Task Force was established specifically to make the connection between IUNS and the ICSU Program on Health and Well-Being in the Changing Urban Environment, see <http://www.icsu.org/what-we-do/interdisciplinary-bodies/health-and-wellbeing-in-the-changing-urban-environment>. The combined symposium under the title Urbanization, Climate Change and Nutrition Insecurity was chaired by Godwin D. Ndossi, Tanzania and Osman Galal, University of California, USA. The program consisted of five speakers in total with two speakers from the WeatCliFS initiative (McGill, Beer) and three speakers from the IUNS Task Force (Atinmo, Tacoli and Wahlqvist): Presentations were also made by McGill and Beer at the IUFoST General Assembly in Montreal during August 2014, and this was followed by a poster exhibit and a presentation by CCEC Chair, Dr Tom Beer, to the ICSU General Assembly, as summarised in Appendix 2.

### **WMO Global Framework for Climate Services (GFCS)**

It is worth recalling the aims of the GFCS. The official wording states that it is:

“a UN-led initiative spearheaded by WMO to guide the development and application of science-based climate information and services in support of decision-making. The GFCS has four initial priority sectors: agriculture and food security, water, health and disaster risk reduction. The vision of the GFCS is to enable society to better manage the risks and opportunities arising from climate variability and change, especially for those who are most vulnerable to such risks. This will be done through development and incorporation of science-based climate information and prediction into planning, policy and practice. The greatest value of the GFCS will occur incrementally through the delivery of a multitude of climate services at national or local levels.”

Arthur Askew, IUGG liaison to WMO, has undertaken the role of GFCS liaison on behalf of CCEC. He attended the Meeting on the Implementation Coordination of the Global Framework for Climate Services (GFCS), Geneva, 28 September to 1 October 2014. All the papers and PowerPoint presentations presented at the meeting can be viewed at <http://gfcs.wmo.int/node/573>

He noted, amongst other points that: “it is very difficult to identify exactly how the Union can contribute and what it would gain by doing so. The practical implementation of the Framework is focused on the 16 least developed countries mentioned above, the aim being to strengthen their ability to develop and use climate-related information/products. Many of our activities are relevant to these challenges but actually converting this relevance into action in a particular country is a major challenge for our Associations. “

IUGG submitted two projects onto the list of GFCS projects: the World Glacier Monitoring Service of IACS and Panta Rhei of IAHS.

Arthur Askew met with Roger Pulwarty, the Director of NOAA's National Integrated Drought Information System based in Boulder, Colorado, and agreed that that, while high quality science led the work on climate change and was widely recognized as doing so, the scientific community afforded far less attention to the science needed to support the development and provision of climate services. Research is essential for improving the climate services that are needed if communities and countries are to adapt to the changing climate and this research cannot be conducted without the close involvement of the communities it should serve. It

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Quadrennial Reports of the IUGG Associations and Union Commissions

needs to be geared to every-day problems faced by farmers, water resource and land-use managers, disaster risk reduction communities and national planners whose challenges differ widely from country to country. Such work attracts little funding in developed countries and no funds at all in the developing world and yet is constantly identified as critical to successful adaptation. The challenge is to bring this lack of support to the attention of those in a position to provide it, while at the same time energizing the scientific community to see such work as worthy of its attention.

The Assembly in Prague offers an excellent opportunity to open this question for debate within the IUGG community. CCEC has sponsored a one-day/half-day open workshop convened by Arthur Askew and Roger Pulwarty.

Arthur also attended the meeting of the GFCS Partner Advisory Committee that in Rome on 27 and 28 October. Further information on IUGG's link with the GFCS is contained in the report of the IUGG Liaison Officers to WMO.

**Session U1 of the IUGG General Assembly in Prague**

The Scientific Program Committee of the IUGG General Assembly accepted a CCEC proposal to organise a Union symposium (Symposium U1) to be held on 23 June 2015 titled Future Earth and

Sustainability with the following invited speakers (in alphabetical order)

- Guy Brasseur, NCAR, Boulder, USA (Chair, WCRP JSC) - Climatic and Environmental Change
- Bruce M. Campbell (Director, CCAFS) International Center for Tropical Agriculture (CIAT), c/o University of Copenhagen, Copenhagen, Denmark - Climate Change and Food Security
- David Johnston (Chair, IRDR), GNS Science/Massey University, Wellington, New Zealand - Future Earth and Disasters
- Pavel Kabat (Director, IIASA), International Institute for Applied Systems Analysis (IIASA) Laxenburg, Austria - A Systems Approach to Future Earth
- Alberto Montanari (Director, Panta Rhei), University of Bologna, Bologna, Italy - Urbanisation and Water Resources
- Guoxiong Wu (ICSU Executive Board), LASG Institute of Atmospheric Physics, Beijing, China - Meteorology and Climate of Future Earth
- Tetsuzo Yasunari (IAMAS Executive Member), Institute for Humanity and Nature (RIHN), Kyoto, Japan - Monsoon Asia and Future Earth

Tom Beer, CCEC Chair  
Keith Alverson, CCEC Secretary

## APPENDIX 1

### IUGG and Future Earth

The following text was prepared by CCEC and supplied to the IUGG Secretariat. The final version of the IUGG statement differs slightly from the version given below.

#### Possible IUGG Contributions to Future Earth

##### Introduction

IUGG consists of eight international scientific associations and a number of scientific commissions. They were all requested to provide information as to their possible interaction with Future Earth. In some cases the associations point out that they can see areas of relevant science but that their plans are at an early stage.

For example:

In the case of IACS, the International Association of Cryospheric Sciences, their ideas are still in very early stages of development. IACS is thinking of installing working groups on topics such as Glacier Mass Balance as well as Dust & Black Carbon on glaciers (and snow). These activities are in a very early stage of planning but may both have societal impacts as outcomes and could thus lead to potential contributions to Future Earth.

IAGA, The International Association of Geomagnetism and Aeronomy, has discussed how IAGA science is involved and noted that currents flowing and magnetic fields generated in the magnetosphere and ionosphere can disrupt satellite operations and communications on which modern technology-based life depends, and that the weakening of the magnetic field generated in the Earth's deep interior has increased the impact of this disruption locally (the 'South Atlantic Anomaly'), and threatens to do so globally. IAGA also notes that the question as to whether solar magnetic activity impacts the Earth's climate is not fully resolved.

The Future Earth activities of the International Association of Geodesy (IAG) are coordinated by its Global Geodetic Observing System (GGOS, [www.ggos.org](http://www.ggos.org)). GGOS Theme 2 is dedicated to new technologies for disaster monitoring and management, and GGOS Theme 3 is studying sea level change, variability and forecasting. The International Altimetry Service (IAS) is operating an Open Altimeter Database ([openadb.dgfi.badw.de](http://openadb.dgfi.badw.de)) providing global and regional sea level changes derived from various satellite altimetry missions. Several IAG Working Groups are dedicated to atmosphere (ionosphere and troposphere), hydrosphere and cryosphere studies using data from satellite gravity field missions and geometric surface scanning.

##### IUGG – Projects of Relevance to Future Earth

In the case of IAMAS, the International Association of Meteorology and Atmospheric Sciences these plans have advanced to a sufficient stage that IAMAS has passed a resolution

[http://www.iamas.org/Pdfs/IAMAS-Resolution\\_FutureEarth-2013.pdf](http://www.iamas.org/Pdfs/IAMAS-Resolution_FutureEarth-2013.pdf)

IAHS, the International Association of Hydrological Sciences, and the IUGG Commission on Climate and Environmental Change (CCEC) are further advanced in activities that they consider would provide useful contributions to Future Earth. This document thus concentrates on these two activities.

##### Panta Rhei

The main IAHS contribution to Future Earth is Panta Rhei that is a decade-long research program that was launched in July 2013. Information about Panta Rhei can be found at their web site:

<http://www.iahs.info/pantarhei/>

that provides links to the call for proposals for research themes and working groups (due by 31 January 2014), the science plan, agenda-setting paper and the key science questions.

The Chair of Panta Rhei is Prof. Alberto Montanari of the University of Bologna, and the leadership is presently structured in terms of three Targets:

- Target 1 - Understanding:
- Target 2 - Estimation and prediction:
- Target 3 - Science in Practice:

whose rationale is presented in the science plan and the agenda-setting paper available at:

<http://www.iahs.info/pantarhei/?q=node/2>

The activities of Panta Rhei aim to address the following science questions:

1. What are the key gaps in our understanding of hydrologic change?
2. How do changes in hydrological systems interact with and feedback on natural and social systems driven by hydrological processes?
3. What are the boundaries of coupled hydrological and societal systems? What are the external drivers and internal system properties of change? How can boundary conditions be defined for the future?
4. How can we use improved knowledge of coupled hydrological-social systems to improve model predictions, including estimation of predictive uncertainty and assessment of predictability?
5. How can we advance our monitoring and data analysis capabilities to predict and manage hydrologic change?
6. How can we support societies to adapt to changing conditions by considering the uncertainties and feedbacks between natural and human-induced hydrologic changes?

WeatCLiFS (Weather, Climate and Food Security)

The Food Security recommendations of the Rio+20 Forum on Science, Technology and Innovation for Sustainable Development included a statement that it is necessary “To understand fully how to measure, assess and reduce the impacts of production on the natural environment including climate change, recognizing that different measures of impact (e.g. water, land, biodiversity, carbon and other greenhouse gases, etc) may trade-off against each other...”

To seek to operationalise such a recommendation within the geophysical community, the IUGG Union Commission for Climate and Environmental Change (CCEC), in conjunction with the International Union of Food Science and Technology (IUFoST) and the International Union of Nutrition Sciences (IUNS) during 2013 ran a scoping activity concerning research activity in relation to weather, climate and food security.

From the broader point of view the topic addresses, *inter alia*, issues such as water, health, and agriculture and links environmental, social and economic dimensions of sustainable development in relation to the nexus between rainfall deficiency, drought, food production decline, food scarcity and famine as well as the nexus between extreme weather, disasters, food distribution and food logistics. IUNS has a particular interest in urbanisation and nutritional security and the role that climate change may play in this.

Within the IUGG community this activity brought together the specialists from IAMAS in climate and weather – especially severe weather – with the experts from cognate geophysical disciplines that produced events that would impact on food security. Thus the effects on food availability, food distribution and food logistics as a result of: volcanic eruptions were relevant to IAVCEI, earthquakes to IASPEI, floods to IAHS, landslides to IAG, avalanches to IACS, tsunamis and storm surges to IAPSO.

WeatCLiFS intends to catalyse an integration of activity of many existing programs on hydrometeorology, on natural hazards and extreme events, on agriculture and food security, on disaster risk reduction to develop a research program through networking.

IUGG-Future Earth Networking

It is to be hoped that the Scientific Committee of Future Earth (FE-SC) sees some or all of these IUGG initiatives as falling within their remit and adopt them as part of the Future Earth science program (with IUGG as the implementing agency). If this occurs, then a possible means of maintaining liaison between IUGG and Future Earth would be through CCEC.

In fact, IUGG should seek to explore the possibility of CCEC becoming a Future Earth Committee, analogous to National Committees.

The feasibility of such an idea will depend on how the relevant organisations (IUGG and Future Earth) see the role and, of course, if such a possibility were to eventuate it would require the agreement of all parties. Considerations are that if IUGG wishes to encourage internal activity related to Future Earth then having a committee, analogous to a Future Earth National Committee, may be a better way to encourage liaison than designating a single liaison officer.

A possible disadvantage of such a procedure will be that of unclear or conflicting chains of command. The suggestion is predicated on the assumption that FE-SC is willing to adopt existing IUGG activities as FE activities and thus have a method for bringing IUGG activities into FE.

## APPENDIX 2

The work of the International Union of Geodesy and Geophysics (IUGG) Commission on Climatic and Environmental Change (CCEC) was presented on 2 September 2014 to the General Assembly of the International Council for Science (ICSU) held in Auckland, New Zealand.

Dr. Tom Beer, CCEC Chair, highlighted that CCEC had taken the first steps in examining possible pluri-disciplinary research for the new Future Earth program by examining Weather, Climate and Food Security. This was done in a consortium with the IUGG, the International Union of Food Science and Technology (IUFOST), and with the International Union of Nutrition Sciences (IUNS).

Dr. Beer said that food security is more than just agriculture or food production and that there are nine areas of

relevance to food security (please see accompanying graphic).

This was illustrated by one of the revelations that emerged from this pluri-disciplinary grouping of international scientific unions: the fact that the risks associated with geophysical hazards (tsunamis, floods, landslides, hurricanes, typhoons, earthquakes, volcanoes) impinge not just on food production and agriculture, but on food distribution. In this respect the quality and quantity of the food that is available after a disaster needs to be considered. In addition, any food that is provided by emergency relief agencies also needs to be sensitive to cultural sensitivities in relation to food.

The term pluri-disciplinary had previously been used at the General Assembly to describe projects that transcend inter-disciplinarity and multi-disciplinarity.



## QUADRENNIAL REPORT OF THE IUGG COMMISSION ON MATHEMATICAL GEOPHYSICS

### SUMMARY

During 2014 the commission held the 30th biennial CMG meeting during June 2-6, 2014 in Merida, Mexico. The commission is working on 31th CMG meeting in Paris. The administration has rotated. During 2013 the CMG had co-organized and convened an educational and capacity-building workshop on Mathematics of Climate Change within the global program Mathematics of Planet Earth 2013 and two research workshops on Statistical Seismology at prime international mathematical centers. The main activity organized by CMG in 2012 was the biennial Conference on Mathematical Geophysics that took place in Edinburgh, Scotland, UK during 18-21 June 2012 at the National Museum of Scotland.

### ADMINISTRATION

The administration of CMG had rotated in the beginning of 2014, the new officers are: Chair: Yehuda Ben Zion (USA); Vice-Chairs: Einat Aharonov (Israel) and Claudia Pasquero (Italy); Secretary: Ilya Zaliapin (USA); Past Chair: Dan Rothman (USA)

Executive Committee meeting on June 21, 2012 at the University of Edinburgh, Informatics Forum, Edinburgh, UK. The meeting was attended by Yehuda Ben-Zion (President), Dan Rothman (Immediate Past President), Ilya Zaliapin (member) and the Union representatives: Matthias Holschneider (IAGA), Malcolm Sambridge (IASPEI), Gordon Swaters (IAPSO), Yulia Tchiguirinskaia (per request of Daniel Schertzer, IAHS). Agenda: 1) Selecting local organizers for CMG 2014 and CMG 2016 meetings; 2) General organization of CMG meetings; 3) Selecting IUGG representative for the IMU-IUGG-IUTAM-ICSU MPE13 Workshop.

Executive Committee meeting on June 4, 2014 in Merida, Mexico. The meeting was attended by Yehuda Ben-Zion (President), Ilya Zaliapin (Secretary), Gordon Swaters (IAPSO), and Alik Ismail-Zadeh (IUGG Secretary General). Agenda: 1) Selecting local organizing committee for CMG 2016, 2) CMG funds and sponsorship.

### ACTIVITIES (most recent first)

#### CMG biennial Meeting in Merida, June 2-6, 2014

CMG organized and conducted the 30th CMG biennial meeting that took place during June 2-6, 2014 in Merida, Yucatan, Mexico. The scientific program included 7 special sessions, including a symposium dedicated to the memory of Prof. Keilis-Borok (the founder of the commission and President of IUGG during 1987-1991) who passed away in October of 2013. Each session featured talks by several invited speakers, as well as contributed talks and posters. There were 18 invited speakers from 9 countries.

The total meeting participation was above 80 researchers, postdocs, and students. NSF supported the meeting participation by early-career scientists, providing travel funds for 12 student/postdoc participants. The social program included a day-long field trip to Chichen-Itza, as well as evening performance of local dancers and singers.

The meeting website is:

<http://eventos.iingen.unam.mx/IUGG2014/>

#### Education and capacity-building workshop on Mathematics of Climate Change, Jul 29-Aug 2, 2013

CMG had co-organized and co-conducted a Workshop on Mathematical Geophysics: "Mathematics of Climate Change, Related Hazards and Risks" during July 29-Aug 2nd at Centro de Investigación en Matemáticas (CIMAT), Guanajuato, MEXICO. The workshop was a part of the global program Mathematics of the Planet Earth 2013 (<http://mpe2013.org/>) and a satellite activity of the Mathematical Congress of Americas 2013 (<http://www.mca2013.org>).

The workshop featured 8 distinguished speakers who discussed the mathematical aspects of understanding and modeling the changing climate: Graciela Canziani (Universidad Nacional del Centro de la Provincia de Buenos Aires, Argentina), Michael Ghil (École Normale Supérieure, Paris, France), Oscar Velasco Fuentes (Centro de Investigación Científica y de Educación Superior de Ensenada, Baja California, México), Eugenia Kalnay (University of Maryland), Carlos R. Mechoso (University of California Los Angeles), George Philander (Princeton), Bala Rajaratnam (Stanford), and Eli Tsiperman (Harvard). The workshop was attended by 25 early career scientists from Latin Americas and the Caribbean, Europe, and Israel, who presented their research in a poster session and participated in round table discussions.

The scientific part of the workshop has been recorded and will be distributed to a wider audience. Workshop website:

<http://www.mca2013.org/en/workshop-on-mathematics-of-climate-change.html>

**Research workshop on Statistical Seismology, August 30-September 1, 2013**

CMG has co-organized a workshop “Statistics and Triggering of Earthquakes” during August 30-September 1, 2013 as a part of global program Mathematics of the Planet Earth 2013 at the Banff International Research Station (BIRS), <http://www.birs.ca/>.

The confirmed invited speakers are I. Zaliapin, M. Naylor, J. Fineberg, P. Johnson, D. Zigone, A. Velasco, V. Durand, X. Meng, D. Eaton, N. van der Elst. The main goal of the workshop is to build and strengthen newly emerging links between active research groups in different scientific areas – statistics/probability, mathematics, physics, geodesy and seismology – toward achieving improved predictive understanding of seismicity patterns and structures and a physical theory for earthquake dynamics. The workshop will highlight the key role of the mathematical sciences in studying seismicity dynamics in relation to properties of faults and the crust as an essential component of this interdisciplinary research endeavor. The list of invitees reflects this diversity and includes senior and junior experts from different scientific areas. The ever-increasing threat to humanity from earthquakes in industrial and highly populated areas prompts for active cross-disciplinary earthquake research and justifies the necessity of this focused workshop.

The workshop organizers are Yehuda Ben-Zion (USC – IUGG representative), Joern Davidsen (U of Calgary), and Robert Schsherbakov (U of Western Ontario). Workshop website: <http://www.birs.ca/events/2013/2-day-workshops/13w2171>

**Research workshop on Statistical Seismology, October 9-11, 2013**

CMG has co-organized a workshop “Dynamics of Seismicity, Earthquake Clustering and Patterns in Fault Networks” during October 9-11, 2013 as a part of global program Mathematics of the Planet Earth 2013 at the Statistical and Applied Mathematical Sciences Institute (SAMSI), <http://www.samsi.info/>. The confirmed invited speakers are: Egill Hauksson (Caltech), Tomas Parsons (USGS), Antoinette Tordesillas (University of Melbourne), Bala Rajaratman (Stanford), Philip Stark (Berkeley), David Harte (Statistical Research Associates, New Zealand),

Karin Dahmen (University of Illinois - Urbana-Champaign).

The main goal of the workshop is to build and strengthen newly emerging links between active research groups in different scientific areas – statistics/probability, mathematics, physics, geodesy, seismology and computer science – toward achieving a solid understanding of seismicity patterns and structures and a physical theory for earthquake dynamics. The workshop will highlight the key role of the mathematical sciences in studying seismicity dynamics in relation to properties of faults and the crust as an essential component of this interdisciplinary research endeavor.

The workshop organizers are Yehuda Ben-Zion (USC – IUGG representative), Joern Davidsen (U of Calgary), and Ilya Zaliapin (U of Nevada Reno – IUGG representative). Workshop web site: <http://www.samsi.info/workshop/2013-dynamics-seismicity-earthquake-clustering-and-patterns-fault-networks-october-9-11-2013>

**CMG biennial Meeting in Edinburgh, Scotland, June 18-21, 2012**

The main activity organized by CMG in 2012 was the biennial Conference on Mathematical Geophysics that took place in Edinburgh, Scotland, UK during 18-21 June 2012 at the National Museum of Scotland. The conference participants represented institutions from 23 countries. There were 170 registered delegates, 11 invited speakers, and 50 student participants. The conference featured 70 talks across 8 topical sessions (see below) and 110 posters in 2 sessions. A half-day field trip has been organized on the fourth day of the meeting. A business meeting of the CMG took place during the conference. Meeting website: <http://www.cmgedinburgh2012.org.uk/>

**FUTURE ACTIVITIES**

**CMG biennial meeting 2016 in Paris, France**

CMG is working on organizing the next CMG biennial meeting during Summer of 2016 in Paris, France. NSF support will be sought to support the meeting participation by early-career scientists.

Yehuda Ben-Zion, CMG Chair  
Ilya Zaliapin, CMG Secretary

## QUADRENNIAL REPORT OF THE IUGG COMMISSION ON GEOPHYSICAL RISK AND SUSTAINABILITY

### INTRODUCTION

The IUGG Commission on Geophysical Risk and Sustainability (IUGG GeoRisk Commission) established by the IUGG Bureau in August 2000 is dedicated (i) to promoting scientific studies applied to the reduction of risk from natural hazards in an increasingly urbanized world and sustainability and (ii) to reducing death and destruction from natural and technological hazards by providing hazards data and information to emergency managers, policy-makers, scientists and the general public in the most timely and effective manner as possible. This includes the integration of knowledge concerning environmental, social and economic processes. The fundamental scope of this Commission is to facilitate communications – between scientists via meetings, workshops and publications, as well as between scientists and decision makers, between scientists and the public, and between scientists and schools.

### ADMINISTRATION

#### Membership

There were some minor changes to the membership list between 2011-14 with John Labrecque replacing David Jackson as Vice-Chair and Ramesh Singh being elected as an Honorary Member. The current membership list is summarized below where five members indicated by \* are the member newly joined to the Commission in 2011 nominated by the Secretary General of their base Associations and serving as the executive committee members. Note that Paula Dunbar remains as Treasurer despite having completed 2 terms in this role. This is because a new Treasurer could not be found, despite the best efforts of the Executive Committee. Ms Dunbar has kindly agreed to remain in the role until a new Treasurer can be found.

Note that \* indicates the newly appointed members in 2011 by SG of their base Association.

Kuniyoshi Takeuchi, IAHS, Chair  
Vladimir Kossobokov, IASPEI, Vice-Chair  
John Labrecque\*, IAG, Vice-Chair  
Diana Greenslade, IAPSO, Secretary  
Paula Dunbar, IAPSO, Treasurer  
David Jackson, IASPEI, EC Member  
David Boteler\*, IAGA, EC Member  
Joan Marti\*, IAVCEI, EC Member  
Servando de la Cruz Reina\*, IAVCEI, EC Member  
Alan Thomson\*, IAGA, EC Member  
Gerd Tetzlaff, IAMAS, Member

Hermann Drewes, IAG, Member  
A. Jayawardena, IAHS, Member  
Yevgeniy Kontar, IAPSO, Member  
Susan McLean, IAGA, Member  
Kosuke Heki, IAG, Member  
Steve McNutt, IAVCEI, Member  
Martin Funk, IACS, Member  
Tom Beer, IAMAS, Honorary Member  
Alik Ismail-Zadeh, IASPEI, Honorary Member  
Ramesh Singh, IASPEI, Honorary Member  
Harsh Gupta, IASPEI, Advisory Board Member  
V. Gusiakov, IAPSO, Advisory Board Member  
Uri Shamir, IAHS, Advisory Board Member  
Gordon McBean, ICSU Advisory Board Member

#### Terms of Reference

The Terms of Reference for the Georisk Commission were modified in order to remove some ambiguities and clarify some details relating to membership of the Commission. The modified Terms of Reference were approved by the IUGG Executive Committee in September, 2013.

#### Business meetings

A Business Meeting of the GRC was held on 30<sup>th</sup> June 2011 at the Melbourne Convention Centre, during the IUGG General Assembly in Melbourne, Australia. 16 members were present. Minutes of the meeting are available on the GRC website.

A Business meeting of the Commission was held at Sandhu Conference Center, Chapman University, Orange, California, USA on 10 December 2012. Eight members were present, including four members of the Executive. Minutes of this meeting can be found on the Commission's website at <http://www.iugg-georisk.org>

An informal Business meeting of the Commission was held in the occasion of the 2<sup>nd</sup> GeoRisk Conference in Madrid on 20 November 2014. Six GRC members (Alik Ismail-Zadeh, Ramesh Singh, Joan Marti, Viacheslav Gusiakov, Yevgeniy Kontar and Kuniyoshi Takeuchi) were present and discussed the commission matters including the plan of Union Session in IUGG GA at Prague.

### ACTIVITIES

#### The IUGG GRC conferences

*The First IUGG GRC Conference* on "Extreme Natural Hazards and Their Impacts" was held from December 8-11, 2012 at Chapman University,

Orange, California, USA. This included a special FORIN seminar, co sponsored by IUGG and the Integrated Research on Disaster Risk (IRDR) Programme of ICSU-ISSC-UNISDR. The conference was sponsored by IUGG, IAHS, NASA, AGU, GEO, IRDR and Chapman University and Professor Ramesh Singh of Chapman University was the Chairman of the Local Organizing Committee. A total of 87 abstracts were received from 28 countries, from which 47 were selected to be presented in plenary as oral presentations. The conference included a panel discussion on the topic "Disaster Risks: Communication between Science and Society". Panelists were Salvano Briceno (Former Director, UNISDR; Chair, IRDR), Susan Hough (USGS), Kuniushi Takeuchi (Director, ICHARM ) and Gezahegn Yirgu (Addis Ababa University, Ethiopia) and the discussion was moderated by Alik Ismail-Zadeh (Secretary General, IUGG).

*The Second IUGG GRC Conference on "Improving Geophysical Risk Assessment, Forecasting, and Management"* was held at Real Observatorio de Madrid, Instituto Geográfico Nacional (IGN), Madrid, Spain from 18-21 November 2014 hosted by Joan Marti, GRC member of IAVCEI. About 80 participants from over 15 nations participated. A total of 31 keynotes, 4 special speeches and 20 posters were presented and two special discussion panels "The Risk of Extreme geohazards: How prepared is a globally interdependent society?" and "Final discussions" were held. The six plenary sessions were: 1. Global risks assessment for natural hazards: methods and practices; 2. Modelling and assessment of geophysical hazards; 3. Vulnerability assessment methodologies; 4. Monitoring and early warning systems for geophysical hazards; 5. Decision making models and protocols; 6. Communication protocols and practices. The presentations and discussions were transdisciplinary and of an integrated nature with geo-scientists, engineers, geographers, sociologists, media experts etc. Reports included examples such as the Eyjafjallajokull eruption in Iceland, rare earthquakes in Spain, emergency responses in remote Canary Island in the Atlantic Ocean, citizen

participation in Catalonia, Spain, a game "Kazan" development for disaster education. The guided tour of the Observatory, one of the oldest cosmic observatories in the world was a superb experience to the participants.

### **IUGG Statement**

The GRC proposed the IUGG statement on Great East Japan Earthquake and Tsunami and this was adopted by the IUGG Bureau on 18 April 2011. The statement can be found at: [http://www.iugg.org/resolutions/IUGG\\_Statement\\_GreatEastJapan\\_Eq\\_Tsu.pdf](http://www.iugg.org/resolutions/IUGG_Statement_GreatEastJapan_Eq_Tsu.pdf)

### **Website**

A new website for the Commission was designed and all content from the previous website has been transferred to the new website. This was launched in May 2014 and can be found at: <http://www.iugg-georisk.org/>

### **FUTURE ACTIVITIES**

During the 26<sup>th</sup> IUGG General Assembly, 22 June-2 July 2015, the GRC will hold jointly with IAHS, IRDR, IAVCEI, IAPSO, IACS, IASPEI, IAG, IAGA, a Union Symposium U02 "Integrated Disaster Risk Science: Accounting for Extremes" on 24 June.

During the IUGG GA in Prague, a GRC Business meeting is planned to be held.

The agenda will include:

1. The renewal and strengthening of the Commission.
2. Plans for the 3<sup>rd</sup> GeoRisk Conference in 2016. Initial discussions have been held with the Integrated Research on Disaster Risk (IRDR) programme in relation to a possible joint meeting.

Kuniyoshi Takeuchi, GRC Chair  
Diana Greenslade, GRC Secretary

## QUADRENNIAL REPORT OF THE IUGG COMMISSION ON THE STUDY OF THE EARTH'S DEEP INTERIOR

### INTRODUCTION

SEDI ([www.sedigroup.org](http://www.sedigroup.org)) is an international scientific organization dedicated to the Study of the Earth's Deep Interior. The scope of SEDI includes the core and lower mantle, but interest may extend to the surface, for example, in the study of mantle plumes or dynamics of descending lithospheric slabs.

The scientific questions and problems of interest to SEDI include:

1. the investigation of the origin, evolution, structure, geochemical and mineralogical composition of the inner core, outer core, mantle and crust (on a planetary scale),
2. the investigation of core magnetohydrodynamics at all time scales, both from a theoretical point of view (e.g., dynamo theory, magnetohydrodynamic waves) and from an observational point of view (as provided by modern, historical, archeomagnetic and paleomagnetic data), and of more general fluid rotational dynamics that can affect the core (such as precessional effects and short time scale instabilities),
3. the investigation of mantle dynamics, both from a theoretical point of view (solid state convection in the presence of complex rheology and phase transitions, role of plumes and descending slabs) and observational point of view (global 3D reconstruction of mantle convection from surface, seismological, geochemical and geodetic observations),
4. the investigation of mechanical, electromagnetic, thermal and chemical interactions between the inner-core, core, mantle, crust and possibly outer layers on a planetary scale, particularly in view of a global understanding of the Earth as a globally interacting system, with special emphasis on investigation of interfaces (nature, shape, role),

The thermodynamics of the Earth and the investigation of its long-term thermal evolution. Since 1987, SEDI has been a Union Committee of the International Union of Geodesy and Geophysics (IUGG). As such, it cuts across the traditional discipline-oriented bounds of the Associations of the IUGG [such as the International Association of Geodesy (IAG), the International Association of Geomagnetism and Aeronomy

(IAGA), the International Association of Seismology and Physics of the Earth's Interior (IASPEI), and the International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI)] which normally study the Earth from a particular point of view. The intent of SEDI is to amalgamate all sources of data and all points of view to generate the most coherent and consistent picture of the workings of the Earth's deep interior.

### ADMINISTRATION

SEDI Officers are traditionally elected during IUGG General Assemblies at a dedicated business meeting. Since the 2011 IUGG General Assembly in Melbourne, Australia, SEDI has been chaired by Satoru Tanaka (JAMSTEC, Japan), vice-chaired by Jonathan Aurnou (UCLA, USA), with Michael Bergman (Simon's Rock College, USA) acting as Secretary-General. Its membership is about 600, as recorded on the email list used to broadcast information related to SEDI activities, upcoming meetings, funding opportunities, and academic openings.

### ACTIVITIES

#### Meetings

SEDI's main activity is the organization of a dedicated workshop every even year and two such meetings were organized in 2012 and 2014. One important aspect of these meetings is that they should provide opportunities for students and young scientists from all over the world to attend and contribute to the ongoing debates.

The 13<sup>th</sup> SEDI Symposium was held at University of Leeds, Leeds, UK, on July 1-6 2012. It was very successfully organized by a Local Organizing Committee led by Jon Mound (Chair), Rainer Hollerbach, Chris Jones, Phil Livermore, Sebastian Rost, and Stephen Stackhouse (University of Leeds). A website was set up and is still accessible at <http://sedi2012.leeds.ac.uk>. Funding for the meeting came from IUGG; the US NSF; INSU/CNRS (France); Royal Astronomical Society; British Geophysical Association; The Mineralogical Society; Worldwide University Network. As is usually the case with SEDI meetings, the meeting was organized around 8 sessions, with each session having two lead review talks followed by ample time for discussion of posters and key scientific issues. These eight sessions were: S1: Other Planets, S2: Inner Core – Structure, Dynamics & Composition, S3: Outer

Core – Observations of Structure & Composition, S4: Outer Core – Modeling & Dynamics, S5: Experiments & Measurements in Deep Earth Research, S6: CMB – Structure, Dynamics & Composition, S7: Mantle – Observations of Structure & Composition, and S8: Mantle – Modeling & Dynamics. About 180 participants attended, coming from twenty different countries (Australia, Belgium, Canada, China, Colombia, Czech Republic, Denmark, France, Germany, India, Iran, Ireland, Japan, Oman, Norway, Portugal, Switzerland, Turkey, UK and USA).

The 14th SEDI international symposium was held in Shonan Village Center, Kanagawa, Japan, on August 3-8 2014. It was very successfully organized by a Local Organizing Committee led by Hisayoshi Shimizu (Chair), Masataka Matsushima, Takashi Nakagawa (Program Chair), Masayuki Obayashi, Futoshi Takahashi, Nozomu Takeuchi and Satoru Tanaka. A website was set up and is still accessible at <http://www.geo.titech.ac.jp/sedi2014/>. With the support by Science Council of Japan, funding for the meeting came from IUGG; the US NSF; INSU/CNRS (France); Japan Geoscience Union (JpGU) and its journal “Progress in Earth and Planetary Science” (PEPS), Inoue Foundation for Science (Japan). As in 2012, the symposium was organized around eight sessions led by discussion leaders. These eight sessions were: S1: Mantle – Observations, S2: Mantle – Modeling & Dynamics, S3: The Core-Mantle Boundary, S4: Inner Core, S5: Outer Core – Observations, S6: Outer Core – Dynamics, S7: Experiments, and S8: Other Planets. About 150 participants attended, coming from fourteen different countries (Australia, Canada, China, Denmark, France, Germany, India, Japan, Netherlands, Norway, Switzerland, Taiwan, UK and USA).

SEDI symposia traditionally include two major highlights: the Zatman Lecture, to be given by a prominent young scientist who has done outstanding work on core dynamics (in memory of Stephen Zatman, a prominent young scientist who studied core dynamics, and whose life was tragically cut short in 2002), and the Doornbos prize, to be presented to a young scientist for outstanding work on the Earth's deep interior (in honor of the Dutch seismologist, Durk Doornbos). The 2012 and 2014 Zatman Lectures were respectively given by Nicolas Gillet (University of Grenoble) on “Stochastic core flow reconstruction over the observatory era” and Jon Mound (University of Leeds) on “Geomagnetic implications of inner core translation”.

In 2012 the Doornbos prize was awarded to Renaud Deguen (Johns Hopkins University, USA),

for his particularly innovative contributions to understanding the dynamics and evolution of the inner core and its interactions with the surrounding fluid; Chris Finlay (Technical University of Denmark, Denmark), for theoretical and applied contributions to understanding the nature and source of the geodynamo secular variation, and unselfish cooperation in research.

In 2014 it was awarded to Nick Schmerr, for cross-disciplinary studies into the detailed natures of seismic discontinuities in the upper mantle, which give new views to mineralogical interpretation and their dynamical relationship with surface tectonic features of the Earth; Kenji Ohta, for outstanding experimental studies on phase transitions, thermal and electrical conductivities of materials in the lowermost mantle at high temperatures and pressures, which constrain strongly the interpretation of the dynamics of the core-mantle boundary region; Binod Sreenivasan, for fundamental contributions to our understanding of vortex dynamics and magnetic field stability in dynamo system and applications to the Earth's core.

In addition, between 2011 and 2014, SEDI co-sponsored various scientific sessions at IUGG, the American Geophysical Union. A Union Symposium was held at the 2011 IUGG General Assembly, entitled “Recent Progress in the Studies of the Earth's Deep Interior” and co-convened by Gauthier Hulot (IPGP, France), Michael Bergman (Simon's Rock College, USA), Greg Houseman (University of Leeds, UK) and Satoru Tanaka (JAMSTEC, Japan). At the forthcoming 2015 IUGG General Assembly, a Union Symposium to be held, entitled “New Discoveries in Deep Interiors of Earth and Planets” is co-convened by Satoru Tanaka (SEDI), Dominique Jault (IAGA), Richard Gross (IAG), Thorn Lay (IASPEI), and John Gamble (IAVCEI).

### **Publications**

Another important tradition of SEDI is that proceedings of the symposia be published in a peer-reviewed international journal. A SEDI 2012 Special Issue was already published in *Physics of the Earth and Planetary Interiors* (Volume 223, Special Issue, 2013), and contributions from the SEDI 2014 symposium are now under review. It will also be published in a special issue of *Progress in Earth and Planetary Science*.

### **FUTURE ACTIVITIES**

The timing and location of the next SEDI Symposium are traditionally finalized during business meetings held at the previous SEDI

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Quadrennial Reports of the IUGG Associations and Union Commissions

edition. In 2014, after a presentation and discussion, it was agreed that the next (15<sup>th</sup>) SEDI workshop would be held in Nantes, late July 2016. As the 2015 IUGG General Assembly also marks the end of the term of the current SEDI officers, a business meeting will be held to renew this board. We warmly encourage participants to take part to this important event.

Satoru Tanaka, SEDI Chair  
Jonathan Aurnou, SEDI Vice-Chair  
Michael Bergman, SEDI Secretary

## QUADRENNIAL REPORT OF THE IUGG COMMISSION ON DATA AND INFORMATION

### PREAMBLE

In 2008, the IUGG established the Union Commission on Data and Information (hereafter UCDI) to provide IUGG's eight Associations an entity to deal with data and information issues at the Union level and engage with similar bodies in other Unions and Societies. IUGG UCDI works closely with CODATA, other International Scientific Unions, and the International Council on Scientific and Technical Information (ICSTI).

The Commission provides a focused and sustainable organizational structure that supports and strengthens IUGG science through integrated scientific information activities in order to ensure the availability of modern data and information systems and services. These services are globally distributed, provide universal open access, and must be sustainable.

The UCDI objectives are to: i) provide a focus and single voice within IUGG, spanning all IUGG Associations and inter-Association bodies; ii) connect IUGG and its scientists to other bodies/agencies/initiatives that have interest and responsibility on matters of geo-data; iii) advocate and facilitate research and development in the growing field of informatics to improve data and information systems and practices; and iv) promote open access to data and adoption of inter-operable data sets.

### ADMINISTRATION

#### Executive Committee and Membership

The UCDI executive is composed by:

*Chair:* Peter Fox (USA)  
*Vice-Chair:* Charles Barton (Australia)  
*Secretary:* Adelina Geyer Traver (Spain)  
*Members:* Tim Ahern (USA)  
Maria Assunção F. Silva Dias (Brazil)  
Pierrick Givone (France)  
Ruth Neilan (USA)  
Mark Parsons (USA)  
Bernd Richter (Germany)  
Anatoly Soloviev (Russia)  
Satheesh Shenoi (India)

Since autumn 2011, the UCDI has now the possibility to host members. In the UCDI webpage it is possible to become a member of the Union Commission ([http://www.iugg-ucdi.org/UCDI/UCDI\\_member2011.html](http://www.iugg-ucdi.org/UCDI/UCDI_member2011.html)).

#### Business Meetings during 2011-2014

During this quadrennial the UCDI executive has tried to meet as regular as possible, principally, during different international conferences (partial attendance):

- *IUGG 2011*, 28 June – 7 July 2011 (Melbourne, Australia)
- *1st ICSU World Data System Conference*, September 3-6, 2011 (Kyoto University, Kyoto, Japan)
- *AGU Fall Meeting 2011*, December 5-9, 2011 (San Francisco, USA)
- *EGU General Assembly 2012*, 22-27 April, 2011 (Vienna, Austria)
- *EGU General Assembly 2013*, 7-12 April 2013 (Vienna, Austria)
- *2<sup>nd</sup> RDA Plenary Assembly 2013*, 16-18 March 2013 (Gothenburg, Sweden)
- *AGU Fall Meeting 2013*, 9-12 December 2013 (San Francisco, USA)
- *3<sup>rd</sup> RDA Plenary Assembly 2014*, 27-29 March 2014 (Dublin, Ireland)
- *EGU General Assembly 2014*, April 2014 (Vienna, Austria)

### ACTIVITIES

#### Scientific sessions in international conferences

- IUGG 2011 Session: Data Science/Informatics and Data Assimilation in Geophysical Models  
Conveners: Peter Fox, Charles Barton
- EGU 2012 Session: Data Science/Informatics and Data Assimilation in Geosciences  
Conveners: Adelina Geyer / Co-Conveners: Peter Fox BRAIN
- EGU USA2013 Session: Data Science/Informatics and Data Assimilation in Geosciences  
Conveners: Adelina Geyer / Co-Conveners: Peter Fox USA
- IAVCEI 2013 Assembly 2013 special session "Basins in Volcanology"  
Conveners: Adelina Geyer; B. Andrews / Co-Conveners: M. Bursik, A. Folch, G. Valentine, S. Sparks, C. Newhall, G. Jolly, B. Andrews, S. Loughlin, P. Papale



## Other activities

UCDI has published its first newsletter ([http://www.iugg-ucdi.org/UCDI/2011Newsletter UCDI.pdf](http://www.iugg-ucdi.org/UCDI/2011Newsletter%20UCDI.pdf)) with a summary of the topics discussed in the meetings, the result of the different sessions at the international conferences and the coming meeting and conferences.

## UCDI Science Meetings

2012

eGYAfrica 2012: Better Internet Connectivity for Research and Education in Africa, 24-26 October 2012, Nairobi, Kenya . UCDI Convener: C. Barton, Co-Convener: P. Fox

2013

2013 Research Data Alliance Plenary Assembly, Mar 16-18, Gothenburg, Sweden.

Peter Fox presented the opening science keynote “Can it get any more important than this?” at the first RDA Plenary Assembly in the session: “Towards an Open Access Research Data without Barriers or Borders – RDA Mission” Chair: John Wood, Secretary General, The Association of Commonwealth Universities and RDA Council Mark Parsons, Executive Director for the U.S. RDA program office, attended also the Plenary.

2013 Now and Future of Data Publishing, May 22, Oxford, UK

Peter Fox gave the first Keynote ‘The Now and Now for Data: Metaphors for Making Data Publically Available’ (based on work by Parsons and Fox) and represented IUGG science interests

2013 Research Data Alliance Plenary Assembly, Sep. 16-18, Washington, DC (USA).

Mark Parsons, Executive Director for the U.S. RDA program office, attended the Plenary and represented IUGG science and data interests.

AAAI Fall Symposium: Semantics and Big Data, Nov. 15-16, Arlington, VA (USA)

Peter Fox gave a Keynote talk: ‘Geosemantics for weird data; mediation, integration, heterogeneity and vocabularies’ and represented IUGG science and data interests.

ICSTI Workshop “Data and non-data integration”, Oct. 16, 2013, Ottawa, Canada

Peter Fox gave a keynote talk: ‘Progress in Open-World, Integrative, Web-based Collaborative Research Platforms’ in this workshop organized by the International Council for Scientific and Technical Information, explicitly representing UCDI.

Climate and Weather of the Sun-Earth System II Closing Symposium, Nov. 18-22, Nagoya, Japan

Peter Fox presented an invited tutorial entitled: ‘eScience and Informatics for International Science Programs.’ CAWSES II (2009-2013) included all major science areas of IUGG. Fox also complete the term as co-chair of the eScience and Informatics task group. ([www.cawses.org](http://www.cawses.org))

2014

Invited talk (Skype) at Japan Geoscience Union meeting (WDS/GEOSS). Thursday 1st May. Local parallel sessions (Future Earth Asia, Open Access Journal, Future of Earth/Planetary Sciences at Science Council of Japan) Title: Activities of the Union Commission for Data and Information of the International Union of Geodesy and Geophysics. Author: Peter Fox and Charles Barton.

2014 3<sup>rd</sup> Research Data Alliance Plenary Assembly, Mar 27-29, Dublin, Ireland.

Peter Fox attended in the capacity of RDA Technical Advisory Board member. Fox held discussions with Mokrane (WDS) and Hodson (CODATA) related to the IUGG Union session for 2015.

Mark Parsons, Executive Director for the U.S. RDA program office, attended the Plenary. Parsons is now Secretary General for RDA (worldwide).

2014 Society for Scholarly Publishing, May 29-30, Boston MA

Peter Fox gave an invited presentation and participated in a panel at the SSP meeting. Exploring the Research Data Ecosystem and representing IUGG science interests.

2014 4<sup>th</sup> Research Data Alliance Plenary Assembly, Sep 21-24, Amsterdam, The Netherlands.

## World Data System Participation

2013

Ruth Neilan is an active member of the World Data System Scientific Committee. The volume from the first conference was released in Jan. 2013, and is available from the Data Science Journal website. Many people with IUGG attended and contributed to this meeting.

Peter Fox and Mark Parsons participated as external consultants/ community representatives in the WDS – Knowledge Network and Metadata Catalog working group (Chaired by Wim Hugo and Kim Finney). Activities began in early 2013 and run through late 2013.

2014

WDS Executive Director Mustapha Mokrane agreed to co-convene the UCDI union session for the 2015 IUGG General Assembly (U04).

### **CODATA Participation**

2013

Mark Parsons and Alexei Gvishiani continued as IUGG co-delegates to CODATA and Anatoly Soloviev continues as vice-chair (Gvishiani is chair) of the CODATA Task Group on "Earth and Space Science Data Interoperability". Peter Fox and Mark Parsons began informal interactions with the CODATA Task Group on "Data Citation Standards and Practices" via its co-chairs (Brase, Callaghan, Borgman).

2014

CODATA Executive Director Simon Hodson agreed to co-convene the UCDI union session for the 2015 IUGG General Assembly (U04). Simon has also initiated a Geo-Union Data and Information Commission discussion that would lead to a combined meeting in 2015. Several IUGG researchers attended SciDataCon (2-5 Nov. 2014 - <http://www.scidatacon2014.org>).

### **RDA Participation**

2013

The Research Data Alliance (RDA) is aimed to build the social and technical bridges that enable open sharing of data. RDA enables data to be shared across barriers through focused Working Groups and Interest Groups, formed of experts from around the world – from academia, industry and government. RDA launched its search for a Secretary General in late 2013 requesting a suitably experienced leader, Mark Parsons was elected the

first Secretary General of the Research Data Alliance (RDA).

2014

The Research Data Alliance (RDA; <http://rd-alliance.org>) is aimed to build the social and technical bridges that enable open sharing of data. RDA appointed its first Secretary General in late 2013: Mark Parsons (UCDI executive committee member and IUGG CODATA delegate). In this capacity Mark Parsons has agreed to co-convene the UCDI union session for the 2015 IUGG General Assembly (U04).

### **Liaison with Peer Organizations**

2013

Continued interaction with international organizations such as IUGS/CGI (Commission on Geoscience Information), IAU/WGAD (Working Group on Astronomical Data), EGU/ESSI (Earth and Space Science Informatics), and AGU/ESSI (Earth and Space Science Informatics).

2014

In 2014, in addition to CODATA, WDS, and RDA, UCDI continued interaction with international organizations such as IUGS/CGI (Commission on Geoscience Information), IAU/WGAD (Working Group on Astronomical Data), EGU/ESSI (Earth and Space Science Informatics), AGU/ESSI (Earth and Space Science Informatics) and the Japanese Geophysical Union (JpGU).

Peter Fox, UCDI Chair  
Adelina Geyer, UCDI Secretary

## QUADRENNIAL REPORT OF THE IUGG WORKING GROUP ON HISTORY

### INTRODUCTION

The IUGG Union Working Group on History (WGH) was established by decision of the IUGG Executive Committee in November 2012, following an organizational meeting at the IUGG General Assembly in Melbourne in 2011 and preparation of Terms of Reference.

The primary tasks for the WGH during 2013-2014 were to: (1) identify Representatives from each of the eight IUGG Associations and two Historian Advisors in accordance with the Terms of Reference, and (2) to begin working to fulfill the broad WGH missions of raising the historical consciousness of IUGG members and preserving IUGG scientific and institutional history as detailed below.

### ADMINISTRATION

The following are the current officers and members of the Union Working Group on History:

Chair: Edward W. Cliver (USA)

Vice Chair: Hans Volkert

Association Representatives

IACS: Mark Carey (USA)

IAG: József Ádám (Hungary)

IAGA: Edward W. Cliver (USA)

IAHS: Maurits W. Ertzen (Netherlands)

IAMAS: Hans Volkert (Germany)

IAPSO: W. John Gould (UK)

IASPEI: Roger M.W. Musson (UK)

IAVCEI: Currently vacant, pending new appointment

Historian Advisors

Ron Doel (USA)

Gregory Good (USA)

A brief description of the WGH has been posted on the <http://www.iugg.org/about/history/> website.

The WGH secured a budget of \$2500 per year from the IUGG for 2014 and 2015 that will be used to cover registration fees for speakers on history topics at the General Assembly in Prague, with preference given to historians (accustomed to smaller registration fees) and retirees.

### ACTIVITIES

WGH-sponsored symposia at Association meeting in 2013:

- The joint IAMAS-IACS Assembly in Davos, Switzerland from 8 - 12 July, 2013

held a symposium entitled “A Century of international Cooperation in Geophysics: Examples from IACS and IAMAS”. Two solicited and five contributed presentations on such topics as the role of geophysics in scientific internationalism, Jacob Bjercknes, the World Weather Watch, and international cooperation in the geosciences were followed by a general discussion about the aims and intended modes of operation of the WGH. During the extended break between the sessions two posters were discussed and copies of IAMAS Publication Series Nos. 1 and 2 (Bolle, 2008; Bojkov, 2012) with historic content were distributed to interested participants.

*References:*

Bolle, H.-J., 2008: International Radiation Commissions 1896 to 2008: Research into atmospheric radiation from IMO to IAMAS. IAMAS Publication Series no. 1, iv + 141 pp.

Bojkov, R., 2012: International Ozone Commission: History and activities. IAMAS Publ. Series no. 2, iv +100 pp.

[Involved WGH Members: Ron Doel, Hans Volkert]

- The IAG Scientific Assembly in Potsdam, Germany from 1-6 September, 2013 featured a special History Session to commemorate the 150<sup>th</sup> anniversary of IAG’s predecessor. Talks covered each of the key phases of IAG science during the last 150 years, followed by guided tours of the facilities at Telegrafenberg, videos from previous IAG Assemblies, and a barbeque.

[Involved WGH Member: József Ádám]

### Preparations for the 26<sup>th</sup> IUGG General Assembly

On 19 February 2013, the WGH held its initial telecon. Topics discussed included: (a) Injection of historical content into scientific symposia at Prague; (b) Union Wide Symposium (U9) at Prague; (c) WGH Presence on the WWW; and (d) Association level history organizations.

A proposal for a Union Session was submitted and approved for the 26<sup>th</sup> IUGG General Assembly in Prague: (U10) “Revolutions in Earth Sciences: from different spheres to a common globe”. Hans Volkert (IAMAS) is the lead convener and the other seven WGH members are Co-conveners.

At the initiative of Josep Batlló (IASPEI) and WGH member, Roger Musson, a Joint Symposium (JA6) entitled: “Data on the Edge: Utilization and

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Quadrennial Reports of the IUGG Associations and Union Commissions

Preservation of Historical Data in the Geosciences” was proposed and approved for Prague. Ed Cliver (IAGA) is the lead convener with co-conveners: József Adám (IAG); Josep Batllo (IASPEI); Maurice Ertsen (IAHS); Bruce Raup (IACS), and Kris Harper (IAMAS).

The second half of 2014 was devoted to organization (via e-mail and phone) of the above-mentioned Union and Joint Symposia for Prague. In addition, each WGH member (with the exception of Dr. Adám who organized the comprehensive historical symposium at the IAG Scientific Assembly in Potsdam in 2013), was charged to coordinate with conveners of symposia in their respective Associations to inject talks with historical content into the scientific sessions in Prague, with the following promising results:

- IACS: Secured WGH co-sponsorship of IACS Symposium C17 (Challenges in Cryospheric Sciences: Past, Present and Future).
- IAGA: Fostered talks with historical content in two IAGA Symposia (A17, Earth’s Plasmasphere; A18, Space Weather).
- IAHS: Fostered historical content talks in two IAHS Symposia: (HS01, Changes

in Flood Risk and Perception; JH01, Extreme Hydrological Events).

- IAPSO: Fostered historical content talks in five IAPSO Symposia (P03, Ocean Mixing; P04, Boundary Currents; P06, Southern Ocean; P08, Meridional Overturning Circulation and Deep Currents; P09, North Atlantic).
- IASPEI: Contacted conveners of all IASPEI scientific symposia by e-mail and initiated, in collaboration with Josep Batlló, IAGA Joint Symposium JA6.
- IAVCEI: Representative resigned from WGH before contacts initiated.

### Publications

Following the initiative of IUGG SG Ismail-Zadeh, with input from the WGH, former IUGG SG Jo Ann Joselyn was selected to write the commemorative volume for the 2019 centenary of the IUGG. Dr. Joselyn has prepared an outline for the book and The WGH will identify co-authors to review scientific progress during the last 100 years for each of the Associations.

Edward Cliver, WGH Chair  
Hans Volkert, WGH Vice-Chair

## QUADRENNIAL REPORT OF THE INTERNATIONAL LITHOSPHERE PROGRAM

### INTRODUCTION

The International Lithosphere Program (ILP) seeks to elucidate the nature, dynamics, origin and evolution of the lithosphere through international, multidisciplinary geoscience research projects – Task Forces (TF) and Coordinating Committees (CC) that operate in the realm of major ILP themes:

- I. Geoscience of global change
  - TF 3: Bridging the gap from microseismicity to large earthquakes
  - TF 10: The Unconventionals
  - CC TOPO-EUROPE
- II. Contemporary dynamics and deep processes
  - TF 4: Continental Collisional Orogens: from Atomic Scales to Mountain Building
  - TF 8: Lithosphere dynamics: interplays between models and data.
  - TF 9: DISC - Deep Into the Subduction Channel
  - CC TOPO-EUROPE
  - CC MEDYNA - Mantle Dynamics and Plate Architecture Beneath North Africa
- III. Continental lithosphere
  - TF 1: CALE - Circum Arctic Lithosphere Evolution
  - TF 2: Volcanoes and society: environment, health and public outreach
  - TF 3: Bridging the gap from microseismicity to large earthquakes
  - TF 4: Continental Collisional Orogens: from Atomic Scales to Mountain Buildings
  - TF 5: LAPBOX - The lithosphere-asthenosphere boundary depth paradox
  - TF 6: Sedimentary Basins
  - TF 7: 3D Geomechanical modelling of geodynamic processes in the lithosphere
  - TF 8: Lithosphere dynamics: interplays between models and data.
  - CC TOPO-EUROPE
  - CC MEDYNA - Mantle Dynamics and Plate Architecture Beneath North Africa
- IV. Oceanic lithosphere
  - TF 1: CALE - Circum Arctic Lithosphere Evolution
  - TF 8: Lithosphere dynamics: interplays between models and data.

### ADMINISTRATION

ILP has an international Bureau with members from several countries that meet regularly to

monitor the progress and to select new projects in close consultation with the representatives of National Committees. The Bureau is chaired by the President with support from the Secretary General. The ILP Secretariat is located in the German Research Centre for Geosciences in Potsdam (GFZ-Potsdam) and is headed by the Executive Secretary A. Rudloff (Germany). The current ILP Bureau membership is presented below:

President: S. Cloetingh, The Netherlands  
Secretary General: M. Scheck-Wenderoth, Germany  
Representative of IUGG: D. Jackson, USA  
Representative of IUGG: K. C. Sain, India  
Representative of IUGS: R. Oberhänsli, Germany  
Joint Representative of IUGG and IUGS: A. Green, Switzerland  
Chair Committee National Representatives: V.L. Pease, Sweden

The Bureau is also supported by the associate members: J.-P. Burg, Switzerland, H. Thybo, Denmark, A. Morozov, Russia, F. Roure, France, M. Zoback, USA, and P. Mc Keever, UNESCO; by the lifetime members M. von Knorring, Sweden and H. Gupta, India as well as by Honorary President A. Green, Switzerland and ILP Fellow J.F.W. Negendank, Germany.

### Business meetings of ILP, Vienna, Austria, 2011- 2014

The annual business meetings were held on the occasion of the EGU General Assembly every year since 2011 and attended by most of the PIs in ILP as well as by guests from IUGG and IUGS. At these meetings a short report has been given by the president and SG on new developments and on the financial situation in ILP. In addition all active Task Forces and Coordinating Committees reported on the activities of the past year and on current and planned activities. The guests informed the attendants about new developments in the mother unions. The Flinn-Hart-Award has been presented to Magdala Tessauro (Italy/Germany/Netherlands) in 2011 and to Manuele Faccenda (Italy/Australia) in 2012. The minutes were distributed among the Bureau Members and are available on request. The next business meeting at EGU 2015 in Vienna, Austria is scheduled for Monday, 13 April 2015, 18:00 - Room Y3 (Splinter meeting SPM2.4).

### Bureau meeting of ILP, at AGU fall meeting 10th December 2013 San Francisco, USA

The annual bureau meeting was held on the occasion of the AGU General Assembly. The President and secretary general informed the attendants about current and planned activities of all active Task Forces and Coordinating Committees. After discussion of three new task force proposals, a new Task Force 11 on Lithosphere dynamics has been established and future activities have been planned. The minutes were distributed among the Bureau Members and are available on request.

#### **Reports to Executive Committee (EC) meetings of IUGG and IUGS**

The SGs have attended the IUGS EC meeting held during the 34th IGC congress in Brisbane, Australia, the IUGS EC Meeting Paris, France 19-22 February 2013, and the IUGG EC Meeting Prague, Czech Republic 21-23 September 2013. On all occasions, the SG and/or president have reported about ongoing activities in ILP. For the IUGS EC meeting in Goa, India 2013 the SG of ILP provided information on progress in ILP to the president of IUGS R. Oberhänsli.

#### **ACTIVITIES**

Full yearly activity reports of all Task Forces (TF) and Coordinating Committees (CC) and of ILP are available on request. ILP supported networking in the scientific community and helped to leverage numerous large projects at national and international levels.

#### **Science Meetings organized under the auspices of ILP**

Several sessions led by ILP Task Forces and Coordinating Committees and numerous presentations of ILP members contributed to the EGU - General Assemblies 2011, 2012, 2013, 2014, in Vienna, Austria and to the AGU Fall meetings 2011, 2012, 2013 and 2014 in San Francisco, USA as well as to several Goldschmidt conferences. Moreover, dedicated workshops have been organized by ILP Task Forces and Coordinating Committees with about 50-150 international participants with many young scientists. In addition, ILP members contributed at many other large international meetings (selection):

#### *2014*

- GSA annual meeting in Vancouver, Canada
- Meeting of the European Seismological Commission Istanbul, Turkey
- Annual meeting of the Seismological Society of America Anchorage, USA

- International Conference on Continental Dynamics, Xi'an, China.
- Geo-Frankfurt: International Annual Meeting of German Geological Societies, Germany
- ALAGO 2014, Armacao dos Buzios, Brazil,
- First EAGE Workshop on Basin & Petroleum Systems Modeling", Dubai, UAE
- AAPG 2014 Annual Convention and Exhibition Houston, USA.

#### *2013*

- IAVCEI 2013, Japan
- Annual meeting of the Seismological Society of America, Salt Lake City, USA
- China Geological Society and American Geological Society Joint meeting: "Roof of the World" Chengdu, China
- International Eclogitic Conference, Courmayer, Italy
- AAPG Hedberg
- EAGE-European Unconventional Resources Conference & Exhibition
- BBSPA Kiew Upstream & Investments Workshop, Ukraine
- GEO2012 Middle East Geoscience Conference and Exhibition
- World Shale Gas Asia, Singapore.
- ICDP Science Conference 2013, Potsdam, Germany

#### *2012*

- 34th IGC, Brisbane, Australia
- SESEH 2012 Sino-European Symposium on Environment and Health, Galway, Ireland
- Annual meeting Seismological Society of America, San Diego, CA, USA
- Kashiwazaki Symp. on Seismic Monitoring of Nuclear Power Plants, Kashiwazaki, Japan
- Geological Soc. America Annual Meeting, Charlotte, USA
- Workshop on Craton formation and destruction with special emphasis on BRICS Cratons, Johannesburg, South Africa
- 4th BBSPA Upstream & Investments Workshop, Kiew, Ukraine
- AAPG Hedberg Conference, Nice, France
- Bulgarian Energy Forum, Sofia, Bulgaria
- EAGE-European Unconventional Resources Conference & Exhibition, Vienna, Austria
- GEO2012, Middle East Geoscience Conference and Exhibition, Sanabis, Bahrain

- Geofluids Conference, Rueil-Malmaison, France
- Gordon Conference on Organic Geochemistry, Holderness, USA
- International Risk Governance Council Workshop, Zurich, Switzerland
- Reserve Estimation for Unconventional Resources, London, UK
- World Shale Gas Asia, Singapore

**Most important publications (in alphabetical order)**

Acarel, D., Bulut, F., Bohnhoff, M., Kartal, R.: Co-seismic velocity change associated with the 2011 Van Earthquake (M7.1): Crustal response to a major event. *Geophys. Res. Lett.*, doi: 10.1002/2014GL060624, 2014. [TF 3](#)

Agard P., Vitale-Brovarone A., 2013: Thermal regime of continental subduction: the record from exhumed HP-LT terranes (New Caledonia, Oman, Corsica). *Tectonophysics*, 601, 206-215. [TF 9](#)

Altmann, J. B., B. Müller, T. Müller, O. Heidbach, M. Tingay, and A. Weißhardt (2014): Pore pressure stress coupling in 3D and consequences for reservoir stress states and fault reactivation, *Geothermics*, [TF7](#)

Angiboust, Samuel; Pettke, Thomas; De Hoog, Jan C. M.; et al., 2014: Channelized Fluid Flow and Eclogite-facies Metasomatism along the Subduction Shear Zone. *JOURNAL OF PETROLOGY*, 55, 5: 883-916 [TF 9](#)

Bernard S., Horsfield B., 2014, Thermal Maturation of Gas Shale Systems, *Annu. Rev. Earth Planet. Sci.*, 42:635–51, [TF 10](#)

Bohnhoff, M., Bulut, F., Dresen, G., Malin, P.E., Eken, T., Aktar, M., 2013: An earthquake gap south of Istanbul. *Nature Commun.*, 4:1999. [TF 3](#)

Buiter, Susanne J. H.; Torsvik, Trond H., 2014: Special Issue of Gondwana Research, Vol 26, Issue: 2 [TF8](#)

Burov E. and T. Gerya, 2014: Asymmetric three-dimensional topography over mantle plumes, *Nature*, 513, 85-89. [TF8](#)

Burov E., T. Watts, Y. Podladchikov, B. Evans: Observational and modeling perspectives on the mechanical properties of the lithosphere, Special Issue of *Tectonophysics*, [TF8](#)

Burov, E., Francois, T., Agard, P., et al., 2014: Rheological and geodynamic controls on the mechanisms of subduction and HP/UHP

exhumation of crustal rocks during continental collision: Insights from numerical models. *Tectonophysics* 631 Special Issue: [TF 9](#)

Cantner, K.; Carey, S.; Nomikou, P.: Integrated volcanologic and petrologic analysis of the 1650 AD eruption of Kolumbo submarine volcano, Greece, *Journal of Volcanology and Geothermal Research*, 269, 28-43, 2014.

Cloetingh, S; Willett, S.; Torsvik, T.; Werner, S., 2013: "TOPO-EUROPE III", *Tectonophysics*, Special Issue, 602, [CC TopoEurope](#)

Cloetingh, S., and S. D. Willett (2013): Linking Deep Earth and Surface Processes, *Eos Trans. AGU*, 94(5), 53.

Dobrzynetska, L., Wirth, R. and Green, H., 2014: Diamonds in Earth's oldest zircons from Jack Hills conglomerate, Australia, are contamination. *EPSL*, 387: 212-218. [TF 4](#)

Gaullier V., Basile C., Roure F. and Scheck-Wenderoth M., 2013: An introduction to the *Tectonophysics* special issue "Basin dynamics". Special Issue, Editorial, *Tectonophysics*, 591. [TF 6](#)

Gasparik, M., Bertier, P., Gensterblum, Y., Ghanizadeh, A., Krooss, B. M., Littke, R. 2014: Geological controls on the methane storage capacity in organic-rich shales, *Intern. Journal of Coal Geology*, 123, 34-51. [TF 10](#)

Gensterblum, Y., Merkel, A., Busch, A., Krooss, B.M., Littke, R. : Gas saturation and CO2 enhancement potential of coalbed methane reservoirs as a function of depth, *AAPG Bulletin*, 98, 395-420, 2014. [TF 10](#)

Gibson G., Manatschal G. and Roure F., eds., 2015: Sedimentary basins and crustal processes at extended and hyper-extended continental margins. Special volume, Geological Society, London. (This book will contain about 15 chapters presented in 2012 during the Task Force 6 sessions at the World Geological Congress in Brisbane, Australia). [TF 6](#)

Hegewald, A., Jokat, W. 2013: Tectonic and sedimentary structures in the northern Chukchi region, Arctic Ocean, *Journal of Geophysical Research: Solid Earth*, 118, 3285–3296. [TF 1](#)

Hidas, K.; C. Garrido, et al. 2013: Strain Localization in Pyroxenite by Reaction-Enhanced Softening in the Shallow Subcontinental Lithospheric Mantle. *JOURNAL OF PETROLOGY*, 54, 10, 1997-2031. [CC MEDYNA](#)

- Huang, J : P and S-wave tomography of the Hainan and surrounding regions: Insight into the Hainan Plume, *Tectonophysics*, 2014, [TF 5](#)
- Hübner, A., Horsfield, B. Kapp, I. 2013, Fact-based communication: the Shale Gas Information Platform. *Environ Earth Sci* (2013) 70: 3921–3925. [TF 10](#)
- Ickrath, M., Bohnhoff, M., Bulut, F., Dresen, G.: Stress rotation and recovery in conjunction with the 1999 Izmit Mw 7.4 earthquake. *Geophys. J. Int.*, doi:10.1093/gji/ggt409, 2014. [TF 3](#)
- Jacob, D., Dobrzhinetskaya, L.F., Wirth, R., 2014: New insight into polycrystalline diamond genesis from modern nanoanalytical techniques. *Earth Sciences Reviews*, 136:21-35. [TF 4](#)
- Janutyte, I., M. Majdanski, P.H. Voss, E. Kozlovskaja and the Passeq working group, 2014 : Upper mantle structure around the Trans-European Suture Zone obtained by teleseismic tomography, *SED*, 6, 1723-1763,
- Karousová, H., Plomerová J., Babuška, V. 2013: Upper mantle structure beneath the southern Bohemian Massif and its surroundings imaged by high-resolution tomography. *Geophys. J. Inter.*, 194 (2): 1203-1215.
- Kwiatek, G., Bulut, F., Bohnhoff, M., Dresen, G.: High-resolution analysis of seismicity induced at Berlin geothermal field, El Salvador. *Geothermics*, doi:10.1016/j.geothermics.2013.09.008, 2014.
- Levander, A., M.J. Bezada, F. Niu, E.D. et al. : Subduction-driven recycling of continental margin lithosphere, *Nature Letter*, Vol 515, 253, 2014 [TF 5](#)
- Maccaferri, F.; Rivalta, E.; Keir, D.; Acocella, V., 2014: Off-rift volcanism in rift zones determined by crustal unloading. *Nature Geoscience*. [TF 2](#)
- Matharu, G.; Bostock, M. G.; Christensen, N. I., et al., 2014: Crustal anisotropy in a subduction zone forearc: Northern Cascadia. *JOURNAL OF GEOPHYSICAL RESEARCH-SOLID EARTH* 119, 9: 7058-7078 [TF 9](#)
- Matenco, L; Andriessen, P., 2013: From Source to Sink - Quantifying the mass transfer from mountain ranges to sedimentary basins, *Global and Planetary Change Special Volume* ,103, 1-260, [CC TopoEurope](#)
- Marchesi, C.; Garrido, et al. 2013: Platinum-group elements, S, Se and Cu in highly depleted abyssal peridotites from the Mid-Atlantic Ocean Ridge (ODP Hole 1274A): Influence of hydrothermal and magmatic processes. *Contributions to Mineralogy and Petrology*, 166, 5, 1521-1538. [CC MEDYNA](#)
- Moreno, M., C. Haberland, O. Oncken, A. Rietbrock, S. Angiboust, and O. Heidbach (2014): Locking of the Chile subduction zone controlled by fluid pressure before the 2010 earthquake, *Nature Geosciences*, [TF7](#)
- Munzarová, H., Plomerová, J., Babuška, V., Vecsey, L.: Upper-mantle fabrics beneath the Northern Apennines revealed by seismic anisotropy. *Geochem. Geophys. Geosyst. (G3)*, 14, 1156-1181. [TF 5](#)
- Pease, V., Drachev, S., Stephenson, R., Zhang, X.: Arctic lithosphere - A review. *Tectonophysics* 625, 1-25, 2014. [TF 1](#)
- Precigout, J.; et al.2013: Deformation and exhumation of the Ronda peridotite (Spain). *Tectonics*, 32, 4, 1011-1025. [CC MEDYNA](#)
- Reiter, K., O. Heidbach, I. Moeck, D. Schmitt, and C. Hauck (2014), Crustal stress field pattern of Canada, *Tectonophysics*, 636, [TF7](#)
- Romero-Sarmiento M-F, Rouzaud J-N., Bernard S., Deldique D., Thomas M. and Littke R. 2014, Evolution of Barnett Shale organic carbon structure and nanostructure with increasing maturation. *Organic Geochemistry*, 71, p7-16. [TF 10](#)
- Roure F., Scheck-Wenderoth M., Matenco L., Muska K. and Nazai S.: Dynamics and active processes: The Albanian natural laboratory and analogues. Special issue, *Ital. J. Geosc.* 132. [TF 6](#)
- Scheck-Wenderoth M., Roure F., Bünge H.P. and Glassmacher U., 2013: Progress in understanding the South Atlantic margins. Special issue, *Tectonophysics*, 604. [TF 6](#)
- Scheck-Wenderoth, M., Schmeißer, D., Mutti, M., Kolditz, O., Huenges, E., Schulz, H.-M., Liebscher, A., Bock, M. (2013): Geoenergy: new concepts for utilization of geo-reservoirs as potential energy sources. – Special Issue of *Environmental Earth Sciences*, 70, 8, p. 3427-3431. [TF 6](#)
- Schmidt, P., B. Lund, J-O. Näslund, J. Fastook, 2014: Comparing a thermo-mechanical Weichselian Ice Sheet reconstruction to reconstructions based on the sea level equation: aspects of ice configurations and glacial isostatic adjustment, *Solid Earth*, 5, 371-388. [TF7](#)
- Smellie, J. L., Rocchi, S., Wilch, T. I., Gemelli, M.; Di Vincenzo, G.; McIntosh, W.; Fargo, A.: Glaciovolcanic evidence for a polythermal



Neogene East Antarctic Ice Sheet, *Geology*, 42(1), 39-41, 2014. [TF 2](#)

Tesauro, M; Kaban, MK; Mooney, WD; Cloetingh, S., 2014, NACr14: A 3D model for the crustal structure of the North American Continent, *Tectonophysics*, 631, 65-86. [CC TopoEurope](#)

Tibaldi, A.; Bonali, F.L.; Corazzato, C., 2014: The diverging volcanic rift system, *Tectonophysics*, 611, 94-113.

Tibaldi A., F.L. Bonali, et al.: Structure of regional dykes and local cone sheets in the Midhyrna-Lysuskard area, Snaefellsnes Peninsula (NW Iceland). *Bull. Volcanol.*, 75, 764 [TF 2](#)

Wang, Y.F., Zhanget al.2013: The origin and geophysical implications of a weak C-type olivine fabric in the Xugou ultra-high pressure garnet peridotite. *Earth and Planetary Sci. Lett.*, 376, 63-73. [TF 4](#)

Wilson, Cian R.; Spiegelman, Marc; van Keken, Peter E.; et al., 2014. Fluid flow in subduction zones: The role of solid rheology and compaction pressure. *EPSL*, 401, 261-274 [TF 9](#)

Wirth, R., Dobrzhinetskaya, L., Harte, B., Schreiber, A. and Green, H.W., 2014: High-Fe (Mg,Fe)O inclusions in diamond apparently from the lowermost mantle. *EPSL*, 404:365-375. [TF 4](#)

Zang, A., Yoon, J.-S. et al. 2013: Fatigue hydraulic fracturing by cyclic reservoir treatment enhances permeability and reduces induced seismicity. *Geophys. J. Int.*, doi: 10.1093/gji/ggt1301. [TF 7](#)

## **FUTURE ACTIVITIES**

- Establish new science plan and define new Task Forces/Coordinating Committees for 2015-2020
- Several sessions with TF and CC contributions at IUGG 2015 in Prague; EGU-GA Vienna, 2015
- Several workshops of individual task forces
- ILP Business meeting at EGU-GA in Vienna, 13 April 2015
- Prepare and conduct ILP 35th anniversary workshop, 21-23 Sept 2015 in Potsdam
- ILP Bureau Meeting at 35th anniversary workshop 2015 in Potsdam
- Launch and update new ILP website
- Advertising for new support by national science foundations and industry

## **ILP meeting 2015 on the occasion of ILP's 35th birthday**

All PIs active in ILP as well as the Bureau Members are invited to attend the next ILP meeting to be held in Potsdam, September 21-23 in Potsdam, Germany. This will be the occasion of reporting on completed projects and of proposing new task forces/ coordinating committees. A bureau meeting will take place September 23 at the occasion of which the new President and Secretary General will be appointed and decisions will be taken which newly proposed projects will be supported in the phase 2015-2020.

Sierd Cloetingh, ILP President  
Magdalena Scheck-Wenderoth, ILP Secretary  
General  
Alexander Rudloff, ILP Executive Secretary

## **Part II**

# **Statutes and By-Laws of the Union and the Associations**

## **STATUTES AND BY-LAWS OF THE UNION**

### **INTERNATIONAL UNION OF GEODESY AND GEOPHYSICS**

#### **STATUTES**

*(Revised June 2015, XXVI IUGG General Assembly, Prague, Czech Republic)*

#### **I. OBJECTIVES AND COMPOSITION OF THE UNION**

1. The objectives of the International Union of Geodesy and Geophysics (IUGG) are:
  - a) to promote the study of all problems relating to the figure of the Earth, and the physics and chemistry of the Earth's interior, surface, fresh waters, cryosphere, oceans and atmosphere, along with relevant studies of other planets;
  - b) to initiate, facilitate and co-ordinate research into, and investigation of those problems of geodesy and geophysics which require international co-operation or which are of international interest;
  - c) to provide, on an international basis, for discussion and publication of the results of the researches indicated in Article 1.b);
  - d) to promote co-ordination worldwide of scientific activities in the disciplines of interest to the Union;
  - e) to assist with scientific advice the study of practical problems of a geodetic or geophysical character when such problems present an international aspect or when they require international co-operation of specialists or facilities;
  - f) to promote and co-ordinate the scientific activities of several Permanent Services whose objectives are, on an international basis, to facilitate the standardization of measurements or to collect, analyze and publish geodetic or geophysical data, taking into account the results of planetary studies.
2. To achieve its scientific aims, the Union consists of a number of International Associations, each of which deals with a discipline of geodesy or geophysics.
3. The Union adheres to the International Council for Science (ICSU).
4.
  - a) Any country in which independent activity in geodesy and geophysics has been developed may adhere to the Union, provided that it takes an adequate share in the maintenance of the Union.
  - b) That country shall be represented by a single body, known as the Adhering Body, which may be either its principal scientific Academy, or its National Research Council, or any other institution or association of institutions, whether non-governmental or governmental, representing the geodetic and geophysical activities of the adhering country. Only under extraordinary circumstances, the Council of IUGG (defined in Article 5 of these Statutes) may admit a suitably designated additional Adhering Body for a country, provided a corresponding Adhering Body of that country has already been admitted as a National Member of the International Council for Science. In this case, each Adhering Body shall have a separate Council Delegate and shall be treated separately in questions of Voting and Finances.
  - c) A country in which activity in geodesy and geophysics has been developed but which cannot participate financially in the maintenance of the Union may become Associate. That country shall be represented by a single body, as specified in Article 4.a.
  - d) Hereafter, adhering countries will be referred to as Member Countries.
  - e) There shall be a category of adherence known as Affiliate Membership. Any multi-national or regional geodetic, geophysical or other geosciences organisation shall be eligible for Affiliate Membership. Affiliate Members shall have the same rights, duties and obligations as Associate Members.
  - f) There shall be a category of membership within IUGG known as Honorary Member conferred upon individuals awarded IUGG Fellowship by the IUGG Bureau. Honorary Members shall have no rights to attend meetings of Council or participate in Council business.

5. The General Assembly shall consist of three parts: i) a meeting of the duly accredited Delegates of the Member Countries and guests invited in accordance with the By-Laws (the Council Meeting); ii) business meetings of the Union; iii) an open scientific assembly.

The Council of the Union shall consist of the Delegates known as Council Delegates, designated by the Adhering Bodies of the Member Countries, one Council Delegate for each Adhering Body. Each Council Delegate shall be formally accredited by the Adhering Body in advance of each meeting of Council. Adhering Bodies in Associate status are not entitled to appoint a Council Delegate. Each Council Delegate, normally the President of the relevant IUGG National Committee, is expected to serve until the beginning of the first session of the subsequent Council meeting. However, an Adhering Body may replace its Council Delegate during the interval between successive Council meetings, and/or appoint an Alternate Delegate for a specific meeting.

The right of a Council Delegate to vote is subject to the relevant Adhering Body meeting its financial obligations to the Union.

## II. ADMINISTRATION

6. Responsibility for the direction of the Union's affairs shall be vested in the Council of the Union. Decisions of the Council shall be reported to the General Assembly.
7. Between meetings of the Council, the direction of the affairs of the Union shall be vested in the Bureau and the Executive Committee, of which the respective responsibilities are hereafter defined.
8. The Bureau of the Union shall consist of the President, Vice-President, Secretary General, Treasurer and three additional Members, all of whom shall be elected by the Council.

The duties of the Bureau shall be to administer the affairs of the Union in accordance with these Statutes and By-Laws and the decisions of the Council.

9. The Executive Committee shall consist of the Bureau, the Presidents of the International Associations, and the immediate Past President of the Union. The Secretaries of the Associations shall be invited to attend meetings of the Executive Committee of the Union in an advisory capacity.

The duties of the Executive Committee shall be to further the scientific objectives of the Associations through effective co-ordination and through the formulation of general policies to guide the scientific work of the Union.

The Executive Committee shall meet with the Council at sessions of the latter with voice but without vote.

10. Within the framework of the Statutes of the Union, the International Associations of the Union may make their own Statutes and By-Laws and control their administration and finance.

## III. FINANCE

11. During the meeting of a General Assembly the Council shall elect a Finance Committee for the next period, consisting of four members drawn from the previous Finance Committee and accredited Council Delegates as specified by By-Law 10.

The Finance Committee shall meet with the Council at sessions of the latter, with voice but without vote.

12. There shall be fourteen categories of membership in the Union, numbered 1 to 14, plus special categories called A and AF.
  - a) For categories 1 to 14, each Member Country shall pay annually the number of units of contribution assigned to the category in which it adheres. In each country the Adhering Body shall be responsible for the payment of the contribution. Any member country may additionally donate contributions for travel support of scientists from countries of Category A.
  - b) Category A is composed of the Associates. They do not pay an annual contribution to the Union.
  - c) Category AF is composed of the Affiliates. They do not pay an annual contribution to the Union.
13.
  - a) A country which seeks to adhere to the Union must specify the category in which it proposes to adhere. Its application for admission may be refused if the category proposed is considered inadequate.

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Union

- b) An Associate may enter a paying category, or a paying Member Country may raise its category at any time provided the Council agrees. A paying Member Country may lower its category or become an Associate only with the consent of the Council of the Union.
- 14.
- a) The financial year shall be the calendar year.
- b) If at the end of any year a paying Member Country has not paid its subscription for that year, the benefits of membership in the Union will be denied to that Member Country until full payment has been made of that year's subscription and of any further subscriptions in arrears. Such Member Countries shall be deemed to be in Observer status.
- c) A Member Country in Observer status shall continue to accrue annual subscription obligations.
- d) If at the start of any year a paying Member Country has been in Observer status for four years, that Member Country shall be deemed to have withdrawn from membership unless the Secretary General has received a formal written request from the Member Country to be transferred to Associate membership (Category A).
- e) The Bureau of the Union is authorized to grant requests for transfer temporarily to Category A, until the next meeting of the Council, to Member Countries in Observer status that provide evidence that efforts to pay all subscriptions in arrears are likely to be unsuccessful.
- f) A Member Country which has been denied a transfer to Category A by the Bureau may appeal at the next meeting of the Council.
- g) Any Member Country in Observer status that is denied a transfer to Category A by Council shall cease to be a Member Country at the end of the Council meeting at which its request is considered.
- h) Every Associate Membership shall be reviewed by the Bureau and the Finance Committee and the results communicated to Council at each General Assembly. Countries in Associate Membership will be asked to consider entering a paying category if it is deemed appropriate. If, following such a request, a Country does not enter a paying category, Council shall decide at its next meeting whether the Country can continue its membership in the Union.
15. In the event of the dissolution of any Association, its assets shall be ceded to the Union. In the event of the dissolution of the Union, its assets shall be ceded to ICSU.

**III. VOTING**

16. Voting in Council is held (a) at meetings of the Council or (b) electronically. Electronic voting is voting using electronic systems (e.g., Internet, E-mail, Fax) and organized by the IUGG Secretariat. Electronic votes shall be open for one calendar month from the date of announcement. Electronic voting shall normally be suspended in the 6 months preceding a meeting of Council.
- Associates have no voting rights.
- 17.
- a) On questions of scientific nature, or of administrative nature, or of a character partly administrative and partly scientific not involving matters of finance, voting shall be in Council by Member Countries, each Council Delegate having one vote, provided that the subscription of the Adhering Body has been paid up to the end of the calendar year preceding the voting.
- b) On questions involving finance, voting shall be in Council by Member Countries with the provision that a voting country must have paid its subscriptions up to the end of the calendar year preceding voting in Council. The number of votes allotted to each Member Country shall be equal to the number of its category of membership.
18. Questions on admission of new Member Countries and new Affiliate Members and appeals against denial of transfer to Associate membership shall be decided by a two-thirds absolute majority vote of the Council Delegates meeting in Council or voting electronically, each Council Delegate having one vote.
19. A Council Delegate may represent only one Member Country. No member of the Bureau shall serve as a Council Delegate of a country. No Member of the Executive Committee shall vote with the Council unless under exceptional circumstances they are also the Council Delegate of a Member Country.

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Union

A paying Member Country which is not represented at a Council meeting may vote by correspondence on any specific question provided that the matter has been clearly defined on the final agenda distributed in advance to the Member Countries and that the discussion thereon has not produced any new considerations or changed its substance and provided that said vote has been received in writing by the President prior to the voting.

For the validity of the deliberations of the Council, at least one third of the Member Countries eligible to vote must be represented by their Council Delegates.

20. Before a vote in a Council meeting or an electronic vote, the President shall decide whether the matter under consideration is scientific, administrative or financial in character and whether the procedure of voting by correspondence applies.
21. Decisions of the Council shall be taken by a simple absolute majority except as otherwise specified in the present Statutes.

If a tie should occur in a Council vote, the decision shall rest with the President.

Simple or two-third absolute majorities are determined by the proportion of affirmative votes to the sum of votes (affirmative, negative, abstention), provided that the total number of delegates voting (affirmative, negative, abstention) is not less than one third of the total membership of the Union eligible to vote. Blank or invalid ballots and votes not cast by Delegates present at a Council meeting or by electronic voting are counted as abstentions.

**IV. GENERAL**

22. These Statutes or any further modification to them shall come into force at the close of the Council meeting at which they are adopted, or in the case of electronic voting on the date at which they are adopted.
23. The Statutes of the Union may be modified only with the approval of two thirds of the Council Delegates present at a meeting or voting electronically.
24. Proposals for changes to any articles of the Statutes and By-Laws of the Union may be made by a Member Country or the IUGG Bureau.

The proposals must reach the Secretary General at least six months before the date of the meeting at which the changes are to be considered. The Secretary General shall notify all Member Countries of any proposed change at least four months before the announced date of the Council meeting.

If a proposal is submitted to Secretary General between Council meetings, the Bureau, in consultation with the Executive Committee, shall determine whether the proposal has merit to be placed for electronic voting by the Council. In the case of electronic voting, the Secretary General shall notify all Member Countries of any proposed change at least three months before the date of the vote.

25. Conduct of IUGG meetings, except as otherwise specified in the Statutes, shall be according to Robert's Rules of Order, Newly Revised. Details of the edition in current use shall be included in the reference document 'Guidelines on IUGG Administration' described in By-Law 13.
26. The official languages of the Union shall be English and French. In case of disparity between the texts, the English text shall be authoritative.

**END OF STATUTES**

## BY-LAWS

### I. COMPOSITION

1. The following are the constituent Associations of the Union:  
The International Association of Cryospheric Sciences (IACS),  
The International Association of Geodesy (IAG),  
The International Association of Geomagnetism and Aeronomy (IAGA),  
The International Association of Hydrological Sciences (IAHS),  
The International Association of Meteorology and Atmospheric Sciences (IAMAS),  
The International Association for the Physical Sciences of the Oceans (IAPSO).  
The International Association of Seismology and Physics of the Earth's Interior (IASPEI),  
The International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI).
2. The IUGG Executive Committee may establish Union Commissions in order to examine scientific issues of mutual interest to at least four Associations. The Union may also, through the Executive Committee, sponsor jointly with other Unions or for special purposes, specific Programmes or Committees for the conduct of inter-disciplinary science. Such bodies may create subordinate bodies as necessary. In the same way, the Union may sponsor Permanent Services. The list of Union Commissions, Programmes, Committees, and Permanent Services shall be reviewed by the Executive Committee at each General Assembly.  
  
Scientists from all countries may attend scientific meetings of the Union and of the Associations. They may also act as observers in Commissions of the Union and in the Associations.
3. The President will normally represent the Union at the General Assemblies of the International Council for Science but may be represented, if necessary, by the Vice-President or Secretary General.
4. Each Adhering Body shall form a Committee for Geodesy and Geophysics hereafter known as an IUGG National Committee, which normally consists of a President, Secretary General, and National Correspondents to Union Associations. The function of the National Committee is, under the direction of the Adhering Body, to provide for the participation of the Member Country in the Union's activities.

During the interval between General Assemblies, the Bureau of the Union may directly consult by correspondence the National Committee of each Member Country on any question of scientific character or on administrative matters not involving finance. On matters of finance and on admission of new Member Countries, the Bureau of the Union shall communicate with the Adhering Bodies of paying Members.

### II. ADMINISTRATION

5. General Assemblies will normally be held once every four years at the call of the President of the Union. The interval of time between the closure of two successive General Assemblies shall be known as a "period".
6. Notice of the date and of the place of the meeting of the next General Assembly shall be sent by the Secretary General to the Member Countries at least nine months before the Assembly.

Proposals concerning the agenda for meetings of the Council may be presented by the Adhering Bodies or National Committees; they must be received by the Secretary General at least six months before the meeting. Associates may make proposals of a scientific nature only. The Secretary General must place all proposals received on the final agenda for the Council meeting. This final agenda, with explanatory comments, shall be sent to all Member Countries at least four months prior to the meeting. An item which has not been thus placed on the agenda may be discussed at a meeting of the Council if a proposal to that effect is approved by a two-thirds absolute majority vote of the Council Delegates.

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Union

7. The Secretary General may send notice of the date and place of the next General Assembly to individuals or scientific organizations in countries not adhering to the Union, but where there is evidence of activity in Geodesy and Geophysics.

Scientists from these countries will be invited to participate in the scientific programme of the General Assembly, with the status of Guest.

The President of the Union may, on their own initiative or at the request of an Association or Member Country, invite representatives of scientific bodies to attend any General Assembly as Guests provided there is no financial obligation for the Union.

8. A plenary meeting of the participants in the General Assembly shall be held during each General Assembly for discussions of Union activities.
9. The Associations shall hold business meetings and scientific sessions at the General Assemblies of the Union.

The scientific meetings at a General Assembly should include joint sessions of two or more Associations for the discussion of interdisciplinary topics. The programme of the meetings and the selection of these interdisciplinary topics shall be decided by the Executive Committee of the Union, about two years before the time of the General Assembly, on the basis of recommendations made earlier by the Associations.

Provided that the Executive Committee is informed, an Association may also arrange meetings of its own in the interval between the General Assemblies, either singly to deal with topics of specific interest, or jointly with another Association or other Associations.

10.

- a) The President of the Union shall be elected for one period and is not immediately eligible for re-election. The Vice-President and the additional elected Members of the Bureau shall be elected for one period and may be re-elected for not more than one consecutive period in the same function.

The Secretary General shall be elected for two periods initially and should not normally be re-elected for more than two additional single periods.

The Treasurer shall be elected for one period initially and should not normally be re-elected for more than two additional single periods.

The Members of the Finance Committee shall be elected for one period and may be re-elected for two successive periods.

- b) At least eighteen months before a General Assembly, the President shall appoint a Nominating Committee with the advice and approval of the Executive Committee. The Nominating Committee shall consist of a Chairman and three other members, not themselves members of the Executive Committee or of the Finance Committee.

The Nominating Committee, after soliciting nominations from the Adhering Bodies of the Member Countries, and from the officers of the Union and the Associations, shall propose one or two candidates for each position in the Bureau, seeking to achieve reasonable balance in their gender, experience, and geographical and disciplinary distribution. Candidates will be required to signify their acceptance of nomination and to prepare a resumé outlining their position, research interests and activities related to the Union.

The officers of the Union and Associations and the National Committees shall be informed by the Nominating Committee of the list of nominations at least eight months before the General Assembly. They may make further nominations and/or recommendations to the Nominating Committee at least three months before the General Assembly. If new nominations for a given position are supported by at least three Presidents or equivalent officers of National Committees of Member Countries, and if they are accompanied by the written acceptance of possible nomination and resumé outlining the position, research interests and Union related activities of the candidates, they shall be added to the list initially established. The Nominating Committee shall send the final list of nominations to the officers of the Union and Associations and to the National Committees at the latest two months prior to the General Assembly.



XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Union

Re-nominations, from those previously nominated for the Bureau may also be made over a period of 48 hours following the close of the first session of the Council meeting at the General Assembly. Such nominations must be submitted in written form to the Secretary General, supported by at least three members of the Council and accompanied by the same documentation as required with the original nominations. The Council Delegates shall be informed of these additional nominations, together with their resumé, at least 24 hours before the elections.

No one can be a candidate for more than one position in the election. Elections shall be by secret ballot.

- c) The Nominating Committee shall, after soliciting nominations from the Adhering Bodies of the Member Countries, and from the officers of the Union and the Associations, propose one or two candidates for each of the four positions on the Finance Committee: two positions from among the current members of the Finance Committee and two positions from among the accredited Council Delegates at the present or any previous General Assembly excluding the current members of the Finance Committee. If there is an insufficient number of candidates from the previous Finance Committee, then an additional member or members shall be elected from among the Council Delegates. No member of the Finance Committee may at the same time be a member of the Bureau or the executive body of the Union or of an Association or of a governing body of one of the Permanent Services or programmes supported by the Union. No member may serve for more than three consecutive periods on the Finance Committee.

The officers of the Union and Associations and the National Committees shall be informed by the Nominating Committee of the list of nominations at least three months before the General Assembly. The Council may add to the list of nominations for the Finance Committee during the General Assembly until three days prior to the elections.

Candidates will be required to signify their acceptance of nomination and to provide a resumé outlining their suitability for serving on the Finance Committee.

- d) No one may be at the same time a Member of the Bureau or of the Finance Committee and President or Secretary of an Association.
- e) Scientists from any country are eligible to hold various positions within IUGG with the following exceptions: positions in the Bureau and the Finance Committee, and the positions of Presidents of the Associations, which can only be held by scientists from Member Countries whose subscription has been paid up to the end of the calendar year preceding their nomination.
11. The Council is convened by the President of the Union, and shall meet at appropriate times during each Assembly.

The Council may be convened between two General Assemblies when a written request is made by at least a third of the paying Member Countries or by a simple majority of the members of the Executive Committee, with notice of the questions to be placed on the agenda of the meeting.

Council meetings shall be open to Council Delegates, the Executive Committee, and the Finance Committee. One person from each Associate Member may attend any Council meeting with voice but without the right to vote. The IUGG President may invite guests to make presentations at Council meetings. Other individuals may, with concurrence of the President, attend Council meetings as Listeners only, except that a simple majority of Council Delegates present may declare part of any meeting closed to Listeners.

The Council shall:

- a) decide upon the admission of new Member Countries and new Affiliate Members;
- b) decide on an appeal against a decision by the Bureau to deny a transfer to Associate membership of a Member Country in Observer Status;
- c) elect the members of the Bureau and of the Finance Committee;
- d) receive reports from the Secretary General and the Treasurer of the Union and ratify the decisions or actions taken by the Bureau and the Executive Committee since the last Council meeting;

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Union

- e) consider the budget submitted by the Treasurer and adopt the final budget;
  - f) determine the amount of the unit of contribution for the ensuing period (the unit cannot be changed at a General Assembly unless proposed on the agenda distributed four months in advance to the Member Countries);
  - g) review from time to time the categories of Member Countries; review the Associates at each General Assembly;
  - h) examine questions of general policy or administration in the business of the Union and appoint such Committees as may from time to time be deemed necessary for this purpose;
  - i) consider proposals for changes in the Statutes or By-Laws.
12. The Executive Committee is convened by the President of the Union. It shall meet at each General Assembly, and also at all sessions of the Council with voice but without vote. It will also meet normally at least once between General Assemblies, two years ahead of the next General Assembly, in order to prepare an outline of the interdisciplinary scientific agenda and of the timetables for the Union and for the Associations during the next General Assembly.

At a meeting of the Executive Committee, no member of the Bureau, or the Past President of the Union, may be represented by any other person. The Presidents of the Associations, in case of hindrance, may be represented by a Vice-President or the Secretary of their Association. The Past President has voice but no vote. For the validity of the deliberations of the Executive Committee, at least half of its members must be present or represented.

Proposals concerning the agenda for meetings of the Executive Committee may be submitted by Members of the Committee; they must be received by the Secretary General at least six months before the meeting.

The final agenda shall be sent to the Members of the Executive Committee at least four months prior to the meeting. No question which has not been placed on the agenda may be discussed at a meeting of the Committee unless a proposal to that effect has been approved by a two-thirds absolute majority vote of the Members present.

The Executive Committee shall:

- a) initiate actions, as required, to co-ordinate the common interest of the Associations, such as by meetings between the Secretary General and the Secretaries of the Associations;
  - b) guide the Treasurer regarding the financial needs of the Associations in achieving their objectives;
  - c) fill any vacancy which may occur between General Assemblies among the Members of the Bureau and the Finance Committee (when such appointments are later confirmed by the Council, the period of office will be considered to begin from the date of its confirmation by the Council);
  - d) make recommendations to the Council on matters of general policy of the Union.
13. The Bureau will normally meet once a year, at the call of the President of the Union. In a meeting, no Member of the Bureau may be represented by any other person. For the validity of the deliberations, four Members at least must be present.

Between the meetings of the Council, the Bureau shall initiate procedures to attain the general objectives of the Union; it shall manage the finances, and ensure the adequate administration of the Union, including maintenance of a reference document 'Guidelines on IUGG Administration'. It shall draw up the programmes for the meetings of the Council and of the Executive Committee.

14. Applications for membership of the Union and for transfer to Associate membership shall be referred to the Secretary General who shall report thereon to the Executive Committee, which shall decide on the scientific merits of each application. The Secretary General shall then forward the proposals through the appropriate channels to the Adhering Bodies representing the paying Member Countries; these bodies will vote electronically and the results of the ballot shall be communicated to them by the Bureau. Admission or transfer will be determined by a simple majority and is provisional until approved by Council. Simple majority is here determined by the proportion of affirmative votes to the sum of votes (affirmative, negative) provided that this sum is not less than one third of the total membership of the Union eligible to vote. Any case of refusal shall be referred to the Council.

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Union

15. The President of the Union shall:
- a) be the representative of the Union in its dealing with National or International Organisations or Institutions;
  - b) convene and preside over the General Assembly and over all meetings of the Council, Executive Committee and Bureau;
  - c) submit a report to the General Assembly on the scientific work of the Union during the current period.

In case of absence of the President, the Vice-President shall act. If the President is incapable of remaining in office, the Vice-President shall become President and the Executive Committee shall elect a new Vice-President from the remaining Members of the Bureau.

16. The Secretary General shall:
- a) serve as Secretary of the General Assembly, the Council, the Executive Committee and the Bureau; arrange for meetings of these bodies; prepare and distribute promptly the agenda and the minutes of all their meetings;
  - b) manage the affairs of the Union, informed by the document 'Guidelines on IUGG Administration', attend to correspondence, preserve the records;
  - c) circulate all information related to the Union;
  - d) prepare reports on the Union's activities; at least three months before the General Assembly, forward to all the Member Countries a report on the administration of the Union since the last General Assembly, and present a summary of this to the General Assembly itself;
  - e) Maintain a register of distinguished scientists who have been honoured by the Union as Fellows of IUGG, collectively designated as the College of Fellows.
  - f) perform such other duties as may be assigned by the Bureau.

17. To assist the Secretary General and the Treasurer in the performance of their duties, the Bureau may appoint one Assistant Secretary General (Executive Secretary) and one Assistant Treasurer who shall be assigned specific tasks by the Secretary General and the Treasurer, respectively, with the approval of the Bureau. The Assistants may attend meetings of the administrative bodies of the Union in an advisory capacity. The Bureau may authorize employment of additional administrative and secretariat personnel as may be required to ensure orderly administration.

**III. FINANCE**

18. a) The Adhering Bodies to the Union shall pay annually the number of units of contributions assigned to the category in which they adhere, according to the following table

Category	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Units of Contribution	1	2	3	5	7	10	15	20	25	30	35	40	45	50

- b) Associates, in Category A, do not pay.
  - c) Affiliate members, in Category AF, do not pay.
19. The Finance Committee shall elect a Chair from among its members.

The Finance Committee shall meet, at the call of its Chair, and at least once during its term of office.

The Treasurer may be invited by the Chairman to attend a meeting of the Finance Committee. No Member may be represented by any other person at a meeting of the Committee.

The Finance Committee shall:

- a) advise the Council on all financial matters of the Union;
- b) receive and review the audits of the accounts;
- c) report to the Council;

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Union

- d) advise the Treasurer on preparation of the budget;
- e) advise the Treasurer, the Bureau, and the Executive Committee on financial matters, including raising funds to support Union and Association activities, and reviewing the category of membership of National Members.

The Chair of the Finance Committee will normally be invited to meetings of the Bureau or Executive Committee when financial matters are on the agenda.

20. The Treasurer of the Union shall be responsible for the financial administration of the Union informed by the document 'Guidelines on IUGG Administration' and directions issued by the Bureau.

The Treasurer shall:

- a) in consultation with the Executive Committee and the Finance Committee, prepare a preliminary budget to be sent to the Adhering Bodies at least three months prior to the Assembly together with comments of the Finance Committee, then update it at the General Assembly and submit the budget to the Council for approval;
- b) arrange for an annual audit of the books;
- c) collect the funds of the Union and disburse them in accordance with the approved budget and instructions of the Council and of the Bureau;
- d) maintain records of all financial transactions of the Union and submit annual financial reports thereon to the Bureau and the Finance Committee;
- e) submit such other reports to the Finance Committee and to the Council as may be requested;
- f) assemble, at the end of the calendar year preceding a General Assembly, a report on the complete accounts of the Union (including those of the Associations and of all Union activities) for the previous period, for presentation to the Bureau and to the Finance Committee at least three months prior to the General Assembly, and at the General Assembly to the Council. The report shall be accompanied by statements concerning each account administered by the Union, its Associations, and other financially assisted bodies. Each account shall be audited by a qualified accountant;
- g) prepare a summary report of the Finances of the Union (including those of the Associations and of all Union activities) and arrange for the distribution of copies thereof to the Member Countries not later than three months prior to the General Assembly.

The President, the Treasurer and the Assistant Treasurer have the authority to draw from any bank accounts of the Union, but only as directed by the Bureau.

21. Travelling expenses and per diem subsistence may be paid by the Treasurer in accordance with rates established by the Bureau.

The following conditions must be satisfied:

- a) the meeting must be for specific Union business;
- b) those concerned must represent the Union and not Adhering Bodies;
- c) those concerned must be unable to obtain adequate allowances from sources in their own country.

#### IV. AWARDS

22. Fellowship of the International Union of Geodesy and Geophysics is a tribute, awarded by the IUGG Bureau, to individuals who have made exceptional contributions to international cooperation in Geodesy or Geophysics and attained eminence in the field of Earth and space sciences.

The nomination and selection procedures and detailed criteria for IUGG Fellowship shall be determined by the IUGG Bureau and published in the document 'Guidelines on IUGG Administration'.

**V. CHANGES TO THE BY-LAWS**

23. The Council has the power to adopt By-Laws within the framework of the Statutes of the Union. These By-Laws may be modified by a simple majority of votes cast at a Council meeting or by electronic voting. These By-Laws, or any further modification of them shall come into force at the close of the Council meeting at which they are adopted or, in the case of electronic voting, at the date on which they are adopted.

**END OF STATUTES AND BY-LAWS**

## STATUTS ET RÈGLEMENTS DE L'UNION

### UNION GEODESIQUE ET GEOPHYSIQUE INTERNATIONALE

#### STATUTS

*(Modifiés en juin 2015, XXVIème Assemblée Générale de l'UGGI, Prague, République tchèque)*

#### I. OBJECTIFS ET COMPOSITION DE L'UNION

1. Les buts de l'Union géodésique et géophysique internationale sont les suivants :
  - a) Favoriser l'étude de tous les problèmes concernant la figure de la Terre, la physique et la chimie de son intérieur, de sa surface, de l'eau douce, de la cryosphère, des océans et de l'atmosphère, ainsi que des études pertinentes d'autres planètes ;
  - b) Initier, faciliter et coordonner les recherches et études de géodésie et de géophysique, qui nécessitent une coopération internationale ou qui présentent un intérêt national ;
  - c) Assurer, sur le plan international, la discussion et la publication des résultats des recherches mentionnées à l'article 1.b) ;
  - d) Coordonner les moyens d'action scientifique dans le monde entier, dans les disciplines qui intéressent l'Union ;
  - e) Prêter son concours scientifique à l'étude des problèmes pratiques de nature géodésique ou géophysique, lorsque ces problèmes présentent un aspect international ou lorsqu'ils exigent la coopération internationale de spécialistes ou d'installations ;
  - f) Promouvoir et coordonner les activités scientifiques de plusieurs services permanents chargés, sur le plan international, de favoriser la normalisation des mesures ou de recueillir, d'analyser et de publier des données géodésiques ou géophysiques en tenant compte des résultats des études planétaires ;
2. Pour réaliser ses objectifs scientifiques, l'Union regroupe un certain nombre d'associations internationales, chacune d'elles traitant d'une discipline de la géodésie ou de la géophysique.
3. L'Union adhère au Conseil international des unions scientifiques (CIUS).
4.
  - a) Tout pays dans lequel une activité géodésique ou géophysique indépendante s'est développée, peut adhérer à l'Union à condition de participer convenablement à son entretien.  

Ce pays est représenté par un seul organisme, appelé organisme adhérent, qui peut être soit la principale Académie scientifique, ou le Conseil national de la recherche scientifique, soit toute autre institution ou groupement d'institutions, gouvernementales ou non, représentant l'ensemble des activités géodésiques et géophysiques du pays adhérent. Le Conseil de l'UGGI (défini à l'article 5 de ces statuts) peut accepter un nouvel organisme adhérent convenablement désigné pour un pays, uniquement en cas de circonstances exceptionnelles, sous réserve qu'un organisme adhérent de ce pays ait déjà été admis comme membre national du Conseil international des unions scientifiques. Dans ce cas, chaque organisme adhérent aura un délégué au Conseil et sera traité à part en matière d'élections ou de finances.
  - b) Un pays dans lequel une activité en géodésie et géophysique s'est développée, mais qui ne peut pas participer financièrement à l'entretien de l'Union, peut devenir membre associé. Ce pays sera représenté par un seul organisme, comme précisé en 4a.
  - c) Dans ce qui suit, les pays adhérents sont appelés pays membres.
  - d) Il existe une catégorie d'adhésion désignée sous le nom d'affiliation. Toute organisation multinationale ou régionale géodésique, géophysique ou relevant des géosciences est éligible

à l'affiliation. Les membres affiliés ont les mêmes droits, devoirs et obligations que les membres associés.

- e) Il existe au sein de l'UGGI une catégorie de membres honoraires à laquelle appartiennent des individus distingués par le Bureau de l'UGGI. Les membres honoraires n'ont pas le droit d'assister aux réunions du Conseil ni de participer aux affaires du Conseil.
5. L'Assemblée générale se compose de trois parties: i) Une réunion des délégués des pays membres, dûment accrédités, et des personnes invitées conformément aux règlements (la réunion du conseil), ii) Les réunions administratives de l'union; iii) Une Assemblée scientifique ouverte.

Le Conseil de l'Union sera composé de délégués appelés délégués au Conseil, désignés par les organismes adhérents des pays membres à raison d'un délégué au Conseil par organisme adhérent. Chaque délégué au Conseil est officiellement accrédité par l'organisme adhérent avant chaque réunion du Conseil. Les organismes adhérents ayant le statut d'associé ne sont pas admis à nommer un délégué au Conseil. Chaque délégué au Conseil, normalement le président du Comité national de l'UGGI concerné, doit assumer ses fonctions jusqu'au début de la première séance de la réunion du Conseil suivante. Toutefois, un organisme adhérent peut remplacer son délégué au Conseil pendant l'intervalle qui sépare deux réunions du Conseil successives et/ou nommer un délégué suppléant pour une réunion précise.

Le droit de vote d'un délégué au Conseil est lié au respect des obligations financières de son organisme adhérent envers l'Union.

## II. ADMINISTRATION

6. La responsabilité de la direction des affaires de l'Union sera confiée au Conseil de l'Union. Les décisions prises par le Conseil sont présentées à l'Assemblée générale.
7. Entre les réunions du Conseil, la direction des affaires de l'Union est dévolue au Bureau et au Comité exécutif, dont les attributions respectives sont définies ci-après.
8. Le Bureau de l'Union est constitué par le président, le vice-président, le secrétaire général, le trésorier et trois membres supplémentaires, tous élus par le Conseil.

Le rôle du Bureau est d'administrer l'Union conformément aux présents statuts et règlements, en accord avec les décisions prises par le Conseil.

9. Le Comité exécutif est constitué par le Bureau, les présidents des associations internationales, et le président sortant de l'Union. Les secrétaires des associations seront invités à assister, à titre consultatif, aux réunions du Comité exécutif de l'Union.

Le rôle du Comité exécutif est de faciliter la réalisation des objectifs scientifiques des associations en assurant leur coordination effective et en exprimant les conditions générales nécessaires à la bonne marche des travaux scientifiques de l'Union.

Le Comité exécutif participe, à titre consultatif, aux séances du Conseil.

10. Dans le cadre des statuts de l'Union, les associations internationales composant l'Union peuvent établir leurs propres statuts et règlements et assurer leur administration ainsi que la gestion de leurs finances.

## III. FINANCES

11. Lors de l'Assemblée générale, le Conseil élira, pour la période suivante, une commission des finances composée de quatre membres choisis parmi la précédente commission des finances et les membres du Conseil, selon les spécifications du Règlement 10.

La commission des finances participe, à titre consultatif, aux séances du Conseil.

12.

- a) Les pays membres de l'Union se rangent selon quatorze catégories, numérotées de 1 à 14, ou dans des catégories particulières, appelées catégorie A et catégorie AF.

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statuts et Règlements de l'Union

- b) Pour les catégories allant de 1 à 14, chaque pays membre paie annuellement le nombre d'unités de contribution correspondant à sa catégorie. L'organisme adhérent représentant le pays est responsable du paiement de la cotisation. Tout pays membre peut en outre verser des fonds destinés à prendre en charge les frais de voyages de scientifiques de pays en catégorie A.
  - c) La catégorie A se compose des membres associés. Ceux-ci n'acquittent pas de cotisation annuelle à l'Union.
  - d) La catégorie AF se compose des membres affiliés. Ceux-ci n'acquittent pas de cotisation annuelle à l'Union.
- 13.
- a) Un pays désireux d'adhérer à l'Union doit spécifier la catégorie à laquelle il se propose d'adhérer. Sa demande d'adhésion peut être refusée si la catégorie choisie est jugée inadéquate.
  - b) Un associé peut devenir membre à titre payant, ou un pays membre à titre payant peut à tout moment passer dans une catégorie supérieure moyennant l'accord du Conseil. Un pays membre à titre payant ne peut passer dans une catégorie inférieure ou devenir membre associé qu'avec l'accord du Conseil de l'Union.
- 14.
- a) L'année financière est l'année civile.
  - b) Si en fin d'année, un pays membre à titre payant n'a pas payé sa cotisation de l'année, il perdra les avantages dont jouissent les membres, jusqu'à réception du paiement intégral de cette année et pour tous les arriérés éventuels de cotisation. De tels pays membres auront le statut d'observateur.
  - c) Un pays membre ayant le statut d'observateur restera redevable des cotisations annuelles échues.
  - d) Si, au début de l'année, un pays membre à titre payant a le statut d'observateur depuis quatre ans, il sera considéré comme démissionnaire de l'Union, à moins que le secrétaire général n'ait reçu de ce pays membre une requête écrite en bonne et due forme pour devenir membre associé (Catégorie A).
  - e) Le Bureau de l'Union a l'autorisation d'accorder des demandes de transfert temporaire en Catégorie A, jusqu'à la prochaine réunion du Conseil, aux pays membres ayant le statut d'observateur, qui fournissent la preuve que tous les efforts pour payer les cotisations en retard ont peu de chances d'aboutir.
  - f) Un pays membre à qui le transfert en Catégorie A a été refusé par le Bureau, peut faire appel lors de la réunion suivante du Conseil.
  - g) Tout pays membre sous le statut d'observateur auquel un transfert en Catégorie A est refusé cessera d'être membre à la fin de la réunion du Conseil au cours de laquelle sa demande est examinée.
  - h) Chaque adhésion en tant qu'associé doit faire l'objet d'un examen par le Bureau et la commission des finances. Les résultats doivent être communiqués au Conseil à chaque Assemblée générale. On demande aux pays membres ayant le statut d'associé d'envisager de passer dans une catégorie payante si cela est jugé approprié. Si, suite à une telle demande, un pays n'entre pas dans une catégorie payante, le Conseil décide à sa prochaine réunion si le pays peut continuer son adhésion à l'Union.
15. En cas de dissolution d'une association, ses avoirs seront cédés à l'Union. En cas de dissolution de l'Union, ses avoirs seront cédés au CIUS.



#### IV. DROIT DE VOTE

16. Le vote au sein du Conseil se fait (a) lors des réunions du Conseil ou (b) par voie électronique. Le vote électronique recourt à des systèmes numériques (par exemple Internet, e-mail, fax) et est organisé par le secrétariat de l'UGGI. Les votes électroniques seront ouverts pendant un mois calendaire à partir de la date à laquelle ils ont été annoncés. Normalement, les votes électroniques seront suspendus pendant les 6 mois qui précèdent une réunion du Conseil.

Les associés n'ont pas le droit de vote.

17.

- a) Pour les questions d'ordre scientifique, ou administratif, ou à la fois d'ordre administratif et scientifique, mais sans incidence financière, le vote se fait au Conseil, par pays membre, chaque délégué au Conseil ayant une voix, à condition que l'organisme adhérent ait payé ses cotisations jusqu'à la fin de l'année civile qui précède le vote.
- b) Pour les questions financières, le vote se fait au Conseil par pays membre, à condition que le pays votant ait payé ses cotisations jusqu'à la fin de l'année calendaire qui précède le vote. Le nombre de voix attribuées à chaque pays membre est égal au numéro de la catégorie à laquelle ce pays appartient.

18. Pour l'admission de nouveaux pays membres et de nouveaux membres affiliés et les appels relatifs à un refus de transfert au statut d'associé, les décisions sont prises au Conseil ou au cours d'un vote électronique à la majorité absolue des deux tiers des délégués au Conseil, chaque délégué au Conseil disposant d'une voix.

19. Un délégué au Conseil ne peut représenter qu'un seul pays membre. Aucun membre du Bureau ne peut être délégué au Conseil d'un pays membre. Aucun membre du Comité exécutif ne peut participer aux votes du Conseil, sauf en cas de circonstances exceptionnelles où il serait également le délégué au Conseil d'un pays membre.

Un pays membre à titre payant non représenté à une réunion du Conseil peut voter par correspondance sur toute question particulière, précisée dans l'ordre du jour définitif distribué à l'avance aux pays membres, pourvu que les débats sur cette question n'aient pas fait apparaître de nouveaux éléments, ni modifié la substance, et que le vote en question soit parvenu au Président avant l'ouverture du scrutin.

Pour la validité des délibérations au Conseil, au moins un tiers des pays membres ayant le droit de vote sont représentés par leurs délégués au Conseil.

20. Avant un vote lors d'une réunion du Conseil ou par voie électronique, il revient au président de décider si la question débattue est d'ordre scientifique, administratif ou financier, et si la procédure du vote par correspondance s'applique.

21. Les décisions du Conseil sont prises à la majorité absolue simple sauf dans les cas spécialement mentionnés dans les présents statuts.

Si, au cours d'un vote au Conseil il y a égalité de voix, la décision appartient au président.

La majorité absolue simple ou des deux tiers est déterminée par la proportion des votes affirmatifs par rapport au total des votes (affirmatifs, négatifs et abstentions) pourvu que le nombre total de délégués votants (affirmatif, négatif, abstention) ne soit pas inférieur à un tiers des pays membres de l'Union ayant droit de vote. Les votes blancs et nuls et les votes non exprimés par les délégués présents à une réunion du Conseil ou lors d'un vote électronique sont comptés comme des abstentions.

#### V. GÉNÉRALITÉS

22. Les présents statuts, ou toute modification ultérieure, prennent effet à la clôture de la réunion du Conseil au cours de laquelle ils ont été adoptés, ou bien, en cas de vote électronique, à la date à laquelle ils ont été adoptés.

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statuts et Règlements de l'Union

23. Les statuts de l'Union ne peuvent être modifiés qu'avec l'assentiment des deux tiers des délégués au Conseil présents à une réunion ou votant par voie électronique.

24. Des propositions de modification de tous les articles des statuts et règlements de l'Union peuvent être faites par un pays membre ou par le Bureau de l'UGGI.

Elles doivent parvenir au secrétaire général au moins six mois avant la date de la réunion du Conseil au cours de laquelle les modifications doivent être examinées. Le secrétaire général fait connaître à tous les pays membres, au moins quatre mois avant la date fixée pour la réunion du Conseil, toutes les propositions de modification reçues.

Si une proposition est soumise au secrétaire général entre deux réunions du Conseil, après avoir consulté le Comité exécutif, le Bureau déterminera si la proposition mérite d'être soumise à un vote électronique du Conseil. En cas de vote électronique, le secrétaire général fait connaître toutes les propositions de modification reçues à tous les pays membres au moins trois mois avant la date du vote.

25. Sauf mention contraire dans les statuts, le déroulement des réunions de l'UGGI suit l'ordre des règles de Robert, nouvelle version Les détails de la version prise en compte seront inclus dans le document de référence « Guidelines on IUGG Administration » décrit dans le Règlement 13.

26. Les langues officielles de l'Union seront l'anglais et le français. En cas de disparité entre les textes, le texte anglais fait autorité.

**FIN DES STATUTS**

## RÈGLEMENTS

### I. COMPOSITION DE L'UNION

1. L'Union est constituée par les Associations suivantes :  
Association internationale des sciences cryosphériques (AISC),  
Association internationale de géodésie (AIG),  
Association internationale de géomagnétisme et d'aéronomie (AIGA),  
Association internationale des sciences hydrologiques (AISH),  
Association internationale de météorologie et des sciences de l'atmosphère (AIMSA),  
Association internationale des sciences physiques des océans (AISPO).  
Association internationale de sismologie et de physique de l'intérieur de la Terre (AISPIT),  
Association internationale de volcanologie et de chimie de l'intérieur de la Terre (IAVCIT),
2. Le Comité Exécutif de l'UGGI peut établir des commissions de l'Union dont le but est d'examiner des sujets scientifiques d'intérêt commun à un minimum de quatre associations. A travers le Comité exécutif, l'Union peut également parrainer, en collaboration avec d'autres Unions ou pour des raisons particulières, des programmes ou des comités spécifiques dans une perspective interdisciplinaire. De telles entités peuvent créer des entités subordonnées selon leurs besoins. De la même manière, l'Union peut parrainer des services permanents. La liste des commissions de l'Union, des programmes, des comités, et des services permanents sera révisée par le Comité exécutif lors de chaque Assemblée générale.  
  
Des scientifiques de tout pays peuvent assister aux réunions scientifiques de l'Union et des associations. Il leur est également possible d'être observateurs dans les commissions de l'Union et des associations.
3. Le président représente normalement l'Union aux Assemblées générales du Conseil international des Unions scientifiques. Il peut se faire remplacer par le vice-président ou le secrétaire général, si nécessaire.
4. Chaque organisme adhérent constitue un comité national de géodésie et de géophysique, désigné ci-après Comité national UGGI, qui est normalement constitué d'un président, d'un secrétaire général et de correspondants nationaux des associations de l'Union. Le comité national est chargé d'assurer, sous les directives de l'organisme adhérent, la participation du pays membre aux activités de l'Union.  
  
Dans l'intervalle entre les Assemblées générales, le Bureau de l'Union peut consulter directement, par correspondance, le Comité national de chaque pays membre sur toute question d'ordre scientifique ou administratif, sans incidence financière. Pour les questions financières et l'admission de nouveaux pays membres, le Bureau de l'Union s'adresse aux organismes adhérents des pays membres à titre payant.

### II. ADMINISTRATION

5. Les Assemblées générales se réunissent normalement tous les quatre ans, sur convocation du président de l'Union. Le terme "période" désigne le temps écoulé entre la clôture de deux Assemblées générales consécutives.
6. Le secrétaire général transmettra aux pays membres, au moins neuf mois à l'avance, notification de la date et du lieu de réunion de la prochaine Assemblée générale.

Toutes les propositions concernant l'ordre du jour des réunions du Conseil peuvent être formulées par les organismes adhérents ou les comités nationaux ; elles devront parvenir au secrétaire général six mois au moins avant la réunion. Les membres associés ne pourront émettre que des propositions de nature scientifique. Le secrétaire général inscrira obligatoirement toutes les propositions reçues à l'ordre du jour définitif de la réunion du Conseil. Cet ordre du jour, accompagné d'un exposé des motifs, est envoyé au moins quatre mois avant la réunion à tous les pays membres. Un article non-inscrit à cet ordre du jour

pourra être soumis à la discussion du Conseil après un vote favorable du Conseil à la majorité absolue des deux tiers des délégués au Conseil.

7. Le secrétaire général peut communiquer la date et le lieu de la prochaine Assemblée générale aux personnes ou organisations scientifiques de pays n'adhérant pas à l'Union, qui témoignent d'une activité en géodésie et en géophysique.

Des scientifiques de ces pays seront conviés à participer au programme scientifique de l'Assemblée générale en tant qu'invités.

Le président de l'Union peut, de sa propre initiative ou à la demande d'une association ou d'un pays membre, convier des représentants d'organisations scientifiques à participer à toute Assemblée générale en tant qu'invités sous réserve qu'il n'y ait aucune obligation financière pour l'Union.

8. Une réunion de travail plénière des participants à l'Assemblée générale se tient pendant chaque Assemblée générale en vue de discuter des activités de l'Union.
9. Les associations tiennent des réunions administratives et des réunions scientifiques pendant les Assemblées générales de l'Union.

Durant une Assemblée générale, les réunions scientifiques devraient comporter des séances conjointes de deux associations ou davantage, en vue de discuter de sujets interdisciplinaires. Le programme des réunions et le choix des sujets interdisciplinaires sont décidés par le Comité exécutif de l'Union environ deux ans avant la date de l'Assemblée générale, sur la base de recommandations faites antérieurement par les Associations.

Sous réserve que le Comité exécutif en soit informé, une association peut organiser elle-même des réunions entre les Assemblées générales de l'Union, soit séparément, pour traiter de sujets d'un intérêt particulier, soit en commun avec une autre association ou plusieurs d'entre elles.

10.

- a) Le président de l'Union est élu pour une période et n'est pas immédiatement rééligible. Le vice-président et les autres membres élus du Bureau sont élus pour une période et ne peuvent être réélus qu'une seule fois, pour une période consécutive, avec les mêmes fonctions.

Le secrétaire général est élu initialement pour deux périodes et ne devrait pas normalement pas être réélu pour plus de deux périodes supplémentaires.

Le trésorier est élu initialement pour une période et ne devrait pas normalement être réélu pour plus de deux périodes supplémentaires.

Les membres de la commission des finances sont élus pour une période et peuvent être réélus pour deux périodes successives.

- b) Au moins dix-huit mois avant une Assemblée générale, le président désigne un comité des candidatures après consultation et approbation du Comité exécutif. Le comité des candidatures se compose d'un président et de trois autres membres, n'appartenant ni au Comité exécutif, ni au Comité des finances.

Le comité des candidatures, après avoir sollicité des candidatures auprès des organismes adhérents des pays membres, et des responsables de l'Union et des associations, propose un ou deux candidats pour chaque poste à pourvoir au Bureau, en recherchant un juste équilibre dans leur sexe, leur expérience, leur répartition géographique et la discipline dans laquelle ils exercent. Les candidats seront tenus de manifester leur accord et de préparer un curriculum vitae énonçant les grandes lignes de leur situation, intérêts de recherche et activités concernant l'Union.

Les responsables de l'Union et des associations et les Comités nationaux sont informés par le comité des candidatures des candidatures retenues au moins huit mois avant l'Assemblée générale. Ils peuvent soumettre de nouvelles candidatures ou recommandations au comité des candidatures au moins trois mois avant l'Assemblée générale. Si les nouvelles candidatures à un poste donné sont soutenues par au moins trois présidents, ou dirigeants équivalents des Comités nationaux de pays membres, et si elles sont accompagnées du consentement écrit, et du curriculum vitae des candidats décrivant leur situation, leurs intérêts scientifiques, et leurs activités liées à l'Union, ces candidatures seront ajoutées à la liste initialement établie. Le comité des candidatures enverra la

liste finale des candidats aux responsables de l'Union et des associations et aux Comités nationaux, au plus tard deux mois avant l'Assemblée générale.

Des renouvellements de candidatures, tirés de la liste initiale des candidats pour le Bureau, peuvent aussi se faire durant les 48 heures suivant la clôture de la première session de la réunion du Conseil à l'Assemblée générale. De telles candidatures devront être soumises par écrit au secrétaire général, soutenues par au moins 3 membres du Conseil et accompagnées des mêmes documents que ceux requis pour une candidature initiale. Les délégués au Conseil seront informés de ces nouvelles candidatures, accompagnées de leurs curriculum vitae respectifs, au moins 24 heures avant les élections.

Aucun candidat ne pourra postuler à plus d'un poste. Les élections se feront à bulletin secret.

- c) Le comité des candidatures, après avoir sollicité des candidatures auprès des organismes adhérents des pays membres, et des responsables de l'Union et des associations, proposera un ou deux candidats pour chacune des quatre positions de la Commission des finances: deux positions parmi les membres actuels de la Commission des finances et deux positions parmi les délégués accrédités au Conseil de l'Assemblée générale actuelle ou de toutes les Assemblées générales précédentes en excluant les membres actuels de la Commission des finances. S'il y a un nombre insuffisant de candidats de la Commission des finances précédente, un ou plusieurs membres supplémentaires sont élus parmi les délégués au Conseil. Aucun membre de la Commission des finances ne peut être en même temps membre du Bureau ou de l'organisme exécutif de l'Union, d'une association, ou d'un organe directeur de l'un des services permanents ou programmes pris en charge par l'Union. Aucun membre ne peut siéger à la Commission des finances pendant plus de trois périodes consécutives.

Les responsables de l'Union et des associations et les Comités nationaux sont informés par le Comité des candidatures de la liste des candidatures au moins trois mois avant l'Assemblée générale. Le conseil peut ajouter des noms à la liste de candidats à la Commission de finances avant les trois jours précédant les élections.

Les candidats seront tenus de signifier qu'ils acceptent d'être candidats et fournir un curriculum vitae énonçant leurs qualifications pour siéger à la Commission des finances.

- d) Nul ne peut simultanément faire partie du Bureau ou de la Commission des Finances et être président ou secrétaire d'une association.
- e) Quel que soit leur pays d'origine, des scientifiques peuvent occuper différentes fonctions au sein de l'UGGI, hormis les exceptions suivantes : fonctions au sein du Bureau et de la Commission des finances, et fonction de président d'association, qui ne peuvent être tenues que par des scientifiques des pays membres dont l'adhésion a été réglée à la fin de l'année calendaire qui précède leur nomination.

11. Le Conseil est convoqué par le président de l'Union et se réunit quand il convient, au cours de chaque Assemblée générale.

Le Conseil peut être convoqué entre deux Assemblées générales sur demande écrite formulée par le tiers au moins des pays membres à titre payant, ou une majorité des membres du Comité exécutif, avec indication des questions à mettre à l'ordre du jour de la réunion ; les décisions prises dans ces conditions par le Conseil sont soumises à l'article 5 des statuts.

Les réunions du Conseil sont ouvertes aux délégués au Conseil, au Comité exécutif et à la Commission des finances. Un représentant de chaque membre associé peut assister à n'importe quelle réunion du Conseil en disposant d'un droit de parole, mais pas du droit de vote. Le président de l'UGGI peut inviter des invités à faire des présentations aux réunions du Conseil. D'autres personnes, peuvent, seulement avec l'accord du président, assister aux réunions du Conseil en tant qu'auditeurs, sauf au cas où une majorité simple des délégués au Conseil présents déclarerait une partie de la réunion interdite aux auditeurs.

Le Conseil :

- a) Se prononce sur l'admission de nouveaux pays membres et de nouveaux membres affiliés;

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statuts et Règlements de l'Union

- b) Statue sur un appel à l'encontre d'une décision prise par le Bureau de refuser le transfert en catégorie associée d'un pays membre au statut d'observateur ;
- c) Elit les membres du Bureau et de la Commission des Finances ;
- d) Reçoit les rapports du secrétaire général et du trésorier de l'Union et ratifie les décisions ou les mesures prises par le Comité exécutif et par le Bureau depuis la dernière réunion du Conseil ;
- e) Etudie le budget présenté par le trésorier et adopte le budget définitif ;
- f) Détermine le montant de l'unité de contribution pour la période suivante (cette unité ne peut être modifiée lors d'une Assemblée générale à moins d'avoir été inscrite à l'ordre du jour distribué quatre mois auparavant aux pays membres) ;
- g) Examine de temps en temps les catégories des pays membres ; examine la situation des membres associés à chaque Assemblée générale ;
- h) Etudie les questions de politique générale ou l'administration des affaires de l'Union et désigne éventuellement les comités qui peuvent être jugés nécessaires à cette fin ;
- i) Etudie les propositions de modification aux statuts ou règlements.

12. Le Comité exécutif est convoqué par le président de l'Union. Il se réunit à chaque Assemblée générale et participe, à titre consultatif seulement, à toutes les délibérations du Conseil. En principe, il se réunit également au moins une fois au cours de chaque période de deux ans entre les Assemblées générales, pour établir un projet d'ordre du jour pour les activités scientifiques interdisciplinaires et un projet d'emploi du temps de l'Union et des associations pendant l'Assemblée générale suivante.

Lors d'une réunion du Comité exécutif, aucun membre du Bureau, ni le président sortant de l'Union ne peuvent se faire représenter par quiconque. Les présidents des associations peuvent, en cas d'empêchement, être représentés par un vice-président ou le secrétaire de leur association. Le président sortant a le droit de parole, sans droit de vote. Pour la validité des délibérations du Comité exécutif, la moitié au moins de ses membres doit être présente ou représentée.

Les propositions concernant l'ordre du jour des réunions du Comité exécutif peuvent être formulées par les membres du Comité ; elles devront parvenir au secrétaire général au moins six mois avant la réunion.

L'ordre du jour définitif devra être envoyé aux membres du Comité exécutif quatre mois au moins avant la réunion. Une question non inscrite à cet ordre du jour ne pourra être soumise à la discussion du Comité exécutif qu'après un vote favorable du Comité, obtenu à la majorité absolue des deux tiers des membres présents à la réunion.

Le Comité exécutif :

- a) Prend les mesures nécessaires à la coordination des intérêts communs des associations, telles que les réunions entre le secrétaire général et les secrétaires des associations ;
  - b) Conseille le trésorier au sujet des besoins financiers des différentes associations pour réaliser leurs objectifs ;
  - c) Comble toute vacance qui pourrait survenir entre les Assemblées générales parmi les membres du Bureau ou de la Commission des finances (lorsque de telles nominations sont confirmées ultérieurement par le Conseil, la période d'exercice sera présumée commencer le jour de cette confirmation) ;
  - d) Fait des recommandations au Conseil sur les questions de politique générale de l'Union.
13. Le Bureau se réunit en principe une fois par an sur convocation du président de l'Union. Lors d'une réunion, aucun membre du Bureau ne peut se faire représenter par quiconque. Pour la validité des délibérations, quatre membres au moins doivent être présents.

Entre les réunions du Conseil, le Bureau prend l'initiative des actions nécessaires pour atteindre les objectifs généraux de l'Union ; il gère les finances et assure l'administration de l'Union y compris la mise à jour d'un document de référence « Lignes directrices de l'administration de l'UGGI ». Il prépare les programmes des réunions du Conseil et du Comité exécutif.

14. Les demandes d'adhésion à l'Union et de transfert en catégorie associée sont présentées au secrétaire général qui présente un rapport à leur sujet au Comité exécutif qui juge du bien-fondé, sur le plan scientifique, de chaque demande. Il transmet alors la demande, par les voies les plus appropriées, aux organismes adhérents représentant les pays membres à titre payant ; ces organismes voteront par voie électronique et le résultat du scrutin devra leur être communiqué par le Bureau. L'admission ou le transfert sera déterminé par une majorité simple et est provisoire jusqu'à l'approbation par le Conseil. Toute admission acceptée à la majorité simple reste provisoire jusqu'à approbation par le Conseil. La majorité simple est ici déterminée par la proportion des votes affirmatifs par rapport au total des votes (affirmatifs, négatifs) sous réserve que ce total ne soit pas inférieur au tiers des pays membres de l'Union ayant le droit de vote. Tout refus est déferé au Conseil.

15. Le président :

- a) Représente l'Union dans ses relations avec les institutions et les organisations internationales ou nationales ;
- b) Convoque et préside l'Assemblée générale ainsi que les réunions du Conseil, du Comité exécutif et du Bureau ;
- c) Présente à l'Assemblée générale le rapport sur les activités scientifiques de l'Union pendant la période en cours ;

En l'absence du président, le vice-président le remplace. Si le président est dans l'incapacité de terminer son mandat, le vice-président devient alors Président et le Comité exécutif élit un nouveau vice-président parmi les membres restants du Bureau.

16. Le secrétaire général :

- a) Remplit les fonctions de secrétaire de l'Assemblée générale, du Conseil, du Comité exécutif et du Bureau ; organise les réunions de ces organismes ; établit et diffuse promptement les ordres du jour et les procès-verbaux de toutes leurs réunions ;
- b) Gère les affaires de l'Union, informé par les spécifications du document « Lignes directrices de l'administration de l'UGGI », se charge de la correspondance et assure la conservation des archives ;
- c) Distribue toutes les informations relatives à l'Union ;
- d) Etablit les rapports d'activité de l'Union ; envoie notamment à tous les pays membres, trois mois au plus tard avant chaque Assemblée générale, un rapport sur l'administration de l'Union depuis l'Assemblée générale précédente, et en présente un résumé à l'Assemblée générale elle-même ;
- e) Tient un registre des scientifiques éminents qui ont été distingués par l'Union en tant que membres honoraires de l'UGGI, collectivement désignés comme le Collège des membres honoraires.
- f) Accomplit toutes autres fonctions que pourrait lui confier le Bureau.

17. Pour aider le secrétaire général et le trésorier dans l'accomplissement de leurs tâches, le Bureau peut engager un secrétaire général assistant (secrétaire exécutif) et un trésorier assistant qui se verront confier des missions spécifiques respectivement par le secrétaire général et par le trésorier avec l'approbation du Bureau. Les assistants peuvent assister aux réunions des organismes administratifs de l'Union à titre consultatif. Le Bureau peut autoriser à embaucher du personnel administratif et de secrétariat supplémentaire afin d'assurer le bon fonctionnement de l'Union.

### III. FINANCES

18.

- a) Les pays adhérents à l'Union paient annuellement le nombre d'unités de contribution correspondant à leur catégorie de membre selon le tableau suivant :

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statuts et Règlements de l'Union

Catégorie	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Unités de contributions	1	2	3	5	7	10	15	20	25	30	35	40	45	50

- b) Les membres associés, en Catégorie A n'acquittent pas de cotisation.
- c) Les membres affiliés, en Catégorie AF, n'acquittent pas de cotisation.
19. La Commission des finances élit un président choisi parmi ses membres.
- La Commission des finances se réunit sur convocation de son président, au moins une fois au cours de l'exercice de son mandat.
- Le trésorier peut être invité par le président à assister à une réunion de la Commission des finances. Aucun membre ne peut être représenté par un tiers à une réunion de la Commission.
- La Commission des finances:
- a) Donne son avis au Conseil sur tout ce qui à trait aux questions financières de l'Union ;
- b) Réceptionne et examine les audits des comptes ;
- c) Rend compte au Conseil ;
- d) Donne son avis au trésorier sur la préparation du budget ;
- e) Donne son avis au trésorier, au Bureau et au Comité exécutif sur les questions financières, y compris la collecte des fonds pour soutenir les activités de l'Union et des associations, et l'examen de la catégorie d'adhésion des membres nationaux ;
- Le président de la Commission des finances est généralement invité aux réunions du Bureau ou du Comité exécutif quand des questions financières figurent à l'ordre du jour.
20. Le trésorier de l'Union est responsable de l'administration des finances de l'Union, informé par les spécifications du document « Lignes directrices de l'administration de l'UGGI », conformément aux directives qui lui sont données par le Bureau.
- Le trésorier :
- a) Prépare, en collaboration avec le Comité exécutif et la Commission des finances, un budget préliminaire accompagné des commentaires de la Commission des finances, qui sera envoyé au moins trois mois avant l'Assemblée aux organismes adhérents, puis le met à jour à l'Assemblée générale, et le soumet à l'approbation du Conseil ;
- b) Prend des dispositions pour un audit annuel des comptes ;
- c) Réunit les fonds de l'Union et les répartit conformément aux instructions du Conseil et du Bureau ;
- d) Tient les comptes de toutes les transactions financières de l'Union et présente tous les ans les rapports financiers qui en découlent au Bureau et à la Commission des finances ;
- e) Présente à la Commission des finances et au Conseil tout autre rapport qui lui serait réclamé ;
- f) Rassemble, à la fin de l'année qui précède l'Assemblée générale, un rapport sur les comptes complets de l'Union (y compris ceux des associations et de toutes les activités de l'Union) pour la période précédente, pour présentation au Bureau et à la Commission des finances trois mois au moins avant l'Assemblée générale, puis, lors de l'Assemblée générale, au Conseil. Le rapport doit être accompagné d'états relatifs à chacun des comptes gérés par l'Union, ses associations et autres organismes bénéficiant de l'aide financière de l'Union. Chaque compte devra être certifié par un comptable qualifié ;
- g) Prépare un bref rapport sur les finances de l'Union (y compris celles des associations et de toutes les activités de l'Union) et en assure la diffusion aux pays membres trois mois au plus tard avant chaque Assemblée générale.
- Le président, le trésorier et le trésorier adjoint sont autorisés à retirer des fonds de tous les comptes bancaires de l'Union, mais seulement selon les instructions du Bureau.



21. Les frais de voyage et de séjour peuvent être payés par le trésorier, aux tarifs établis par le Bureau.

Les conditions suivantes doivent être remplies :

- a) Les réunions concernent spécifiquement les activités de l'Union ;
- b) Les personnes concernées doivent représenter l'Union et non un organisme adhérent ;
- c) Les personnes concernées ne peuvent pas obtenir d'allocations suffisantes de leur pays d'origine.

#### **IV. DISTINCTIONS**

22. L'honorariat de l'Union Géodésique et Géophysique Internationale est un hommage, décerné par le Bureau de l'UGGI, aux individus qui ont apporté une contribution exceptionnelle à la coopération internationale en géodésie ou géophysique et qui ont atteint l'excellence dans le domaine des sciences de la Terre et de l'espace.

Les procédures de nomination et de sélection, et les critères détaillés pour l'honorariat de l'UGGI, doivent être déterminés par le Bureau de l'UGGI et publiés dans le document «Lignes directrices de l'Administration de l'UGGI».

#### **V. MODIFICATIONS AUX RÈGLEMENTS**

23. Le Conseil a le pouvoir d'adopter des règlements dans le cadre des statuts de l'Union. Ces règlements peuvent être modifiés par une majorité simple des voix exprimées à une réunion du Conseil ou lors d'un vote électronique. Ces règlements ou toute modification ultérieure de ceux-ci entreront en vigueur à la clôture de la réunion du Conseil à laquelle ils sont adoptés ou, en cas de vote électronique, à la date à laquelle ils sont adoptés.

#### **FIN DES STATUTS ET RÈGLEMENTS**

## STATUTES AND BY-LAWS OF THE ASSOCIATIONS

### STATUTES AND BY-LAWS OF THE INTERNATIONAL ASSOCIATION OF CRYOSPHERIC SCIENCES

#### Statutes of the International Association of Cryospheric Sciences

*(Adopted July 2007, XXIV IUGG General Assembly, Perugia, Italy; revised June 2015, XXVI IUGG General Assembly, Prague, Czech Republic)*

#### **Statute 1; Objectives of the Association**

- a) to promote studies of the cryosphere of Earth and other bodies of the Solar System and related physical processes;
- b) to encourage research on cryospheric sciences through collaboration and co-operation among individuals, institutions, and research programmes, both nationally and internationally;
- c) to provide opportunities for international discussion and publication of the results of research on cryospheric structures and processes;
- d) to promote education and public awareness about the cryosphere;
- e) to facilitate the standardisation of measurements and the collection of data on cryospheric systems and the analysis, archiving and publication of such data;
- f) to promote the scientific activities of any Permanent Service which may fall under IACS responsibility and scientific supervision.

#### **Statute 2; Structure of the Association**

- 2.1. The Association shall consist of a Bureau and other component bodies as specified in the By-laws of the Association.
- 2.2. The members of the Association shall be all persons engaged in scientific research on the cryosphere, or otherwise contributing to the objectives of the Association.  
Members include:
  - a) the elected Officers of the Association (the Bureau);
  - b) Correspondents to the Association that are appointed by the International Union of Geodesy and Geophysics (IUGG) Adhering Body National Committees (hereafter known as IUGG National Committees);
  - c) Delegates that are accredited by the IUGG Adhering Bodies for the purpose of attending Plenary Administrative Sessions (Accredited Delegates);
  - d) Representatives that are designated by the Bureau as liaisons to the cryospheric scientific community in their countries;
  - e) all other persons engaged in cryospheric research or otherwise contributing to the objectives of the Association.
- 2.3. The work of the Association shall be directed by the Plenary Administrative Session, which shall be convened at least once during each General Assembly of IACS and attended by members of the Association. Votes from at least one-third of the delegates representing IUGG Adhering Bodies eligible to vote are required to validate a decision. Delegates not present may forward a vote on any specific question as described in Statute 2.5.
- 2.4. The work of the Association consists of matters that are scientific, administrative, and financial in character. Prior to a Plenary Administrative Session the President shall decide the character of each agenda item and whether the procedure of voting by correspondence applies.
  - 2.4 a On matters of scientific purpose, all scientific participants have a single vote.
  - 2.4 b On matters of administration, including election of officers, only Accredited Delegates of IUGG Adhering Bodies in regular member status (dues paid) may vote; each delegate has one vote and may represent only one Adhering Body.
  - 2.4 c On matters of finance, only Accredited Delegates of IUGG Adhering Bodies in regular member status (dues paid) may vote; each delegate has the number of votes corresponding to the Category of IUGG membership of the Adhering Body.

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

- 2.5 An IUGG Adhering Body eligible to vote that is not represented by a delegate at a Plenary Administrative Session may vote by correspondence, including post, fax, or electronic mail, on any voting matter provided that:
- a) the matter has been clearly defined in the final agenda distributed in advance to the members in accordance with the By-laws,
  - b) the substance of the matter has not been changed, and c) the vote has been received by the Secretary General prior to the meeting.
- 2.6 Decisions on any voting matter, except for the modification of the Statutes, shall be determined by a simple majority of the votes cast. Simple majority shall be determined by the proportion of affirmative votes to the sum of the affirmative and negative votes, including correspondence votes, and excluding abstentions. If a tie should occur, the decision shall rest with the President.
- 2.7 The Plenary Administrative Session has the power to adopt and modify By-laws that include specification of the scientific components of the Association (Divisions).
- 2.8 The Bureau
- 2.8 a The Bureau shall consist of the President, the President-Elect or immediate Past-President, three Vice-Presidents, the Secretary General, and the Heads of the Divisions. The immediate Past-President will remain a Bureau Member during the period between the end of his/her office and the election of a new President-Elect. In order to maintain continuity, the terms of office of the President, the President-Elect and the immediate Past-President are staggered. Thus the four-year term of the President is split, with the first two years in office having the immediate Past-President on the Bureau and with the last two years having the President-Elect on the Bureau. The President-Elect will become President at the IACS Scientific Assembly held approximately mid-period between IUGG General Assemblies.
- 2.8 b Except for the resident President, all members of the Bureau shall be elected by the Plenary Administrative Session during a General Assembly of IUGG in accordance with the Statutes and By-laws.
- 2.8 c In the event of any vacancy occurring in the membership of the Bureau, a person will be appointed to fill the vacancy by the remaining members of the Bureau until the next election. The eligibility for election of a person so appointed shall not be affected by such an appointment. If the vacancy is that of the President, the President-Elect shall assume the office of President. If there is no President-Elect, then the Bureau shall appoint one of the three Vice-Presidents to act as President.
- 2.9 The Bureau may establish Standing Groups with specified terms of reference.
- 2.10 The Bureau may nominate persons who have given outstanding service to IACS, to a Plenary Administrative Session for recognition as "Honorary Members of IACS."
- 2.11 The Association may create Joint Bodies with other IUGG Associations, components of other governmental and international scientific organisations such as the International Council for Science (ICSU) and organizations affiliated with the United Nations, to deal with topics of mutual interest, and may appoint appropriate leaders and representatives of the Association to these organizations. In dealing with other scientific organizations, IACS shall not commit the name of IUGG, or act on behalf of IUGG, unless prior approval has been secured from the IUGG Executive Committee.

***Statute 3; Assemblies of IACS***

- 3.1 An ordinary General Assembly of IACS shall normally be held in conjunction with each ordinary General Assembly of IUGG.
- 3.2 The interval between the end of one ordinary General Assembly and the end of the next one is, for the purposes of the Statutes, termed one Period.
- 3.3 A Scientific Assembly of IACS may be held between ordinary General Assemblies of IACS, in accordance with the IUGG By-laws.
- 3.4 An extraordinary General Assembly of IACS may be convened by the President with the approval of the Bureau, and must be convened at the request of not less than one-third of IUGG Adhering Bodies eligible to vote. Such an extraordinary General Assembly must be held no later than nine months after the request is received. An extraordinary General Assembly shall have the same powers and be subject to the same rules as an ordinary General Assembly.

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

- 3.5 Notice of the date and place of an ordinary General Assembly or a Scientific Assembly shall be sent by the Secretary General to the IACS Correspondents and Representatives at least nine months prior to that Assembly. The notice period for an extraordinary General Assembly shall be four months.
- 3.6 Between Assemblies, responsibility for the direction of the Association shall rest with the Bureau, which shall administer the affairs of the Association in accordance with these Statutes and By-laws and the decisions of the prior Plenary Administrative Session.

***Statute 4; Dissolution of the Association***

If the Association should be dissolved, its financial assets will revert to the Union to be used for the continuation of scientific and educational activities.

***Statute 5; Languages***

The present Statutes have been prepared in the official languages of IUGG. The English text shall take precedence if there is a question of interpretation.

***Statute 6; Adoption and Modification of the Statutes***

- 6.1 The Statutes of the Association must be approved by the IUGG Council at a General Assembly, and shall come into force at the close of the Council Meeting at that General Assembly.
- 6.2 A member of the IACS Bureau, an IACS Correspondent or an Accredited Delegate of an IUGG Adhering Body to a Plenary Administrative Session may propose a change to these Statutes. Any such proposal must reach the Secretary General at least six months prior to the announced date of the General Assembly at which it is to be considered. The Secretary General shall notify all IACS Correspondents and Accredited Delegates of any proposed change at least two months prior to the announced date of the General Assembly.
- 6.3 For adoption, modifications must be agreed by at least a two-thirds' majority of the votes cast by Accredited Delegates at a Plenary Administrative Session held during a General Assembly, and further approved by the IUGG Council. A two-thirds' majority shall be determined by the proportion of affirmative votes to the sum of the affirmative and negative votes, including correspondence votes, and excluding abstentions.
- 6.4 Modifications to these Statutes shall come into force at the close of the General Assembly at which they were adopted.

**By-Laws of the International Association of Cryospheric Sciences**

*(Revised July 2011, XXV IUGG General Assembly, Melbourne, Australia)*

***By-law 1; Divisions***

- 1.1 The scientific components of the Association shall be separated into Divisions as follows:
- Division I: Snow and Avalanches
  - Division II: Glaciers and Ice-sheets
  - Division III: Sea Ice, Lake and River Ice
  - Division IV: Cryosphere, Atmosphere and Climate
  - Division V: Planetary and other Ices of the Solar System
- 1.2 The role of Divisions shall be to further the scientific objectives of the Association through co-ordination of appropriate scientific research, organisation of scientific meetings, and promotion of the exchange of information and data.
- 1.3 Each Division shall be responsible for its role, structure, and mode of operation.
- 1.4 Each Division shall be represented on the IACS Bureau by a person elected to be the Division Head.
- 1.5 Divisions may establish working groups with specified terms of reference.
- 1.6 The role and effectiveness of each Division shall be reviewed periodically by the Bureau.

**By-law 2; IACS Administration**

- 2.1 The Bureau shall meet at least twice at each Assembly, and must meet at least once more between ordinary General Assemblies.
- 2.2 The Bureau shall meet at the call of the President, who will set the agenda in consultation with the Secretary General.
- 2.3 The quorum needed for an IACS Bureau Meeting shall be a majority of the members but must include: at least three of the President; President-Elect or Past-President; the Secretary General; and one of the Vice-presidents.
- 2.4 The President may invite representatives of scientific bodies or individuals to attend a Bureau Meeting in an advisory capacity.
- 2.5 Electronic voting (e-voting) may be required in between Bureau Meetings. E-voting is a two-stage process: a discussion phase where Bureau Members openly discuss the issue, followed by a voting phase that is secret. The Secretary General or, in case of conflict of interest, either the President or the President-Elect or Past-President, counts the votes. The same quorum applies as for Bureau Meetings (see By-law 2.3). The discussion period and voting time should be kept as short as possible (one week each).

**By-law 3; Officers**

- 3.1 President
  - 3.1 a The President shall be elected for one Period, and may not be re-elected to the same office. In accordance with Statute 2.8a, the term of office begins approximately mid-period between IUGG General Assemblies, usually at the time of an IACS Scientific Assembly.
  - 3.1 b The duties of the President are:
    - i) to represent IACS in the IUGG Executive Committee and at other meetings, conferences, or functions where formal representation is requested or desirable;
    - ii) to convene Plenary Administrative Sessions and meetings of the Bureau and to preside over these meetings;
    - iii) to prepare and distribute the agenda of Bureau Meetings to Bureau members;
    - iv) to submit a report on the work of the Association to a Plenary Administrative Session at each General Assembly;
    - v) to select the Chair of Standing Groups established according to Statute 2.9;
    - vi) to select, on behalf of the Bureau, persons 'ex officio' who maintain liaison between the Bureau and other scientific bodies and programmes according to specified terms of reference.
  - 3.1 c If the President is not available, the President-Elect shall act on behalf of the President in accordance with the Statutes and By-laws. If there is no President-Elect, then the Bureau shall appoint one of the Vice-Presidents to act on behalf of the President in accordance with the Statutes and By-laws.
- 3.2 Vice-Presidents
  - 3.2 a The Vice-Presidents shall be elected for one Period and may be re-elected for one Period.
  - 3.2 b The duties of the Vice-Presidents are:
    - i) to represent the interests of cryospheric scientists at-large;
    - ii) to advise the Bureau on IACS activities;
    - iii) to assist the President in furthering the objectives of the Association within IUGG and the International Scientific Community.
- 3.3 Secretary General
  - 3.3 a The Secretary General shall be elected for one Period and may be re-elected for two successive Periods.
  - 3.3 b The duties of the Secretary General are:
    - i) to assist the Bureau in the management of the administrative and scientific affairs of the Association, to attend to correspondence, and to maintain and preserve the records of the Association;
    - ii) to arrange meetings of the Bureau, to assist the President in the preparation of the agenda for Bureau Meetings, and to prepare and distribute the minutes of these meetings;
    - iii) to organise Assemblies according to the instructions of the Bureau, to prepare and arrange publication of the Programme of each Assembly,
    - iv) to request and receive the names of the Accredited Delegates for each Plenary Administrative Session; to prepare and distribute the agenda; to prepare ballots and arrange for counting of votes; and to prepare and distribute the minutes of each Session;
    - v) to receive and take charge of such funds as may be allocated by IUGG to the Association, or as may be received from any other source; to disburse such funds in accordance with the

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

- decisions of Plenary Administrative Sessions or with the instructions of the Bureau; to keep account of all receipts and disbursements and to submit such account, audited by a qualified accountant, for approval by the Bureau and submission to a Plenary Administrative Session at each General Assembly;
- vi) to maintain lists of IACS members for purposes of communication, including IUGG National Committee Correspondents, and IACS Representatives;
  - vii) to publish an internal Association bulletin (such as IACS News) containing information of general interest to the Association;
  - viii) to perform such other duties as may be assigned by the President or the Bureau.
- 3.3 c The Bureau may, at its discretion, appoint an Assistant Secretary General.
- 3.4 Heads of Divisions
- 3.4 a The Heads of Divisions shall serve for one Period but may be re-elected for two more Periods.
- 3.4 b The duties of the Heads of Divisions are:
- i) to promote the interests of their respective divisions through participation in symposia, conferences, workshops and other activities, which receive the approbation of the Bureau;
  - ii) to select the Chair of any Working Group established by the Division according to By-law 1.5;
  - iii) to assist the Bureau in furthering the objectives of the Association in accordance with the Statutes and By-laws.
- 3.4 c The Bureau may, upon request from the Head of a Division and at its discretion, appoint a Deputy Head of Division.
- 3.5 No person who has served on the Bureau for four Periods shall be eligible for further election to any position on the IACS Bureau.

***By-law 4; Nominations and Election of the Bureau***

- 4.1 The Bureau shall establish a Nomination Panel consisting of a Chair and not less than two other members at least ten months before an IUGG General Assembly. The Panel will receive and consider suggestions and shall prepare a list of candidates for each office, seeking to achieve reasonable balance in their geographical and professional distribution. Members of the Bureau may not be appointed to the Nomination Panel.
- 4.2 At least nine months before an IUGG General Assembly, the Secretary General shall solicit nominations for officers that must be received by the Chair of the Nomination Panel not later than six months before the General Assembly. Nominees for the position of President-Elect, but not for the other positions, must be from countries represented by IUGG Adhering Bodies in regular status (dues paid).
- 4.3 Each nomination for office must include a résumé of the candidate's qualifications relevant to the office for which the candidate is nominated. A signed statement of the candidate's willingness to stand for office must also be provided. The nomination shall not be considered without submission of the résumé and consent form.
- 4.4 A person may be a candidate for more than one office except in the case of a candidate for the office of President-Elect who may not be a candidate for any other office of the Association.
- 4.5 The list of candidates shall normally contain more than one name for each office. The Chair of the Nomination Panel shall distribute the list to Accredited Delegates at least three months before the General Assembly at which a Plenary Administrative Session will take place. The list submitted for voting shall contain both the candidates proposed by the Nomination Panel and the names of all other nominees submitted.
- 4.6 Voting for the election of Bureau Officers shall be by secret ballot. The President shall select two electoral officers from among the participants at the Plenary Administrative Session to oversee and compile the votes. The electoral officers shall not be members of the Bureau or members of the Nomination Panel nor candidates for the election.
- 4.7 Candidates who obtain a simple majority of votes shall be elected. If no candidate receives a majority of votes for a specific office, the two candidates receiving the most votes shall be named and a second vote shall be held. In the case of a tie in the second round the President shall decide.

***By-law 5; Plenary Administrative Sessions***

- 5.1 Attendance
- 5.1 a Plenary Administrative Sessions shall be open to all scientific participants at IACS Assemblies and to the general public.

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

- 5.1 b Participants who are Accredited Delegates of IUGG Adhering Bodies may vote on administrative and financial issues in accordance with the Statutes and By-laws. All other participants may have voice but may vote only on scientific issues.
- 5.1 c An Accredited Delegate may designate another participant from that country to be his or her representative at all or part of a Plenary Administrative Session provided that the Secretary General is informed in writing prior to the Plenary Administrative Session at which the designated representative is to act.
- 5.1 d A session attendee who is not a participant at the Assembly shall have voice only with permission of the President.
- 5.1 e The President may, on his or her initiative or at the request of an Accredited Delegate, invite individuals such as representatives of relevant scientific bodies to attend a Plenary Administrative Session in an advisory capacity.
- 5.2 Agendas
- 5.2 a A provisional agenda for a Plenary Administrative Session shall be prepared by the Secretary General and circulated to IACS Accredited Delegates, Correspondents and Representatives at least two months prior to the opening of an Assembly.
- 5.2 b The provisional agenda shall comprise all items submitted by Accredited Delegates for discussion at the Plenary Administrative Session together with questions included by the Bureau. Additional agenda items, for which notice has not thus been given, may only be discussed with the consent of the voting members of the Plenary Administrative Session.

***By-law 6; Modifications to the By-laws***

The By-laws may be modified by a simple majority of votes cast at a Plenary Administrative Session, held during a General Assembly, according to Statute 6.

**STATUTES AND BY-LAWS OF THE INTERNATIONAL ASSOCIATION OF GEODESY**  
(Revised June 2015, XXVI IUGG General Assembly, Prague, Czech Republic)

**Statutes of the International Association of Geodesy**

**1. Definition of Terms**

- (a) Geodesy is the discipline that deals with the measurement and representation (geometry, physics, and temporal variations) of the Earth and other celestial bodies.
- (b) IUGG means the International Union of Geodesy and Geophysics.
- (c) IAG or Association means the International Association of Geodesy.
- (d) Adhering Body and Council have the same meaning as in the Statutes of the IUGG.
- (e) General Assembly means an assembly for scientific and/or administrative purposes of:
  - (i) scientists from geodesy and other Earth science disciplines;
  - (ii) the Council delegates (or alternative delegates) appointed by the Adhering Bodies; and
  - (iii) individual members as defined by Statute 6(b).
- (f) Scientific Assembly means an assembly for primarily scientific purposes and therefore it does not normally require the presence of the delegates appointed by the Adhering Bodies.
- (g) Council Delegate means the person appointed by the Adhering Body to be member of the Council for four years. Adhering Bodies may appoint an Alternative Delegate to a Council meeting if the Permanent Delegate cannot attend the meeting.
- (h) Period means the interval of time between the closures of two successive ordinary General Assemblies.

**2. International Association of Geodesy**

- (a) The International Association of Geodesy:
  - (i) is a constituent Association of the IUGG; and
  - (ii) is subject to the Statutes and Bylaws of the IUGG.
- (b) In the event of the dissolution of the IAG, its assets shall be ceded to the IUGG.

**3. Mission**

The Mission of the Association is the advancement of geodesy. The IAG implements its mission by furthering geodetic theory through research and teaching, by collecting, analyzing, modelling and interpreting observational data, by stimulating technological development and by providing a consistent representation of the figure, rotation, and gravity field of the Earth and planets, and their temporal variations.

**4. Objectives**

The IAG shall pursue the following objectives to achieve its mission:

- (a) Study, at the highest possible level of accuracy, all geodetic problems related to Earth observation and global change, including:
  - i) Definition, establishment, and maintenance of global and regional reference systems for interdisciplinary use.
  - ii) Rotation of the Earth and planets.
  - iii) Positioning and deformation.
  - iv) Gravity field.
  - v) Ocean, ice and sea level.
  - vi) Atmosphere and hydrosphere.
  - vii) Time and frequency transfer.
- (b) Support the maintenance of geodetic reference systems and frames for continuous, long-term observations and archival of results.
- (c) Provide observational and processed data, standards, methodologies, and models in a form that ensures the broadest possible range of research and application.
- (d) Stimulate development and take advantage of emerging space and other technologies to increase the resolution and accuracy of geodetic data and products in order to advance geodetic and interdisciplinary research.
- (e) Initiate, coordinate, and promote international cooperation and knowledge exchange through symposia, workshops,



XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

summer schools, training courses, publications, and other means of communication.

- (f) Foster the development of geodetic activities and infrastructure in all regions of the world, taking into consideration the specific situation of developing countries.
- (g) Collaborate with the international science and engineering community in supporting the application of geodetic theory and techniques and the interpretation of results.
- (h) Cooperate with national and international agencies in establishing research goals, missions, and projects.

#### 5. Structure and Administration

- (a) The Association's structure shall comprise a small number of components: Commissions, the Inter-commission Committee on Theory (ICCT), Services, the Global Geodetic Observing System (GGOS), and the Communication and Outreach Branch (COB).
- (b) Subcomponents, such as IAG Projects, Sub-commissions, Commission Projects, Inter-commission Committees, and Study and Working Groups, may be formed as provided for in the Bylaws.
- (c) The administration of the IAG is carried out by the General Assembly, the Council, the Bureau and the Executive Committee. The COB is the office responsible for the promotional activities of the IAG and the communication with its members.

#### 6. Membership

The membership of the IAG shall comprise:

- (a) Adhering Bodies; and
- (b) individual members in accordance with the Bylaws.

#### 7. IAG Council

- (a) The Council is responsible for governance, strategic policy and direction.
- (b) The membership of the Council consists of delegates appointed by the Adhering Bodies.
- (c) Each Adhering Body may appoint one delegate subject to the conditions in (d) and (e) below.
- (d) A delegate may only represent one Adhering Body.

- (e) The President, Vice President and Secretary General may not serve as delegates.

#### 8. Bureau

- (a) The Bureau of the Association consists of the President, the Vice President and the Secretary General.
- (b) The duties of the Bureau shall be to administer the affairs of the Association in accordance with these Statutes and Bylaws and with the decisions of the Council and the Executive Committee.

#### 9. President

- (a) The President shall be elected by the Council.
- (b) The President shall provide general leadership for the Association.
- (c) The President presides over the meetings of the General Assembly, the Scientific Assembly, the Council, the Executive Committee, and the Bureau. The President has no vote in the Council meetings, except in the case of a tie as provided in 14(h).
- (d) The President, on completion of his or her term of office of one period, shall serve for the next period in the position of Immediate Past President.

#### 10. Vice President

- (a) The Vice President shall be elected by the Council.
- (b) The Vice President shall perform such tasks as may be assigned by the President, the Executive Committee or the Council.
- (c) The Vice President assumes the functions, duties and powers of the President when the latter is absent or otherwise unable to assume office.

#### 11. Secretary General

- (a) The Secretary General shall be elected by the Council.
- (b) The Secretary General shall serve as secretary of the General Assembly, the Scientific Assembly, the Council, the Executive Committee, and the Bureau and arrange for meetings of these bodies in accordance with the Bylaws.

## 12. Executive Committee

- (a) The Executive Committee shall consist of the following voting members: the Bureau, the immediate Past President, the Presidents of the Commissions, the President of the ICCT, the Chair of GGOS, the President of the COB, the three representatives of the Services, and two Members-at-Large to improve geographical and organizational balance.
- (b) Presidents of the Inter-commission Committees other than the ICCT, Chairs of the IAG Projects, and the Assistant Secretaries shall attend any meeting of the Executive Committee, with voice but without vote. The Past Presidents and past Secretaries General may attend any meeting of the Executive Committee, with voice but without vote, (except for the immediate Past President, who does have a vote).
- (c) The election of Executive Committee members shall be in accordance with the Bylaws.
- (d) The duties of the Executive Committee shall be to further the objectives of the Association through effective coordination and through the formulation of general policies.

## 13. Council Meetings

- (a) The Council shall meet at the time of a General Assembly.
- (b) The Council may hold extraordinary meetings either in person or electronically, at times other than a General Assembly. Such meetings must be proposed by the Executive Committee.
- (c) The members of the Executive Committee may attend meetings of the Council, with voice but without vote, except for those who are also delegates.

## 14. Voting in Council

Voting in Council shall follow the following rules:

- (a) An Adhering Body which is not represented at a Council meeting may vote by correspondence on any specific question, provided that the matter has been clearly defined on the final agenda distributed in advance, and that the discussion thereon has not produced any significant new considerations or change in its substance, and that the said vote has been

received by the President prior to the voting. In such a case the vote will be cast in accordance with 13(d).

- (b) Quorum in Council meetings is achieved when the number of Council Delegates in attendance is at least one third of the delegates from countries eligible to vote.
- (c) On questions not involving matters of finance, each delegate from an Adhering Body, with its IUGG subscriptions paid up to the end of the calendar year preceding the voting, shall have one vote.
- (d) On questions involving finance, each delegate from an Adhering Body, which has paid its IUGG subscriptions up to the end of the calendar year preceding the voting, shall have the right to vote. The number of votes allotted to each delegate of an Adhering Body shall then be equal to the number of its category of membership, as defined by IUGG.
- (e) Before a vote in a Council meeting, the President shall decide whether or not the matter under consideration is financial in character and whether the procedure of voting by correspondence applies.
- (f) The Council may also deliberate and decide matters at other times by correspondence and/or email ballot, provided that the issues were communicated to Council members at least one month in advance of the voting date.
- (g) Decisions of the Council shall be taken by a simple majority, except as otherwise specified in these Statutes. If a tie should occur in a Council vote, the President shall cast the decisive vote. This procedure also applies if the vote is taken by mail ballot. Simple and two-thirds majorities are determined by the proportion of affirmative votes to the sum of all votes (affirmative, negative and abstention). Blank and invalid ballots and votes not cast by delegates present are counted as abstentions.
- (h) Except as otherwise provided in the Statutes or Bylaws, meetings of the Council, as well as those of other IAG administrative bodies, shall be conducted according to the edition of Robert's Rules of Order currently recommended by the IUGG.

**15. Decision of Council**

- (a) Decisions of the Council shall be reported to the individual membership in a meeting of the IAG General Assembly.
- (b) If the majority of those present at this meeting disagree with the decisions of the Council, the Council shall reconsider the question, and make a decision, which shall be final.

**16. Changes to Statutes and Bylaws**

Changes in the Statutes and Bylaws shall be made as follows:

- (a) If deemed necessary, the Association may review the Statutes and Bylaws in each period, to ensure an up-to-date structure of its scientific and administrative organization. A Review Committee will be appointed by the Executive Committee to achieve this goal.. Proposals for a change

of any article of these Statutes and Bylaws must reach the Secretary General at least two months before the announced date of the Council meeting at which it is to be considered. The Secretary General shall notify all Adhering Bodies of any proposed change at least one month before the announced date of the Council meeting.

- (b) The Statutes may not be modified except by the approval of a two-thirds majority of votes cast at a Council meeting, and shall come into force at the close of that meeting.
- (c) The Council shall have the power to adopt Bylaws within the framework of the Statutes.
- (d) The Bylaws may be modified by a simple majority of votes cast at a Council meeting, and shall come into force at the close of the meeting.

## By-Laws of the International Association of Geodesy

### 1. Definition of Terms

- (a) **Association components** or **components** means Commissions, the Inter-commission Committee on Theory (ICCT), Services, the Global Geodetic Observing System (GGOS), and the Communication and Outreach Branch (COB).
- (b) **Commissions** represent major fields of activity in accordance with the IAG statutes.
- (c) **Services** collect and analyze observations to generate products relevant to geodesy and other sciences and applications.
- (d) The **Global Geodetic Observing System (GGOS)** works with the IAG Services to provide the geodetic expertise and infrastructure necessary for the monitoring of the Earth system and global change research.
- (e) **Association subcomponents** or **subcomponents** are long-term or short-term structures created by IAG or one or more of its components.
- (f) **Long-term subcomponents** comprise IAG Projects (broad in scope and of high interest for the entire field of geodesy), Inter-commission Committees, Sub-commissions and Commission Projects which may remain established for several periods.
- (g) **Short-term subcomponents** means Study Groups and Working Groups which are established for a maximum term of one period.
- (h) **Steering Committee** means a group of elected or appointed IAG officers who review the work of Commissions, Inter-commission Committees (see 17), IAG Projects (see 16), and the Communication and Outreach Branch (see 18).
- (i) **Period** means the interval of time between the closures of two successive IAG General Assemblies.

### 2. Responsibilities of Association Components

- (a) The scientific work of the Association is performed by Commissions, Inter-commission Committees, IAG Projects, Services and the GGOS.

- (b) The responsibilities of the Association components are determined by the Council on the recommendation of the Executive Committee.
- (c) Components shall interact with each other where their activities are inter-related.
- (d) Each component may set up subcomponents and is responsible for the activities of those subcomponents.

### 3. General Responsibilities of Component Presidents or Chairs, and Steering Committees

- (a) Each component shall have a President or Chair who will lead a Steering Committee.
- (b) The component President or Chair is responsible for the scientific development within the component's field of interest. The component President or Chair shall:
  - (i) coordinate the work of the subcomponents;
  - (ii) keep the officers of the component as well as the Bureau informed of the component's activities, on an annual basis;
  - (iii) collect reports of the subcomponents two months before each IAG General and Scientific Assembly for publication in the "Travaux de l'Association Internationale de Géodésie";
  - (iv) receive suggestions for new subcomponents, and suggestions for continuation of existing ones; and
  - (v) recommend changes to subcomponents to the IAG Executive Committee for approval.
- (c) The component steering committee shall meet at least once per year and at least once during each IAG General Assembly.
- (d) The component steering committee shall review at one of its meetings (usually the IAG General Assembly, or the IAG Scientific Assembly):
  - (i) the activities of the subcomponents over the past period;
  - (ii) the structure of the subcomponent; and
  - (iii) the programs for the forthcoming period for those subcomponents that will be recommended for continuation.

- (e) The component steering committee shall inform the IAG Secretary General about all relevant issues .
- (f) The component steering committee may organise scientific and organizational meetings and workshops provided that they are readily distinguished as being of a more limited scope than IAG Scientific symposia or IAG Sponsored Symposia as described in Bylaws 27 and 28.

#### 4. Commission Responsibilities

Commissions shall promote the advancement of science, technology and international cooperation in their field. They establish the necessary links with sister disciplines and with the relevant Services. Commissions shall represent the Association in all scientific domains related to their field of geodesy.

#### 5. Commission Steering Committee

- (a) The Commission Steering Committee shall be set up at each IAG General Assembly, following the election of the Association officers
- (b) The Steering Committee shall have the following voting members:
  - (i) Commission President.
  - (ii) Commission Vice President.
  - (iii) Chairs of the Sub-commissions and Commission Projects.
  - (iv) Up to three representatives of the Services relevant to the work of the Commission.
  - (v) Up to two Members-at-Large to balance geographical and member country representation.

#### 6. Appointment of Commission Officers

- (a) The Commission President shall be elected by the Council for one period without reappointment except where exceptional circumstances justify reappointment.
- (b) The Commission Vice President shall be appointed by the IAG Executive Committee for one period without reappointment except where exceptional circumstances justify reappointment.
- (c) Chairs of the Sub-commissions and Commission Projects shall be nominated by the Commission President and Vice President within two months following the General Assembly.

- (d) The representatives of the Services shall be appointed by the Commission President and Vice President upon proposal of the Services.
- (e) The Members-at-Large shall be nominated by the Commission President and Vice President within two months following the IAG General Assembly.
- (f) The appointments of Members-at-Large and Chairs of Sub-commissions and Commission Projects take effect on approval of the nominations by the IAG Executive Committee.

#### 7. Tasks of Commission Steering Committee

The Commission Steering Committee is subject to the general responsibilities of component steering committees in Bylaw 3(c), 3(d), 3(e), and 3(f) above. In particular, its tasks are to:

- (a) Review the Commission's field of interests and objectives.
- (b) Liaise with the other IAG commissions, the Inter-commission Committees, and with similar organizations outside the IAG, as appropriate.
- (c) Foster active participation of young geodesists and geodesists from under-represented countries.
- (d) Coordinate and review the work of its components and report at the time of the Scientific Assembly to the IAG Executive Committee on the progress and performance of the components.
- (e) Encourage and organize Commission and interdisciplinary symposia and/or sessions at major geodesy related international meetings.
- (f) Maintain a Commission website and e-mail service.
- (g) Nominate up to three editors for the Journal of Geodesy.

#### 8. Current Commissions

On the coming into effect of these bylaws, there shall be four Commissions with areas of scientific responsibility as outlined below:

##### (1) Commission 1: Reference Frames

- (a) Establishment, maintenance, improvement of the geodetic reference frames.

- (b) Advanced terrestrial and space observation technique development for the above purposes.
  - (c) International collaboration for the definition and deployment of networks of terrestrially-based space geodetic observatories.
  - (d) Theory and coordination of astrometric observation for reference frame purposes.
  - (e) Collaboration with space geodesy/reference frame related international services, agencies and organizations.
- (f) networks), including monitoring of deformations.
  - (e) Applications of geodesy to engineering.
  - (f) Atmospheric investigations using space geodetic techniques.

**(2) Commission 2: Gravity Field**

- (a) Terrestrial, marine, and airborne gravimetry.
- (b) Satellite gravity and altimetry observations.
- (c) Gravity field modelling.
- (d) Time-variable gravity field.
- (e) Geoid determination.
- (f) Satellite orbit modeling and determination.

**(3) Commission 3: Earth Rotation and Geodynamics**

- (a) Earth orientation (Earth rotation, polar motion, nutation and precession).
- (b) Earth tides.
- (c) Tectonics and crustal deformation.
- (d) Sea surface topography and sea level changes.
- (e) Planetary and lunar dynamics.
- (f) Effects of the Earth's fluid layers (e.g., post glacial rebound, loading).

**(4) Commission 4: Positioning and Applications**

- (a) Terrestrial and satellite-based positioning systems development, including sensor and information fusion.
- (b) Navigation and guidance of platforms.
- (c) Interferometric laser and radar applications (e.g., Synthetic Aperture Radar).
- (d) Applications of geodetic positioning using three dimensional geodetic networks (passive and active

**9. Commission Subcomponents and Joint Subcomponents**

- (a) Commission Subcomponents are Sub-commissions, Commission Projects, Study Groups, and Working Groups, which all belong to one commission.
- (b) If more than one component is involved in a subcomponent, the term joint subcomponent will be used, e.g. Joint Sub-commission, Joint Commission Project, Joint Study Group, Joint Working Group.

**10. Sub-commissions and Joint Sub-commissions**

- (a) A Sub-commission may be set up for topics where the Commission plays a leading or coordinating role.
- (b) Where a topic relates to the scientific responsibilities of more than one IAG component, a Joint Sub-commission shall be established under the lead of one Commission.
- (c) A Sub-commission is expected to be established for several periods.
- (d) Sub-commissions are established and terminated by the IAG Executive Committee upon recommendation from the Commission President.
- (e) A proposal to the Executive Committee for a Joint Sub-commission requires the recommendation of the Presidents of all contributing components.

**11. Commission Projects and Joint Projects**

- (a) A Commission Project may be established when a new scientific method or a new technique is being developed, or when it seems appropriate to apply an existing technique to a specific geographic area where international collaboration is required.
- (b) Where a topic for a Commission Project relates to the scientific responsibilities of more than one Commission, or a Commission and a Service, a Joint Commission Project shall be established under the lead of one Commission.

- (c) A Commission Project is established for one period and may be extended for another period subject to a positive review.
- (d) Commission Projects are established, extended and terminated by the IAG Executive Committee upon recommendation from the Commission President.
- (e) A proposal to the Executive Committee for a Joint Commission Project requires the recommendation of the Presidents of all contributing Components.

## 12. Study Groups, Working Groups, Joint Study Groups and Joint Working Groups

- (a) A Study Group or Working Group may be established at any time to address clearly defined well-focused scientific topics of limited scope within the field of the Commission. A Study Group deals with more theoretical issues and a Working Group with more practical realizations.
- (b) Where a topic for a Study Group or Working Group relates to the scientific responsibilities of more than one Commission, or a Commission and a Service, a Joint Study Group or a Joint Working Group shall be established.
- (c) A Study Group or Working Group is established for one period or less.
- (d) Study Groups and Working Groups, including the position of the group chair, are established and terminated by the IAG Executive Committee upon recommendation from the Commission President.
- (e) A proposal to the Executive Committee for a Joint Study Group or Joint Working Group requires the recommendation of the Presidents of all contributing components.
- (f) The Chair of a Study Group or Working Group is responsible for initiating and directing its work and appointing its members.
- (g) Study Group and Working Group membership should be balanced so as to reflect international cooperation in its subject.
- (h) A Study Group or Working Group may have not more than 20 full members and an unlimited number of correspondent members.
- (i) The Chair of each Study Group or Working Group shall issue a brief description of the work to be performed

and a list of members, to be published in the Geodesist's Handbook after each General Assembly.

- (j) The Chair of each Study Group or Working Group shall report annually to its members and the commission steering committee, on results achieved and outstanding problems.

## 13. Services

- (a) IAG Services generate products, using their own observations and/or observations of other services, relevant for geodesy and for other sciences and applications. Accuracy and robustness of products, quality control, timeliness, and state of the art quality are the essential aspects of the Services.
- (b) Each Service shall define its Terms of Reference as appropriate to accomplish its mission and shall submit the Terms of Reference to the IAG Executive Committee for approval.
- (c) Each Service shall have an IAG representative, appointed by the IAG Executive Committee, as a voting member of its directing/governing board.
- (d) Services are linked to at least one of the Commissions and may be also linked to other scientific organizations, such as the World Data System (WDS) or the International Astronomical Union (IAU).
- (e) Services should collaborate on a scientific basis with the Commissions, establish Joint Commission Projects and Joint Study Groups and help compile the Commissions' list of themes for Study Groups.
- (f) Three representatives shall be elected in accordance with Bylaw 39 to the IAG Executive Committee to serve the interests of all Services.
- (g) On any matter relating to the products of a Service, the Service shall represent the IAG.

## 14. Current Services

On the coming into effect of these Bylaws, there shall be fourteen Services as outlined alphabetically:

- (a) International Altimetry Service (IAS)
- (b) International Bureau of Weights and Measures (BIPM) Time Department

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

- (c) International Centre for Global Earth Models (ICGEM)
- (d) International Digital Elevation Models Service (IDEMS)
- (e) International DORIS Service (IDS)
- (f) International Earth Rotation and Reference Systems Service (IERS)
- (g) International Geodynamics and Earth Tides Service (IGETS)
- (h) International GNSS Service (IGS)
- (i) International Gravimetric Bureau (BGI)
- (j) International Gravity Field Service (IGFS)
- (k) International Laser Ranging Service (ILRS)
- (l) International Service for the Geoid (ISG)
- (m) International VLBI Service for Geodesy and Astrometry (IVS)
- (n) Permanent Service for Mean Sea Level (PSMSL)

**15. The Global Geodetic Observing System (GGOS)**

- (a) The GGOS is IAG's observing system to monitor the geodetic and the global geodynamic properties of the Earth as a system.
- (b) GGOS works with other IAG components, such as the IAG Services and the IAG Commissions, as well as the Inter-commission Committees, to provide unique, mutually consistent, and easily accessible geodetic products (including the geometric reference frames and the gravity field) and the relevant geodetic constants for science and society.
- (c) GGOS operates on its own Terms of Reference, defined by the GGOS Coordinating Board (CB) and approved by the IAG Executive Committee. GGOS nomination and election procedures are specified in its Terms of Reference.
- (d) The GGOS Chair is appointed by the IAG Executive Committee in consultation with GGOS CB for one four-year period, which may be renewed once.

**16. IAG Projects**

- (a) IAG Projects are flagship long-term projects of a broad scope and of highest interest and importance for the entire field of geodesy.

- (b) Planning for the creation of an IAG Project shall be carried out by a planning group established by the Executive Committee.
- (c) The Project Steering Committee shall have the following voting members:
  - (i) The Project Chair appointed by the IAG Executive Committee
  - (ii) One member from each Commission appointed by the Commissions' Steering Committee
  - (iii) Two Members-at-Large proposed by the members of the Project Steering Committee identified in clause (i) and (ii) above and approved by the IAG Executive Committee.
  - (iv) Chairs of the IAG Project Working Groups (if any).
  - (v) Representatives of other IAG components, as appropriate.
- (d) IAG Project Subcomponents are Working Groups but not Study Groups.

**17. Inter-commission Committees**

- (a) Inter-commission Committees shall handle well defined, important and permanent tasks involving all Commissions.
- (b) Each Inter-commission Committee shall have a steering committee, which shall include the following members:
  - (i) President appointed by the IAG Executive Committee.
  - (ii) Vice President appointed by the IAG Executive Committee on the recommendation of the president.
  - (iii) One representative appointed by each Commission.
- (c) The terms of reference for each Inter-commission Committee shall be developed by a planning group appointed by the IAG Executive Committee for approval by the Executive Committee.
- (d) Inter-commission Committees will be established for at least 2 periods (eight years) and shall be reviewed by the Executive Committee every eight years.
- (e) The Inter-commission Committees shall report to the IAG Executive Committee.



### 18. Communication and Outreach Branch (COB)

- (a) The function of the Communication and Outreach Branch is to provide the Association with communication, educational/public information and outreach links to the membership, to other scientific Associations and to the world as a whole.
- (b) The responsibilities of the Communication and Outreach Branch shall include the following tasks:
  - (i) Promote the recognition and usefulness of geodesy in general and IAG in particular.
  - (ii) Publications (newsletters).
  - (iii) Membership development.
  - (iv) General information service and outreach.
- (c) The Communication and Outreach Branch shall also assist the IAG General Secretary, in the following tasks as required:
  - (i) Maintenance of the IAG website.
  - (ii) Setting up Association schools.
  - (iii) Setting up meetings and conferences.
- (d) The IAG Executive Committee establishes the COB on a long-term basis by issuing a Call for Participation. The responding organization(s) and the IAG Executive Committee shall then negotiate the Terms of Reference and other conditions.
- (e) The President of the Communication and Outreach Branch shall be elected by Council.
- (f) Major decisions related to the operations of the COB shall be made by a Steering Committee consisting of the following voting members:
  - (i) Communications and Outreach Branch President.
  - (ii) IAG Secretary General.
  - (iii) Editor-in-Chief of the Journal of Geodesy.
  - (iv) Editor-in-Chief of the IAG Symposia Series
  - (v) Up to 5 other members appointed by the Executive Committee on the recommendation of the President of the Communications and Outreach Branch.

### 19. IAG Publications

- (a) The IAG publications include the Journal of Geodesy, the IAG Symposia series, the Geodesist's Handbook, the "Travaux de l'Association Internationale de Géodésie," the IAG Newsletter, and IAG Special Publications.
- (b) The Association's journal is the Journal of Geodesy, hereinafter referred to as the journal. The journal is published monthly through an agreement between the Association and a publishing company, or by other arrangement approved by the Executive Committee. The terms of any agreement for publication of the journal shall be negotiated by the President of the Communications and Outreach Branch and ratified by the Executive Committee.
- (c) The journal publishes peer-reviewed papers, covering the whole range of geodesy, including geodetic applications.
- (d) After each IAG General Assembly, a special issue of the Journal of Geodesy shall be published under the name of "The Geodesist's Handbook". This issue provides the actual information on the Association, including the reports of the President and Secretary General presented at the previous IAG General Assembly, the resolutions taken at that Assembly, and the Association structure listing all components and subcomponents for the running period, rules for the IAG Fund, IAG Awards and for the conduct of scientific meetings as well as relevant scientific information.
- (e) The IAG Symposia Series publishes peer-reviewed papers related to presentations made at IAG and/or IAG-sponsored Symposia provided that sufficient number of papers are submitted and accepted for publication,
- (f) After each IAG General Assembly, a collection of the reports by the Association components shall be published in the "Travaux de l'Association Internationale de Géodésie". This publication is supplied free of charge to the officers of the Association and to the Adhering Body of each member country.
- (g) At every IAG General Assembly each member country is encouraged to a National Report on geodetic work done since the previous General Assembly to be placed on the IAG website. These National Reports, as far as available, are distributed by the IAG Office in the same manner as

the "Travaux de l'Association Internationale de Géodésie".

- (h) The IAG Newsletter is under the editorial responsibility of the Communication and Outreach Branch. It should be published on the IAG website and distributed to members electronically.

## 20. Editor-in-Chief and Editorial Board

- (a) There shall be one Editor-in-Chief for the journal, hereinafter referred to as the Journal Editor. An Assistant Editor-in-Chief may assist the Journal Editor. The Journal Editor shall be advised and assisted by a Board of Editors, hereinafter referred to as the Board. To ensure broad expertise, each of the Commissions may nominate up to three members of the Board.
- (b) The Journal Editor shall be responsible for the scientific content of the journal. The Journal Editor shall make the final decision on whether a refereed scientific manuscript is accepted for publication. The Journal Editor shall keep the Executive Committee informed of the activities and status of operations of the journal.
- (c) Three months before each General Assembly, the current Journal Editor, in consultation with the Bureau, shall recommend a preliminary list of candidates for the new Board of Editors. This list shall be published on the IAG website at least two months in advance of the General Assembly to solicit additional nominations for the Editorial Board from the geodetic community. The additional candidates will be added to the list.
- (d) At the General Assembly, the current Board shall appoint the members of the new Board from those recommended. After taking office, the new Board shall nominate the new Journal Editor and the new Assistant Editor for the next period. After approval of these nominations by the Executive Committee, the Journal Editor and the Assistant Editor will be considered as elected. Concurrence with the Publisher will be sought.
- (e) The Journal Editor, the Assistant Editor, and the members of the Editorial Board shall each hold office for one period, but may be eligible to be re-elected for one further period.
- (f) There shall be one Editor-in-Chief for the IAG Symposia Series, hereinafter referred

to as the Series Editor. He/she is appointed by the Executive Committee for a four year period. An assistant Editor-in-Chief may also be appointed for the same time period.

- (g) The Series Editor shall be responsible for the scientific content of the IAG Symposia Series. On the recommendation of the volume editors, the Series Editor shall make the final decision on whether a refereed scientific manuscript is accepted for publication. The Series Editor shall keep the Executive Committee informed of the activities and status of operations of the IAG Symposia Series.
- (h) Each volume of the IAG Symposia Series shall have additional Volume Editors.

## 21. Individual Membership

- (a) Individuals engaged in geodesy, can become individual members of the Association on application and payment of the membership fee.
- (b) Applications for individual membership are submitted to the Secretary General.
- (c) The decision on the membership application shall be made by the Bureau.
- (d) Benefits of membership include
  - (i) Substantial reduction on the individual subscription rate to the Journal of Geodesy.
  - (ii) The right to participate in the IAG election process both as a nominator and a nominee.
  - (iii) Upon application, correspondent membership in a sub-commission or study group of choice.
  - (iv) Reduction of the registration fee for IAG meetings as set under Bylaws 25(i), 26(d) and 27(c).
- (e) The membership fee per annum is set by the Executive Committee. In setting the fee the Executive Committee will consider a recommendation from the Secretary General.
- (f) In individual cases, the Secretary General may consider a discount or full remission of membership fees on application by the member.
- (g) Where a member provides a donation in excess of the membership fee, the excess shall be assigned to the IAG Fund in support of young scientists.

- (h) Membership is terminated if the membership fee is not paid or if an application for discount or full remission has not been received one year after the fee was due.

## 22. Honorary Officers, Fellows

- (a) The Executive Committee may appoint a merited past President as Honorary President or a merited Secretary General as Honorary Secretary General.
- (b) The Executive Committee may appoint past officers of the Association as Fellows.

## 23. IAG Fund

The Executive Committee may establish a fund (IAG Fund) for supporting specific IAG activities as defined in the IAG Fund Rules, to be published in the Geodesist's Handbook in accordance with Bylaw 20(e). The fund is under the direct responsibility of the President; the fund's resources are administered by the Secretary General.

## 24. IAG Awards

The Executive Committee may establish awards for outstanding contributions to geodesy and distinguished service to the Association. The rules for the awards are published in the Geodesist's Handbook in accordance with Bylaw 20(e).

## 25. Administration of the IAG General Assemblies

- (a) The IAG General Assembly will be held at the same time and the same place as the IUGG General Assembly.
- (b) Before any IAG General Assembly, the Bureau of the Association shall prepare detailed agendas for the Council meetings, Executive Committee meetings, the opening and the closing sessions.
- (c) The Executive Committee shall draw up the agenda for the scientific program. Joint Symposia covering topics of interest to two or more Associations within the Union may be arranged.
- (d) The agendas developed according to (b) and (c) above are sent to the member countries and to all the officers of the Association so as to reach them at least two months prior to the IAG General Assembly. In principle, only matters on the agenda may be considered during the sessions, unless a decision to do otherwise

is passed by a two-thirds majority in the Council concerning the agenda of the Council meeting.

- (e) At each IAG General Assembly, the President shall present a detailed report on the scientific work of the Association during his/her tenure. The Secretary General shall present a detailed report on the administrative work and on the finances of the Association for the same period. The President and Secretary General should include in their reports, proposals for work to be undertaken during the coming period, within the limits of expected resources. These reports shall be published in "The Geodesist's Handbook".
- (f) At each IAG General Assembly, the work of each Commission, each Service, the Communication and Outreach Branch, and each IAG Project shall be reported by its President / Chair. IAG Representatives to other scientific bodies report to the Executive Committee.

## 26. Scientific Meetings

- (a) Scientific meetings of the IAG are:
- (i) the Scientific Symposia held during a General Assembly;
  - (ii) Scientific Assemblies, including Scientific Symposia; and
  - (iii) IAG sponsored Symposia.
- (b) The IAG Newsletter shall include on a regular basis a Calendar of IAG Symposia and other scientific meetings organized or sponsored by the IAG or its components.
- (c) The Executive Committee shall appoint an official IAG Scientific Meeting Representative for each of the scientific meetings other than the General Assembly and the Scientific Assembly to be governed by these Bylaws. The representative is obliged to remind the organizers to obey the Bylaws for scientific meetings and to report back to the Executive Committee.
- (d) A reduced registration fee shall be offered for Individual members in accordance with 21(d) (iv).

## 27. Scientific Assemblies

- (a) Scientific assemblies are held mid-way during the period between two IAG General Assemblies and shall consist of a group of component meetings and/or a

group of Scientific Symposia, held at the same time and place.

- (c) A reduced registration fee shall be offered for Individual members in accordance with 21(d)(iv).

### 28. Scientific Symposia

- (a) Scientific symposia take place at the IAG General Assembly and the IAG Scientific Assembly. In general, they shall be organized by Association components and subcomponents, and be led by their respective chairs.
- (b) The study of some questions may require joint meetings of several components under a chair, appointed by the Executive Committee. A committee consisting of the component chairs shall decide on the agenda and on the inclusion of scientific presentations.
- (c) At each IUGG General Assembly Joint Scientific Symposia covering topics of interest to two or more Associations within the IUGG and/or other international scientific organizations may be arranged. Though the IAG may be asked to act as convenor or co-convenor, these symposia shall follow the rules issued by the IUGG. The IAG may participate also in joint symposia at any other time outside of the IAG General Assembly obeying the same procedures.
- (d) The arrangement of a scientific symposium shall be subject to the usual approval procedure provided by in the Geodesist's Handbook in accordance with Bylaw 20(e).

### 29. IAG Sponsored Symposia

- (a) The IAG may sponsor a symposium covering broad parts of geodesy and having large attendance at any suitable time outside the IAG General Assemblies or Scientific Assemblies, and shall call it an IAG Sponsored Symposium, provided the following conditions are fulfilled:
  - (i) One or more Association component or subcomponent shall sponsor it or at least two Study Groups.
  - (ii) Host organization of the symposium shall accept a representative in the Scientific Organizing Committee (SOC) appointed by the IAG Executive Committee.

- (iii) The symposium shall be open to all bona-fide scientists in accordance with the ICSU rules.

- (iv) The symposium proceedings shall be published.

- (b) The SOC appointed under 29(a)(ii) above shall be responsible for the quality of science of the symposium being at a high level. A Local Organizing Committee (LOC) shall take care of the organization and logistics.

- (c) Applications for approval of an IAG Symposium should be submitted to the Secretary General at least one year before the intended date of the meeting.

### 30. International Cooperation

- (a) The Association may participate in joint bodies of the IUGG and other scientific organizations, especially those belonging to the International Council for Science (ICSU). These bodies shall be administered according to their specific rules.

- (b) The Association shall initiate international cooperation in scientific work of international and interdisciplinary character. This includes the adequate participation in international programs and projects and the representation at scientific congresses, symposia etc. of organizations with related activities.

- (c) Representatives to international programs and projects shall be appointed by the Executive Committee and shall inform the EC on the activities, on a biannual basis. The representatives shall also prepare a report to be presented at the IAG General Assembly.

### 31. Duties of the Council

- (a) In addition to any other functions, powers and duties provided in other Statutes and Bylaws, the Council shall:

- (i) Examine questions of general scientific policy or administration, and propose actions deemed necessary.

- (ii) Elect the voting members of the Executive Committee, with the exception of the GGOS Chair, see 15(d) and the ICCT President, see 17(b(i)).

- (iii) Receive reports from the Secretary General and consider for approval the decisions or actions taken by the

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

- Bureau and the Executive Committee since the last Council meeting.
- (iv) Set up and dissolve Association components.
  - (v) Appoint the three members of the ad hoc (audit) committee created for examining the finances of the Association, consider its recommendations and adopt the final budget.
  - (vi) Consider proposals for changes in the Statutes and Bylaws.
  - (vii) Decide on the venue of IAG Scientific Assemblies.
  - (viii) Approve the establishment of Inter-Commission Committees and IAG Projects.
- (b) Council meetings shall be convened by the President of the Association. It shall meet at least once during each IAG General Assembly and may be convened at other times, normally coinciding with the IAG Scientific Assembly according to the Statutes 13b.

### 32. Duties of the Executive Committee

- (a) In addition to any other functions, powers and duties provided in other Statutes and Bylaws, the Executive Committee shall:
  - (i) Initiate actions and issue guidelines, as required, to guide the Association towards the achievement of its scientific objectives.
  - (ii) Fill vacancies occurring between IAG General Assemblies, in accordance with the Statutes and Bylaws.
  - (iii) Approve the internal structure of Association components.
  - (iv) Make recommendations to the Council on matters of general policy of the Association and on the implementation of its objectives.
  - (v) Appoint Honorary Officers and Fellows of the Association, upon the recommendation of the Bureau..
  - (vi) Appoint planning groups for Inter-commission Committees and IAG Projects.
  - (vii) Establish Inter-commission Committees and IAG Projects.
  - (viii) Appoint a Committee for reviewing and updating the IAG Statutes and Bylaws when deemed necessary.

- (ix) Confirm the Assistant Secretaries of the Association.
  - (x) Confirm the links between Commissions and Services.
  - (xi) Adopt the suggested membership fee
  - (xii) Appoint the Vice President of each Commission.
  - (xiii) Appoint representatives to external bodies.
- (b) Executive Committee meetings shall be convened by the President of the Association. It shall meet at IAG General Assemblies and its members are expected to attend the meetings of the Council, with voice but without vote. It shall also meet normally at least once a year, especially one year before the IAG General Assembly, in order to prepare the scientific agenda and the timetable of the next IAG General Assembly.
- (c) At a meeting of the Executive Committee, no member may be represented by any other person, except by the corresponding Vice Presidents or Vice Chairs of the IAG components represented in the EC. In order that the deliberations of the Executive Committee shall be valid, a quorum of at least half of its members must be present or represented.
- (d) The agenda for each meeting of the Executive Committee shall be prepared by the Bureau and sent to the members at least two months prior to the meeting.

### 33. Duties of the Bureau

- (a) In addition to any other functions, powers and duties provided in other Statutes and Bylaws, the Bureau shall:
  - (i) Draw up the agenda of the meetings of the Council and Executive Committee and send these to the members at least two months prior to the meeting.
  - (ii) Ensure the adequate administration of the Association.
  - (iii) Receive applications for individual memberships and accept individuals as Members of the Association.
  - (iv) Recommend Honorary Officers and Fellows to the Executive Committee.
- (b) The Bureau shall normally meet before each meeting of the Executive Committee.

### 34. Duties of the President

In addition to any other functions, powers and duties provided in other Statutes and Bylaws, the President shall:

- (a) Provide general leadership for the Association in all matters.
- (b) Convene and preside over the IAG General Assembly and over all meetings of the Council, Executive Committee and Bureau.
- (c) Represent the Association in the International Union of Geodesy and Geophysics.
- (c) Represent the Association in its dealing with national or international organizations or institutions.
- (d) Submit a report to the IAG General Assembly on the scientific work of the Association during his/her tenure.

### 35. Duties of the Vice President

In addition to any other functions, powers and duties provided in other Statutes and Bylaws, the Vice President shall act as the President whenever the President is not present or is unable to perform any of the President's duties, and shall perform such tasks as may be assigned by the President, the Executive Committee or the Council.

### 36. Duties of the Secretary General

In addition to any other functions, powers and duties provided in other Statutes and Bylaws, the Secretary General shall:

- (a) Serve as secretary of the General Assembly, the Scientific Assembly, the Council, the Executive Committee and the Bureau; arrange for meetings of these bodies, distribute promptly the agenda and prepare and distribute the minutes of all their meetings.
- (b) Act as Director of the IAG Office.
- (c) Manage the affairs of the Association including finances as per 42(b), attend to correspondence, and preserve the records.
- (d) Circulate all appropriate information related to the Association.
- (e) Prepare the reports of the Association's activities.
- (f) Perform such other duties as may be assigned by the Bureau.

- (g) The function of the Secretary General is unpaid and only expenses incurred in connection with the functions and duties are repayable.

### 37. Assistant Secretaries

- (a) The Secretary General is assisted by a small number of assistant secretaries.
- (b) The position of Assistant Secretary is unpaid and only expenses incurred in connection with the functions and duties are repayable.

### 38. IAG Office

To assist the Secretary General, the Association establishes the IAG Office in the country in which the Secretary General resides. The Executive Committee negotiates logistical and financial support with the host country.

### 39. Procedure for Nominations and Elections of Officers

- (a) Elections shall take place by e-mail vote before each IAG General Assembly and should be completed one month before the assembly.
- (b) The President of the Association, after taking advice from the Executive Committee, shall appoint a Nominating Committee consisting of a Chair and three other members.
- (c) The Nominating Committee, after taking advice from the Delegates of the Adhering Bodies, the officers, fellows, and members of the Association, shall normally propose at least two candidates for each position to be filled by election in the Council. Candidates shall be asked to signify their acceptance of nomination and to prepare a resume, maximum 150 words, outlining their position, research interests and activities relating to the Association.
- (d) The Adhering Bodies and the individual membership shall be informed of these nominations three months before the IAG General Assembly.
- (e) During the following month further nominations can be submitted by the Delegates of the Adhering Bodies. Such additional nominations shall be in writing, shall be supported by at least two members of the Council, and shall be submitted with resumes as described above to the Chair of the Nominating Committee.

- (f) Nominations shall be checked against the eligibility criteria in Bylaw 40 by the Nominating Committee. Ineligible nominations will not be accepted and the members of Council who supported the nomination will be advised of the reason for its rejection.
- (g) Delegates shall be informed of these further eligible nominations and resumes and of their supporters.
- (h) The Chair of the Nominating Committee shall write to all Services asking them for one nomination from each Service for the Service representatives in the Executive Committee. The Nominating Committee shall recommend normally two nominees for each of the Services' three positions, considering appropriate scientific and national distribution. The procedure for seeking additional nominations in sub clause (e) above does not apply to these positions.
- (i) If candidates have been nominated for more than one position, they will be asked to make a decision for which position they will allow their name to stand.
- (j) Elections shall be by e-mail ballot and by majority vote.
- (k) The Members-at-Large shall be elected in a second round after the other members of the Executive Committee are known, in order to fulfil the condition of geographical and organizational balance (see Statutes 12a).

#### **40. Eligibility & Terms of Office**

- (a) No person may hold more than one of the following offices at the same time: President of the Association, Vice President, President of a Commission, President of an Inter-commission Committee, Chair of a Service, Chair of GGOS, President of the Communication and Outreach Branch, Chair of an IAG Project.
- (b) A member of the IUGG Bureau or of the IUGG Finance Committee may not occupy the post of President, of Vice President or of Secretary General of the Association.
- (c) The President of the Association is elected for one period and may not be immediately re-elected to the same office.
- (d) The Vice President is elected for one period and may not be re-elected to the same office.

- (e) The Secretary General is elected for one period initially. He/she may be re-elected for two additional periods.

#### **41. Extraordinary Vacancies**

- (a) Should the position of President become vacant during the Period between two IAG General Assemblies, his duties devolve to the Vice President until the closure of the next IAG General Assembly.
- (b) Should the post of Secretary General become vacant, the President shall arrange without delay for the Executive Committee to propose a replacement and for the Council to appoint a new Secretary General so as to ensure the continuity of the work of the IAG Office. This appointment has effect until the closure of the next IAG General Assembly and shall not be counted in the restriction of eligibility for re-election of the Secretary General under Bylaw 40(e).

#### **42. Finances**

- (a) The Finances of the Association derive from the following sources:
  - (i) Contributions of IUGG Adhering Bodies of which a portion, determined by the IUGG Council on recommendation of its Finance Committee, is paid to the Association by the Treasurer of the Union.
  - (ii) Sale of publications.
  - (iii) IAG Fund collected from individual contributions for specific purposes.
  - (iv) Membership fees.
  - (v) A portion of the registration fee charged at IAG symposia.
  - (vi) Other sources e.g., grants, interests, and funds remaining after a symposium.
- (b) The Secretary General is responsible to the Bureau and to the Council for managing the funds in accordance with the Statutes and Bylaws, with the decisions of the Council. The Secretary General alone shall be responsible for control of the financial operations of the Association.
- (c) At each IAG General Assembly the budget proposal for the next period shall be presented by the Secretary General and submitted for approval to the Council. The budget as approved by the Council shall be implemented by the Secretary General.

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

- (d) During each IAG General Assembly, the Council shall examine all expenditures during the preceding period to ensure that they were in accordance with the proposed budget previously approved. This examination shall be carried out by an ad hoc (audit) committee appointed by the Council; see also 31(a)(v).
- (e) In addition, the accounts shall be audited by a qualified accountant and shall then be reported to the IUGG Treasurer, as prescribed in Article 20 of the IUGG Bylaws.



**STATUTES AND BY-LAWS OF THE INTERNATIONAL ASSOCIATION OF  
GEOMAGNETISM AND AERONOMY**

*(Revised July 2011, XXV IUGG General Assembly, Melbourne, Australia and June 2015, XXVI IUGG General  
Assembly, Prague, Czech Republic)*

**CONTENTS**

Glossary of Terms

**STATUTES OF IAGA**

**I. OBJECTIVES, STRUCTURE, AND MEMBERSHIP OF THE ASSOCIATION**

1. Objectives of IAGA
2. Establishment of Component Bodies
3. A Member Country of IAGA
4. An IAGA National Body

**II. ADMINISTRATION**

5. Assemblies of IAGA
6. Delegates and Conferences of Delegates
7. The Executive Committee
8. Membership of the Executive Committee
9. Duties of Component Bodies

**III. FINANCE**

10. Adoption of the budget
11. Finance Committee

**IV. VOTING**

12. Categories of Voting Matters
13. Voting Rules
14. Voting at Conferences of Delegates

**V. GENERAL**

15. Modification of the Statutes
16. Modification of the By-Laws
17. Languages

**BY-LAWS OF IAGA**

**I. COMPOSITION**

1. Component Bodies of IAGA
2. Role and Structure of a Component Body
3. Appointment of Leaders of Component Bodies
4. Honorary Membership of IAGA

**II. ADMINISTRATION**

5. Extraordinary General Assemblies
6. Notice of an Assembly
7. The Agenda for a Conference of Delegates
8. Attendance at a Conference of Delegates
9. Representation on behalf of a Chief Delegate
10. Nominations and election of the Executive Committee
11. Meetings of the Executive Committee
12. Duties of the Executive Committee
13. Duties of the President
14. Representation on behalf of the President
15. Duties of the Secretary-General

**III. FINANCE**

16. Allocations of Funds

## GLOSSARY OF TERMS

*Terms are defined formally in the Statutes; this glossary is included for convenience only and does not provide the formal definition of terms.*

Assembly: a General Assembly, an extraordinary Assembly, or a Scientific Assembly of IAGA.

(The) Association: IAGA.

(The) By-Laws: the By-Laws of IAGA.

Chief Delegate: the Delegate appointed by an IAGA National Body for the purpose of casting that country's vote(s) on administrative and financial matters and who has communicated his or her accreditation to the Secretary-General.

Component Bodies of IAGA: the Divisions and Interdivisional Bodies of IAGA.

Conference of Delegates: a formal meeting of Delegates and Chief Delegates of Member Countries, open to the public.

Delegate: a scientist from a Member Country who is registered for an IAGA Assembly as a bona-fide scientific participant, or someone who has the agreement of the Secretary-General in consultation with the IAGA Executive Committee to attend and vote as a Delegate at a Conference of Delegates.

Executive Committee: the committee elected by a Conference of Delegates to be responsible for IAGA affairs between Conferences of Delegates.

Extraordinary Assembly: an Assembly of IAGA called by the President in accordance with By-Law 5.

Finance Committee: the committee appointed by the Executive Committee to examine the accounts and report to a Conference of Delegates.

General Assembly (of IAGA): a General Assembly of IAGA normally held in conjunction with a General Assembly of IUGG (i.e., every 4 years).

Honorary Member of IAGA: a person who has been voted the status of honorary member of the Association in recognition of outstanding contributions to the work of IAGA.

IAGA: the International Association of Geomagnetism and Aeronomy.

IAGA National Body: the body in a Member Country that is established by the body that adheres to IUGG to represent that country in IAGA activities.

ICSU: the International Council for Science (previously called the International Council of Scientific Unions).

IUGG: the International Union of Geodesy and Geophysics.

Member Country: a country that adheres to IUGG and may, therefore, participate in IAGA activities. Paying Member Countries of IUGG, as defined in the IUGG statutes, are Member Countries of IAGA.

Nominating Committee: the committee appointed by the Executive Committee to provide to a conference of Delegates nominations for the Executive Committee (Chief Delegates may also make nominations).

Period: the interval between two scheduled General Assemblies.

Scientific Assembly (of IAGA): an Assembly of IAGA normally held between General Assemblies.

(The) Statutes: the Statutes of IAGA.

## **STATUTES OF IAGA**

### **I. OBJECTIVES, STRUCTURE, AND MEMBERSHIP OF THE ASSOCIATION**

#### Statute 1. Objectives of IAGA

The objectives of the International Association of Geomagnetism and Aeronomy (henceforth IAGA) are:

- (a) to promote studies of the geomagnetism and aeronomy of the Earth and other bodies of the solar system and of the interplanetary medium and its interaction with these bodies ;
- (b) to promote and encourage research in the above subjects by individual countries, institutions or persons and to facilitate international co-ordination of such research;
- (c) to provide an opportunity on an international basis for presentation, discussion and publication of the results of the research indicated above;
- (d) to promote appropriate standardisations of observational programmes, data acquisition systems, data analysis, modelling, and publications;
- (e) to promote understanding and appreciation of geomagnetism and aeronomy by the general public through, but not limited to, public lectures, media events, media publication packages, etc.

#### Statute 2. Establishment of Component Bodies

To achieve its objectives, IAGA may establish Component Bodies both within the Association and jointly with other Associations of the International Union of Geodesy and Geophysics (IUGG), components of other Bodies of the International Council for Science (ICSU) or other internationally recognised scientific bodies.

#### Statute 3. A Member Country of IAGA

Fully accredited Member Countries of IUGG, as defined in IUGG Statute 4, are Member Countries of IAGA. Countries in Observer status or having Associate Membership of IUGG, as defined in IUGG Statute 4, have the same status in IAGA as in IUGG.

#### Statute 4. An IAGA National Body

Each Member Country shall be represented by a single body, henceforth referred to as the IAGA National Body, established in that country by the body that adheres to IUGG.

### **II. ADMINISTRATION**

#### Statute 5. Assemblies of IAGA

- 5.1 A General Assembly of IAGA shall normally be held in conjunction with each General Assembly of IUGG.
- 5.2 The interval between the end of one ordinary General Assembly and the end of the next one is, for the purposes of the Statutes, termed one Period.
- 5.3 A Scientific Assembly of IAGA may be held between General Assemblies of IAGA, in accordance with IUGG By-Law 9.
- 5.4 An extraordinary General Assembly or an extraordinary Scientific Assembly of IAGA may be convened by the President in accordance with By-Law 5.

#### Statute 6. Delegates and Conferences of Delegates

- 6.1 The work of the Association shall be directed by Conferences of Delegates held at General and Scientific Assemblies of IAGA.
- 6.2 A Delegate is a scientist from a Member Country who is registered for an Assembly as a bona-fide scientific participant, or someone who has the agreement of the Secretary-General in consultation with the IAGA Executive Committee to attend and vote as a Delegate at a Conference of Delegates.
- 6.3 Among the Delegates from each Member Country, one shall be identified by the respective IAGA National Body as Chief Delegate for the purpose of casting that country's votes on

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

administrative and financial matters as stipulated in Statutes 12, 13 and 14. A Chief Delegate may be represented in voting matters by another Delegate appointed in accordance with the By-Laws.

- 6.4 A Delegate may represent only one Member Country. A member of the Executive Committee (see Statute 7) may not be a Chief Delegate, except when that member is the only person in attendance from the country in question.
- 6.5 A Conference of Delegates shall be convened at least once during each Assembly of IAGA.

Statute 7. The Executive Committee

- 7.1 Responsibility for the direction of IAGA affairs between Conferences of Delegates shall rest with an Executive Committee of the Association, elected at a Conference of Delegates.
- 7.2 Decisions of the Executive Committee must be reported to a Conference of Delegates. Any decision or recommendation failing to receive simple majority support from a Conference of Delegates shall be referred to the Executive Committee for further study.
- 7.3 The duties of the Executive Committee shall be to administer the affairs of the Association in accordance with these Statutes and By-Laws and the decisions of a Conference of Delegates.
- 7.4 The Executive Committee may appoint appropriate leaders and IAGA representatives to Joint Bodies established with other IUGG Associations, components of other ICSU Bodies, or other internationally recognised scientific bodies.
- 7.5 In its dealings with non-IUGG Bodies, the Executive Committee shall not commit the name of IUGG, or act on behalf of IUGG, unless prior approval has been secured from either the President or the Secretary-General of the IUGG, acting on behalf of the IUGG Executive Committee.
- 7.6 The Executive Committee shall meet at least twice at each Assembly, and must meet at least once more between General Assemblies. Any such meeting between General Assemblies can be conducted electronically, via audio and/or video links.

Statute 8. Membership of the Executive Committee

- 8.1 The Executive Committee shall be Chaired by the President of IAGA and shall consist of the President, Vice-President, Secretary General ex-officio, and seven additional Members. Two members of the Executive Committee shall come from developing countries. All members of the Executive Committee shall be elected by a Conference of Delegates as an administrative matter with voting as stipulated in Statutes 13 and 14.
- 8.2 The President shall be elected for one Period, and may not be re-elected to the same office. No person, other than the Secretary General, may serve in the same position for more than two Periods. A person who has already served for two Periods is not eligible for a lower position.
- 8.3 The retiring President (ex-officio) shall be entitled to attend Executive Committee meetings and participate in Committee business, but shall not vote or draw on IAGA funds to attend such meetings.
- 8.4 The Secretary General shall be elected for two periods and may be re-elected in extraordinary circumstances for up to two successive further periods.
- 8.5 The election of the Executive Committee shall normally take place at a Conference of Delegates held at a General Assembly, with the exception of that of the Secretary-General who shall normally be elected at a Conference of Delegates held at a Scientific Assembly.
- 8.6 In the event of any vacancy occurring in the membership of the Executive Committee during a Period, the Executive Committee shall appoint a person to fill the vacancy until the next election. The eligibility for election of a person so appointed shall not be affected by such an appointment. If the vacancy is that of the Presidency, the Vice-President shall act as President and one of the existing seven members of the Executive Committee shall be appointed Vice-President.

Statute 9. Duties of Component Bodies

- 9.1 The duties of the Component Bodies within IAGA (see Statute 2) shall be to further the scientific objectives of IAGA through:
- (a) co-ordination of appropriate scientific research;
  - (b) organisation of scientific meetings;
  - (c) promotion of the exchange of information and data; and

- (d) provision of advice to the Executive Committee on the formulation of policies to guide the scientific work of the Association.
- 9.2 The duties of the Component Bodies established jointly with other Associations of IUGG, other ICSU Bodies or other internationally recognised scientific bodies (see Statute 2) shall be to deal with and co-ordinate those scientific programmes and/or meetings that cover topics of mutual interest, to promote the exchange of information, data and products derived from them, to undertake and promote educational and outreach activities, and to formulate policies and provide advice on topics of mutual interest.

### III. FINANCE

#### Statute 10. Adoption of the budget

The Secretary General shall prepare a budget estimate of receipts and expenditures for each half-Period and present this budget before the Executive Committee and a Conference of Delegates at the time of an Assembly. On receiving the approval of both the Executive Committee and a Conference of Delegates, the Secretary General shall proceed with the disbursement of funds in accordance with that approved budget.

#### Statute 11. Finance Committee

- 11.1 A Finance Committee shall be appointed by the Executive Committee within six months after the opening of each General Assembly and shall normally serve for one Period.
- 11.2 No serving Executive Committee Member may be a member of the Finance Committee.
- 11.3 The Finance Committee shall examine the accounts and report the results of their examination for approval to the Executive Committee and to a Conference of Delegates at the time of an Assembly

### IV. VOTING

#### Statute 12. Categories of Voting Matters

- 12.1 Prior to a vote by a conference of Delegates, the President, on the advice of the Secretary General, shall decide whether the matter under consideration is scientific, administrative, or financial.
- 12.2 Matters that are partly scientific and partly administrative and do not involve matters of finance shall be classified as administrative matters.
- 12.3 The President's ruling may be challenged only by the Chief Delegate of a Member Country. In the event of a challenge, the President's ruling can be changed in accordance with a vote passed at the Conference of Delegates by a two-thirds majority of those entitled to vote.

#### Statute 13. Voting Rules

- 13.1 When a vote is taken on a scientific matter, each Delegate present at a conference of Delegates shall have one vote.
- 13.2 When a vote is taken on an administrative matter, voting shall be by fully accredited Member Countries, each fully accredited Member Country having one vote cast by its Chief Delegate, or that person's representative appointed in accordance with the By-Laws.
- 13.3 When a vote is taken on a financial matter, voting shall be by fully accredited Member Countries, each fully accredited Member Country having a number of votes equal to the number of its category of membership in IUGG. Such votes shall be cast by the Chief Delegate of each fully accredited Member Country, or that person's representative.

#### Statute 14. Voting at Conferences of Delegates

- 14.1 Decisions taken by a vote at a Conference of Delegates shall be valid only if at least half of the Chief Delegates of fully accredited Member Countries attending the Assembly are present or represented in accordance with the By-Laws.

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

- 14.2 Decisions of a Conference of Delegates shall be taken by a simple majority of the votes cast, except as otherwise specified in the Statutes. If a tie should occur, the decision shall rest with the President.

**V. GENERAL**

Statute 15. Modification of the Statutes

- 15.1 Modifications to these Statutes shall normally come into force at the close of the General Assembly at which the modifications are adopted.
- 15.2 These Statutes may only be modified with the approval of at least a two-thirds majority of Chief Delegates of fully accredited Member Countries present at a Conference of Delegates held during a General Assembly, in accordance with Statutes 6, 13, and 14.
- 15.3 Only the IAGA National Body of a Member Country may propose a change to these Statutes. Any such proposal must reach the Secretary General at least six weeks prior to the announced date of the General Assembly at which it is to be considered. The Secretary General shall notify all IAGA National Bodies of any proposed change at least four weeks prior to the announced date of the General Assembly.

Statute 16. Modification of the By-Laws

A Conference of Delegates shall have the power to adopt By-Laws within the framework of the Statutes of the Association. These By-Laws may be adopted or modified by a simple majority vote of Chief Delegates of fully accredited Member Countries present at a General Assembly, in accordance with Statutes 6, 13, and 14. Any modification of the By-Laws shall normally come into force at the close of the General Assembly at which they are approved.

Statute 17. Languages

The present Statutes have been prepared in the official languages of the IUGG. The English text shall take precedence if there is a question of interpretation.

**BY-LAWS OF IAGA**

**I. COMPOSITION**

By-Law 1. Component Bodies of IAGA

The Component Bodies of IAGA shall be called Divisions and Interdivisional Bodies as follows:

Division I : Internal Magnetic Fields

Division II: Aeronomical Phenomena

Division III: Magnetospheric Phenomena

Division IV: Solar Wind and Interplanetary Magnetic Field

Division V: Observatories, Instruments, Surveys, and Analyses

Division VI: Electromagnetic Induction in the Earth and Planetary Bodies

Interdivisional Commission: History

Interdivisional Commission: Developing Countries

Interdivisional Commission: Education and Outreach

By-Law 2. Role and Structure of a Component Body

- 2.1 Each Division or Interdivisional Body shall propose to the Executive Committee its own role, structure, and mode of operation, which must be approved by the Executive Committee.
- 2.2 The role and the effectiveness of each Division and Interdivisional Body shall be reviewed by the Executive Committee at each General Assembly.

By-Law 3. Appointment of Leaders of Component Bodies

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

- 3.1 The names of candidates to fill the positions of leaders of each Division and Interdivisional Bodies shall be proposed by the President, representing the wishes of the Executive Committee, at the Conference of Delegates during a General Assembly. Alternates may be proposed by a Chief Delegate (or his/her representative appointed in accordance with By-Law 9) of a fully accredited Member Country, and, if seconded by another Chief Delegate (or his/her representative), then voting occurs of all Chief Delegates (or their representatives) at the Conference of Delegates.
- 3.2 In order that their appointments shall become effective, Division and Interdivisional Body leaders must express in writing or electronically to the President their willingness to serve. For leaders proposed by the President, this must be prior to the Conference of Delegates; for alternates approved at the Conference of Delegates, this must be no later than two weeks after the Conference of Delegates.
- 3.3 If no structure exists within subdivisions for appointment of leaders of such subdivisions, then the leaders of the relevant Divisions and Interdivisional Bodies may appoint, for each Period, Reporters, Working Group leaders, and the leaders of other possible subdivisions.
- 3.4 While it is recognized that the prime criteria for the appointment of leaders should be the scientific and administrative competence of the candidates, the Executive Committee and Division and Interdivisional Body leaders shall ensure that, wherever possible, these appointments achieve a diversified geographical and gender representation.

By-Law 4. Honorary Membership of IAGA

- 4.1 A person who has given outstanding service to IAGA may be elected by a Conference of Delegates as an "Honorary Member of IAGA". Proposals for Honorary Members must reach the Secretary General no later than 31st December of the year before an Assembly. The Executive Committee shall select persons for this category and shall present their names to a Conference of Delegates for approval.
- 4.2 The names of Honorary Members of IAGA shall be listed in publications where the structure of IAGA is shown.

**II. ADMINISTRATION**

By-Law 5. Extraordinary Assemblies

- 5.1 The President may at any time, with the approval of the Executive Committee, call an Extraordinary Assembly.
- 5.2 The President must call an Extraordinary Assembly at the request of not less than one-third of the number of IAGA Member Countries.
- 5.3 Such an Extraordinary Assembly must be held no later than nine months after the request.
- 5.4 An Extraordinary Assembly shall have the same powers and be subject to the same rules as a General Assembly.

By-Law 6. Notice of an Assembly

Notice of the date and place of a General Assembly or a Scientific Assembly shall be announced on the IAGA web site and through electronic distribution to the IAGA emailing list maintained by the Secretary General.

By-Law 7. The Agenda for a Conference of Delegates

- 7.1 A provisional agenda for a Conference of Delegates shall be prepared by the Secretary General and sent electronically to IAGA National Bodies at least four weeks prior to the opening of an Assembly.
- 7.2 The provisional agenda shall include all items submitted by IAGA National Bodies for discussion at the Conference of Delegates, together with questions placed on the provisional agenda by the Executive Committee. Additional agenda items, for which notice has not thus been given, may only be discussed with the consent of the Conference of Delegates by simple majority of all Delegates present.

By-Law 8. Attendance at a Conference of Delegates

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

- 8.1 A Conferences of Delegates shall be open to the public. Any non-delegate shall be heard in a discussion provided that person has the consent of the President to speak on the matter.
- 8.2 The President may, on his or her own initiative or at the request of a National Body, invite representatives of scientific bodies or individuals to attend a Conference of Delegates in an advisory capacity.

By-Law 9. Representation on behalf of a Chief Delegate

A Chief Delegate of a Member Country may designate another Delegate from that country to be his or her representative at all or part of a Conference of Delegates. If the Chief Delegate is unable to do this, the accredited Delegates from that Member Country may designate one of their members to represent the Chief Delegate. In either case, the Secretary General shall be informed of the designation electronically prior to the Conference of Delegates at which the representative of the Chief Delegate is to act.

By-Law 10. Nominations and Election of the Executive Committee

- 10.1 At least six months prior to the opening of a General Assembly, the President, in consultation with the Executive Committee, shall appoint a Nominating Committee consisting of a Chair and four members. Members of the Executive Committee may not be appointed to the Nominating Committee.
- 10.2 The Nominating Committee shall nominate at least one candidate for each position on the Executive Committee and notify the Secretary General so that these nominations are circulated to all IAGA National Bodies at least six weeks prior to the election. Those nominated must have advised the Nominating Committee in writing or electronically beforehand of their willingness to serve.
- 10.3 The IAGA National Body of any Member Country may make other nominations in writing to the Chair of the Nominating Committee at least four weeks prior to the election. To qualify for candidacy, each individual nomination must be supported by at least three Member Countries and must be accompanied by the written or electronic agreement of the nominee to stand. The combined list of candidates must be made publicly viewable and distributed electronically at least one day prior to the election.
- 10.4 The composition of the Executive Committee should reflect diversified geographical and scientific disciplinary representation, and favour short rather than long intervals of service in order to increase opportunities for new members to serve. At least two members of the Executive Committee should come from developing countries.
- 10.5 Members of the Executive Committee shall be elected by secret ballot. The President shall select two scrutineers for the election from among the Delegates present. The scrutineers shall not be members of the Executive Committee nor of the Nominating Committee nor candidates for the election.
- 10.6 Only scientists from Member Countries of IUGG (as defined in IUGG Statute 4) are eligible to hold elected positions in IAGA.

By-Law 11. Meetings of the Executive Committee

- 11.1 Executive Committee meetings shall be convened by the President, or by the Vice-President when the President is not available. At a meeting of the Executive Committee, whether a physical or virtual meeting, no member can be represented by another person. Decisions of the Executive Committee shall be valid only if at least half plus one of its members are present. All decisions of the Executive Committee shall be taken by simple majority of the total number of voting members present. In the case of a tie, the decision shall rest with the President.
- 11.2 When the importance and urgency of a decision warrant it, a vote by electronic correspondence may be organized by the Secretary General at the request of the President. Voting rules stipulated in these Statutes and By-Laws shall apply.
- 11.3 The President may, on his or her own initiative or at the request of another member of the Executive Committee or of an IAGA National Body, invite representatives of scientific bodies or individuals to attend an Executive Committee meeting in an advisory capacity.



XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

- 11.4 Proposals concerning the agenda for meetings of the Executive Committee may be submitted by members of that Committee, by Division or Interdivisional Body leaders, or by IAGA National Bodies; they must be notified to the Secretary General at least two weeks prior to the meeting. The final agenda, after its approval by the President, shall be distributed to the members of the Executive Committee at least one week prior to the meeting.

By-Law 12. Duties of the Executive Committee

In addition to the duties specified in Statutes 7 and 8 and By-Laws 2, 3, 4, 5, 7, 10, and 11, and subject to directives of a Conference of Delegates, the Executive Committee shall have the power to:

- (a) act as the organizing committee for all IAGA Assemblies, Symposia, and Meetings, or delegate such responsibility to other persons by making the necessary appointments;
- (b) entrust to special commissions or to particular individuals the preparation of reports on subjects within the province of the Association;
- (c) invite or appoint persons or institutions belonging to countries that are not members of the Association to be local correspondents to the Association.

By-Law 13. Duties of the President

The duties of the President of IAGA are:

- (a) to promote geomagnetism and aeronomy within scientific communities and also to the public;
- (b) to represent IAGA in the IUGG Executive Committee;
- (b) to represent IAGA in its dealings with IAGA National Bodies, other IUGG Associations, other ICSU Bodies, and other international scientific bodies;
- (c) to represent or to appoint a person to represent IAGA at meetings, conferences, or functions where formal representation is requested or desirable;
- (d) to convene Conferences of Delegates and meetings of the Executive Committee and to preside over these meetings;
- (e) to submit a report on the scientific work of the Association to a Conference of Delegates at each Assembly.

By-Law 14. Representation on behalf of the President

If the President is not available, the Vice-President shall preside at a Conferences of Delegates or an Executive Committee meeting, and the Vice-President or the Secretary General shall represent the President at an IUGG Executive Committee Meeting in accordance with IUGG By-Laws. The President may designate the Vice-President to act on his or her behalf in any other function, meeting, or conference in which formal representation of IAGA is requested or desirable.

By-Law 15. Duties of the Secretary General

The duties of the Secretary General are:

- (a) to serve as secretary of IAGA, to organize Assemblies according to the instructions of the Executive Committee, to arrange meetings of the Executive Committee, and to prepare and distribute promptly the agenda and minutes of Conferences of Delegates and meetings of the Executive Committee;
- (b) to manage the administrative and scientific affairs of the Association, to attend to correspondence, and to maintain and preserve the records of the Association;
- (c) to inform members of the Executive Committee during the interval between its meetings about any important matter concerning the Association;
- (d) to advise the President during the meetings of the IUGG Executive Committee;
- (e) to receive and take charge of such funds as may be allocated by IUGG to the Association, or as may be received from any other source; to disburse such funds in accordance with the decisions of Conferences of Delegates or with the instructions of the Executive Committee; to keep account of all receipts and disbursements and to submit such account, audited by a qualified accountant (before each General Assembly), for examination by the Finance Committee appointed according to Statute 11;

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

- (f) to prepare and arrange publication of the Programme of each Assembly, and a report on the outcomes;
- (g) to publish an internal Association bulletin (such as IAGA News) containing information of general interest to the Association;
- (h) to prepare for each Assembly the list of Chief Delegates;
- (i) to ensure that the website of the Association is maintained;
- (j) to perform such other duties as may be assigned by the President or by the Executive Committee.

### III. FINANCE

#### By-Law 16. Allocation of Funds

In the estimation of expenditures by the Secretary General and approval thereof by the Executive Committee, as mentioned in Statute 10, provision may be made to allocate the expected funds to:

- operation of the Secretariat of the Association;
- administrative arrangements in preparation for Assemblies and Executive Committee meetings;
- publication and distribution electronically of IAGA News, series of Geomagnetic Indices for which IAGA has primary responsibility, or special publications;
- assistance for the President to attend IUGG Committee meetings and for IAGA officers to attend functions as the representative of IAGA when such officers have expressed in writing or electronically that they are unable to obtain the necessary support from other sources;
- assistance for officers of IAGA, meeting organisers, and scientists to attend official administrative meetings or IAGA-sponsored scientific meetings when participation by such persons is judged by the Executive Committee to be essential for the success of the meeting and those persons have expressed in writing or electronically that they are unable to obtain the necessary support from other sources;
- minor administrative expenses requested by leaders of Divisions, Joint Bodies, and Interdivisional Bodies who have expressed in writing or electronically that they are unable to obtain the necessary support from other sources,
- any item not mentioned above for which support will contribute to achieving the objectives of the Association.

## STATUTES AND BY-LAWS OF THE INTERNATIONAL ASSOCIATION OF HYDROLOGICAL SCIENCES

*(Revised July 2011, XXV IUGG General Assembly, Melbourne, Australia)*

### STATUTES

#### 1. THE OBJECTIVES OF THE ASSOCIATION

1.1. To promote the study of Hydrology as an aspect of the earth sciences and of water resources;

\_ to study the hydrological cycle on the Earth and the waters of the continents; the surface and groundwaters, snow and ice, including their physical, chemical and biological processes, their relation to climate and to other physical and geographical factors as well as the interrelations between them;

\_ to study erosion and sedimentation and their relation to the hydrological cycle;

\_ to examine the hydrological aspects of the use and management of water resources and their change under the influence of man's activities;

\_ to provide a firm scientific basis for the optimal utilization of water resources systems, including the transfer of knowledge on planning, engineering, management and economic aspects of applied hydrology.

1.2. To provide for discussion, comparison, and publication of research results.

1.3. To initiate, facilitate, and coordinate research into, and investigation of, those hydrological problems which require international cooperation.

2. The Association is a constituent body of the International Union of Geodesy and Geophysics (IUGG). The Association is subject to those Articles of the Statutes and Bye-laws of the Union that apply to associations and also to these Statutes.

3. Any country adhering to the Union also adheres to the Association, and is entitled to send delegates and otherwise to participate in its work. All scientific meetings of the Association or of its components are open to such delegates.

4. The Association performs its activities in the framework of the International Council for Science (ICSU) and IUGG, in cooperation with the United Nations and its specialized agencies and through direct contacts with other international organizations.

5. The Association shall comprise: the Plenary Session, the Bureau of the Association, the Scientific Commissions, the Panels and Working Groups and the International Association of Hydrological Sciences Limited. The Association shall maintain contact with the several adhering countries through their National Representatives or National Committees (often subcommittees or sections of the IUGG National Committees) and Regional Committees.

**Scientific Commissions:** Units of the Association having defined scientific responsibilities in specific hydrological fields or subjects. Divisions are corresponding units of the Scientific Commissions.

**Panels or Working Groups:** Ad hoc units to report on specific problems, either scientific or administrative.

**National Committees:** National Committees of IAHS are administrative bodies for maintaining contacts with the Association. They may include representatives to the Scientific Commissions of IAHS.

**National Representatives:** Each member country of IUGG shall appoint a National IAHS Representative who is responsible for maintaining contact with the Association, taking part in the work of the National Committee of IAHS, if one such is established.

**Regional Committees:** Regional Committees are administrative bodies which examine subjects of particular concern within specific regions.

**The International Association of Hydrological Sciences Limited:** This is a UK Registered Charity having as part of its Memorandum and Articles of Association objects which are identical to those of this Association and coming within the framework of ICSU and IUGG.

**Individual Members:** Even though membership of IAHS is by country, individuals may request to be registered for so-called individual membership. To qualify for such membership an individual must work in one or more fields of hydrology and endeavour to participate in IAHS activities. The individual members are not permitted to vote on administrative matters.

## PLENARY SESSION

6. A Plenary Session of the Association shall be convened in accordance with the Bye-laws of the Union. At least one Plenary Session of the Association shall be held during a General Assembly of the IUGG and during a Scientific Assembly of the Association. Each adhering country may be represented by one or more delegates to the Plenary Session.

6.1. The Plenary Session has final authority on questions of a scientific character.

6.2. The Plenary Session shall consider the state of hydrological sciences, the trends in their development, and questions relating to the organization of symposia on important programmes, taking into consideration the appropriate programmes of other international organizations.

6.3. Each participant present at the Plenary Session shall have one vote on scientific matters.

7. The final authority of the Association in all matters of administration and finance shall be vested in the Plenary Administrative Session of the Association.

7.1. The Plenary Administrative Session shall consist of the President, the President-Elect or immediate Past-President, the Vice-Presidents, the Secretary General, the Treasurer, the Editor, the President or other designee of each Scientific Commission in existence at the time, the Chairman of IAHS Limited and one voting delegate from each adhering country, appointed by that country to vote in the Plenary Administrative Session.

A quorum shall consist of the President (or Vice-President acting as President), the Secretary General, or his deputy, and voting delegates from at least 10 countries.

7.2. Voting in the Plenary Administrative Session shall be by countries, each country having one vote, with the provision that it has voting rights in IUGG at that time. This voting may also be by mail but if the vote has been by mail then the country cannot vote at the Plenary Session again. Only those officers of the Association and its Scientific Commissions who are also voting delegates of their countries may vote.

7.3. The Plenary Administrative Session, during the General Assembly of the IUGG, shall elect for the Association, in accordance with the Bye-laws, the President-Elect, three Vice-Presidents, the Secretary General, the Treasurer, and such other elective officers as may be deemed necessary.

The election shall be held during the IUGG General Assembly, in accordance with Articles 7.1, 7.2 and 7.6.

The period of office for all Association officers except the President, shall be the interval between elections at two successive IUGG General Assemblies.

The President-Elect shall become President, and the President shall become immediate Past-President, two years after the elections at the IUGG General Assembly.

If a Scientific Assembly is held during the second year after the elections, the President-Elect shall become President at the beginning of the Scientific Assembly.

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

The term of immediate Past-President shall be from the time the new President takes office to the next election of a President-Elect. At any time there shall be in the Bureau either a President and President-Elect or a President and a Past-President.

The President and Vice-Presidents may not be elected to two successive terms of the same office.

The Secretary General shall be eligible for re-election, but not for more than two additional terms.

The Treasurer shall be appointed by the Bureau, and shall be eligible for re-appointment without limit.

The Editor shall be appointed by the Bureau, and shall be eligible for re-appointment without limit.

The President-Elect shall assume the office of President if this office becomes vacant. If there is no President-Elect the Bureau shall appoint one of the Vice-Presidents to be President.

If the office of the Secretary General or that of the Treasurer or that of the Editor shall become vacant between IUGG General Assemblies, acting officers shall be appointed by the President to serve the remainder part of the term.

7.4. The Plenary Administrative Session has the power to form and discontinue Scientific Commissions. Their terms of reference shall be included in the Bye-laws of the Association.

The Plenary Administrative Session during the IUGG Assembly shall be informed of the President-Elect, three Vice-Presidents and Secretary elected during the Plenary Administrative Session of each of the Scientific Commissions.

The office of President-Elect of each Scientific Commission shall be established under the same terms as outlined in Article 7.3 for the Association.

The Presidents of the Scientific Commissions may not be re-elected to two successive terms of the same office. The Vice-Presidents and the Secretary shall be eligible for re-election but for not more than one additional term.

The Scientific Commissions have the power to fill vacancies that may occur between elections.

7.5. The Plenary Administrative Session has the power to form and discontinue Regional Committees, which may be formed on the initiative of several National Committees or National Representatives. Their Officers shall be elected by those National Committees, or National Representatives. Regional Committees shall examine hydrological subjects of particular concern to a specific region, and may conduct regional meetings on such subjects. Regional meetings shall be open to all adhering countries, and the Scientific Commissions may designate a representative to appear on their behalf at these meetings. Each Regional Committee may propose a set of regulations for its organization and governance for approval by the Plenary Administrative Session of the Association.

7.6. The Plenary Administrative Session may elect an Honorary President, who shall serve life or until such time as he/she resigns from this office. The Honorary President may participate as a non-voting member in any Association meeting, including those of the Bureau, and may be requested by the Bureau to undertake specific tasks in support of the Objectives of the Association.

7.7. In questions involving finance, voting in the Plenary Administrative Session shall be as in Article 7.2, except that upon the request of two voting delegates, the number of votes for each country shall be one greater than the number of its category of membership in the Union as defined in the Statutes of the Union.

7.8. An adhering country not represented at a Plenary Administrative Session may forward its vote on any pertinent item on the agenda, including elections of Association officers, by mail.

7.9. Voting by post on administrative matters between Plenary Sessions of the Association can be authorized by the Bureau.

## **THE BUREAU**

8. The Bureau of the Association shall consist of the President, the President-Elect or immediate Past-President, three Vice-Presidents, the Secretary General, the Treasurer, the Editor and Presidents of the Scientific Commissions in existence at the time and the Chairman of the International Association of Hydrological Sciences Limited. The immediate Past-President shall remain a Bureau member during the period between the end of his/her office and the election of a new President-Elect. The President shall convene the Bureau at least every other year to guide the affairs of the Association.

## **PRESIDENT, SECRETARY GENERAL, TREASURER AND EDITOR**

9. The President shall be the executive officer of the Association and shall direct its affairs in accordance with the decisions of the Plenary Session of the Association. The President shall be assisted by the Vice-Presidents.

10. The Secretary General, in consultation with the President, shall manage the business of the Association, conduct the correspondence, preserve the official documents and administrative records. The Bureau may authorize the Secretary General to employ administrative and secretarial personnel to assist him/her in the performance of his/her duties to the Association. The Secretary General shall also take any action necessary to ensure that the Objectives of the Association are fulfilled in a manner which complies with the relevant Law governing administration, taxation, Contract and Tort or their equivalent in any country where the Association is operational including the appointment of a person or corporation if required to protect and represent the Association in any such matters and he/she shall be indemnified by the Association in respect of the costs of any such action.

11. The Treasurer, or acting Treasurer, shall collect the funds of the Association and disburse them in accordance with the decisions of the Plenary Session of the Association and the Bureau. He shall maintain records of all financial transactions of the Association and submit annual reports thereon to the Bureau as required by the Statutes and Bye-laws of IUGG. In agreement with the Secretary General he shall arrange for the subscriptions, sales, and storage of the publications of the Association.

11.1. The funds of the Association shall be invested in accounts of the Association. They shall be at the disposal of the Treasurer and the Secretary General as may be deemed necessary and as specified in Article 11, but provisions shall be made to enable the President to transfer the funds or part of them to an acting Treasurer appointed according to Article 7.3.

12. The Editor shall prepare for publication by the Association original papers, reviews and other material in a form in accordance with the decisions of the Plenary Session and the Bureau.

## **COMMISSIONS**

13. The following provisions shall govern Scientific Commissions that are created under Article 7.4.

13.1. The Scientific Commissions shall keep abreast of their fields of hydrology and determine the trends in research on the most urgent problems of hydrology that are of common interest to many countries. The Scientific Commissions shall study the questions voted by their Plenary Session.

13.2. The Scientific Commissions shall participate actively in the preparation of symposia on appropriate scientific problems.

13.3. The Scientific Commissions shall be styled "International Commission on ...".

13.4. The National Committee (or National Representative) for IAHS of each adhering country may designate one representative on each Scientific Commission and on each Regional Committee with which it desires to affiliate. Such representatives may vote on all administrative and scientific matters before the Scientific Commission or Regional Committee and may correspond directly with the Officers of a Commission or such Committee on all matters of concern to that Commission or such Committee. All participants present at a meeting of a Commission or such Committee may vote on scientific matters.

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

13.5. While the regulations for all scientific commissions should be as similar as possible, each Scientific Commission may propose a set of regulations for its organization and governance for approval by the Plenary Administrative Session of the Association.

13.6 The Scientific Commissions may establish Divisions and ad hoc working groups to report on specific problems.

**PANELS, WORKING GROUPS AND RAPPORTEURS**

14. The Plenary Session or the Bureau may create panels or working groups and appoint rapporteurs to undertake either:

- (a) ad hoc scientific programmes; or
- (b) activities of a pro tempore regional nature; or
- (c) specific administrative or organizational tasks.

The Chairman and members of all such groups shall be appointed by the President, to whom they shall report. Such groups shall exist only during the term between two successive IUGG General Assemblies.

**IAHS LIMITED**

15. The International Association of Hydrological Sciences Limited.

15.1. The International Association of Hydrological Sciences Limited shall deal with those matters set out in its Memorandum and Articles of Association (a copy of which shall be held by the Secretary General) and is a registered Charity in the United Kingdom.

15.2. Membership of the Limited Company is restricted to Individual Members of the Association. The Limited Company will deal inter alia with the IAHS publishing programme including the arrangements for the Hydrological Sciences Journal.

15.3. The International Association of Hydrological Sciences Limited shall have as its Board the Secretary General and those persons appointed by the President. The Chairman of the Limited Company will report to the President. Because of requirements under English Law, at least half the Board of the Limited Company, who shall also be Directors, must be ordinarily resident in the United Kingdom.

15.4. For the purpose of continuity of administration of the Limited Company, the President shall have absolute discretion regarding the appointment of the Chairman and the Board.

**BYE-LAWS: AMENDMENTS**

16. Within the framework of these Statutes, the Plenary Administrative Session of the Association shall have the power to adopt or amend Bye-laws by a simple majority.

17. Proposals by adhering countries for a change of any Article of the Statutes must reach the Secretary General at least six months before the date of the meeting at which they are considered by the Plenary Administrative Session of the Association. The Secretary General shall notify all adhering countries of any proposed changes at least four months before the named date.

18. The Articles of these Statutes may be changed only by a majority of two-thirds of the votes cast at a meeting of the Plenary Administrative Session of the Association by voting members who are present or who vote by post, provided that the total number of favourable votes is not less than one-half the number of the members of the Plenary Administrative Session of the Association eligible to vote.

19. The Statutes are prepared in English and French, and the English text shall be considered the authoritative text. Questions of interpretation as between the texts shall be decided by the President.

### **BY-LAWS**

1. The following Scientific Commissions have been established in accord with Article 7.4 of the Statutes:

International Commission on Surface Water;

International Commission on Groundwater;

International Commission on Continental Erosion;

International Commission on Snow and Ice Hydrology;

International Commission on Water Quality;

International Commission on Water Resources Systems;

International Commission on Remote Sensing;

International Commission on the Coupled Land-Atmosphere System;

International Commission on Tracers.

International Commission on Statistical Hydrology.

The Commissions shall follow the Regulations of the Scientific Commissions. Commission-specific modifications of these regulations are subject to approval by the Plenary Administrative Session of the Association and shall become part of the Bye-laws.

All Commissions will be concerned with natural processes and these processes as modified by human activities or with processes, technologies and applications. Relations to the environment will be considered as appropriate.

Whenever Scientific Commissions are referred to in the Bye-laws, it implies "International Commissions".

2. The several Scientific Commissions shall prepare scientific reviews of the state of research in their respective fields of hydrology, noting achievements and trends, with particular emphasis on significant problems for attack. The reports should be submitted in English or in French and include a summary in the other language. The report shall reach the Secretary General at least four months before the Plenary Session of the Association, for distribution among the officers of the Association including those of the several Scientific Commissions and among the National Committees, and for publication in the reports of the Plenary Session of the Association. The President of the Association shall introduce these reviews in his address to the Plenary Session of the Association, together with his recommendations as to the course of research.

3. The Scientific Commissions shall meet at the IUGG General Assemblies and Scientific Assemblies of the Association unless authorized otherwise by the Bureau. A Scientific Commission may also schedule other meetings under the regulations it adopts according to Statutes Article 13.6.

4. The Scientific Commissions may invite advisors from non-adhering countries to participate in the work of the Scientific Commissions. These advisors may not vote.

5. Each Scientific Commission shall show on its stationery or other formal documents its identification with the International Association of Hydrological Sciences.



## NOMINATIONS AND VOTING FOR OFFICE

6. The Bureau shall establish a Nomination Panel of not less than three members at least 10 months before an IUGG General Assembly to receive and consider suggestions and prepare nominations for the President-Elect, the three Vice-Presidents and the Secretary General.

At least nine months before an IUGG General Assembly the Secretary General shall inform all National Committees of the membership of the Nomination Panel, asking them to send their nominations to its Chairman not later than six months before the General Assembly in order to be considered by the Panel. On the basis of available nominations from the National Committees, the IAHS Bureau and from the Scientific Commissions, the Panel shall prepare a list of candidates, seeking to achieve a reasonable balance in their geographical and professional distribution.

Each nomination for office must include a résumé of the candidate's qualifications relevant to the office for which the candidate is nominated. A signed statement of the candidate's willingness to stand for office must also be provided. The nomination shall not be considered without submission of the résumé and consent form.

A person may be a candidate for more than one office except the candidate for President-Elect who may not be a candidate for any other office of the Association. No one may hold more than one office at the same time.

The list submitted for voting shall contain the candidates proposed by the Nomination Panel and mention the names of all other nominees submitted.

The voting on the list shall be by the Plenary Administrative Session of the Association or by mail according to Article 7.2 of the Statutes.

6.1. Each of the Scientific Commissions shall establish a Nomination Group of not less than three members at least 10 months before an IUGG General Assembly to prepare nominations of Commission officers. At least nine months before an IUGG General Assembly the Secretary General shall inform all National Committees of the membership of these groups, asking them to send nominations to the Chairman of the Nomination Panel not later than six months before the General Assembly. The Chairman of the Panel shall furnish each Nomination Group with the names of candidates appropriate to each Scientific Commission. On the basis of available nominations from the National Committees and respective Scientific Commissions each Nomination Group shall then prepare a list of candidates for Scientific Commission officers. The preparation of the list shall be done in consultation with the Panel Chairman.

The nominations for Commission officers shall follow the same procedure as that for the Bureau officers (Article 6) except that the nominee for President-Elect may be a candidate for more than one office.

The voting on this list shall be by the Plenary Administrative Session of the Scientific Commissions or by mail according to Article 7.2 of the Statutes. The results shall be given to the Chairman of the Nomination Panel who shall draw up a list of Scientific Commission Officers to be announced at a Plenary Session of the Association in Administrative Session.

6.2. The list of candidates for Association and Commission Officers shall normally contain more than one name for each office. The Chairman of the Nomination Panel shall distribute the list to the National Committees at least three months before an IUGG General Assembly.

The list submitted for voting shall include both the candidates proposed and the names of all the other nominees submitted.

6.3. Voting on the list of candidates for both Association and Scientific Commission officers shall be done by secret ballot. To be elected, each candidate must obtain a simple majority of votes. For those offices not filled in the first round of voting, a second round shall be held on the two highest ranking candidates of the first round. In the case of a draw in the second round, the President shall decide

## **NATIONAL COMMITTEES**

7. The National Committees or the National Representatives shall disseminate information on the Association within their countries and shall solicit papers for symposia or for publication in the Hydrological Sciences Journal.

8. National Committees shall be invited to present their views on hydrological and water resources research and on matters relating to the management of the Association to the Bureau and the Plenary Sessions, as a contribution to the discussion on future activities of the Association.

9. Where the National Committee for IAHS has not appointed or designated a person or persons to cast its vote as specified by the Statutes in the Plenary Session or at a meeting of a Scientific Commission or other committee, the delegates present are invited to select one of their number for this purpose.

10. The Association should encourage the formation of National Committees for hydrology in all countries that adhere to the Union. Where such National Committees do not exist, de facto or de jure delegates who have attended General Assemblies and symposia of IAHS are invited to petition the National Committee for IUGG to form a national group for discussion of questions before IAHS or its Scientific Commissions or to designate delegations to a General Assembly.

11. National Committees shall designate a delegate to the Plenary Sessions of the Association and each of the Scientific Commissions. The names of such delegates should be given to the Secretary of the pertinent body at least one day in advance of any Administrative Session.

## **AGENDA, SYMPOSIA AND PUBLICATIONS**

12. The Bureau of the Association shall organize the agenda for the Plenary Sessions of the Association.

13. Suggestions for the agenda of the Plenary Session of the Association must reach the Secretary General at least three months before the date of the meeting. However, a question which has not been placed on the agenda may be discussed if a proposal to that effect be approved by two-thirds of the votes of the delegates to the Plenary Session.

14. A Scientific Assembly may be held once during the four-year period between the General Assemblies of IUGG.

### Guidelines for organizing symposia

15. Symposia for which the Association has primary responsibility (referred to as IAHS symposia in this By-law) should meet the following conditions and be accepted by the Bureau:

- (i) a subject having an important role in the development of hydrology;
- (ii) proposed by a National Committee or by officers of the Association or of its Scientific Commissions;
- (iii) a member country expressing readiness to serve as host and presenting evidence of adequate support.

15.1. IAHS symposia (with subject outline) should be announced by the Secretary General not later than 18 months before the date of the symposium, by post to each National Committee and published in the Journal of the Association.

15.2. IAHS symposia are organized jointly with a relevant organization of the host country and may be supported by or organized in collaboration with other international organizations. Preference shall be given to those symposia where there is evidence of adequate national support.

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

15.3. The Association may support or take partial responsibility in symposia of other international organizations according to arrangements formulated through exchange of correspondence and approved by the Bureau.

16. The Editor is authorized to arrange for the publication of a periodic Journal to provide a line of communication with the National Committees and with the world hydrological community.

**GENERAL**

17. Scientific Commissions, Panels, Working Groups and the International Association of Hydrological Sciences Limited shall account to the Treasurer in January of each year on all funds received from the Association and from other sources for their activities and disbursed by them during the preceding year.

18. Corporate Subscribers: The Bureau of the Association is authorized to accept institutions with an interest in hydrology as Corporate Subscribers who, for an annual fee established by the Bureau, shall be entitled to receive a copy of each Journal published by the Association, a 20% discount on any IAHS publication other than the Journal, copies of all notices and information circulars, and to a listing in the Journal.

19. The President may invite representatives of the UN specialized agencies or other observers, advisors or consultants to attend Plenary Sessions or meetings of the Bureau, with voice but without vote.

20. The legal domicile of the Association shall be established by the Bureau.

21. The Secretary General shall publish the Statutes and Bye-laws at least once in each period between General Assemblies of the IUGG.

22. The Secretary General keeps a list of hydrologists who are willing and qualified to participate actively in the work of the Association. These hydrologists are designated as Individual Members of IAHS. The Secretary General will notify the Secretaries of the Scientific Commissions of the Individual Members interested in their respective Commission.

**STATUTES AND BY-LAWS OF THE INTERNATIONAL ASSOCIATION OF  
METEOROLOGY AND ATMOSPHERIC SCIENCES**

*(Revised July 2011, XXV IUGG General Assembly, Melbourne, Australia)*

**STATUTES**

Statute I - Objectives of the Association

1. The objectives of the International Association of Meteorology and Atmospheric Sciences (IAMAS), hereafter the Association, are:

- 1.1. To promote study of the sciences of the atmospheres of the Earth and other celestial bodies, and of the interactions of the Earth's atmosphere with society and with other components of the Earth system.
- 1.2. To initiate, encourage, facilitate, and coordinate international cooperation in scientific research.
- 1.3. To stimulate discussion, presentation and publication of scientific results.
- 1.4. To facilitate the education, development, and participation of early career scientists and atmospheric scientists from countries with low per-capita GDP (hereafter referred to as resource-limited countries) in international scientific assemblies and conferences.
- 1.5. To recognize leading scientific accomplishments and scientists.
- 1.6. To promote communication about the atmospheric sciences within and across the international scientific community.
- 1.7. To convey the collective views of the atmospheric science community to other organizations.
- 1.8. To promote public education and awareness of the role and importance of the atmosphere and atmospheric sciences.

In pursuit of all of its activities, the aim of the Association is to further the advancement of atmospheric sciences in a strictly non-partisan and non-profit manner.

Statute II - Membership in the Association

2. Membership in the Association is of three forms: (1) National Members, (2) Individual Members, and Affiliate Members.

- 2.1. National (or Adhering) Members of the Association are the Member Countries of the International Union of Geodesy and Geophysics (IUGG), hereafter referred to as the Union. All countries that adhere to the Union are National (Adhering) Members of the Association and are qualified to appoint delegates to the Association's General Assemblies.
  - 2.1.1. Consistent with the Statutes of the Union, a nation's Adhering Body may be either its principal scientific Academy, its National Research Council, or any other institution or association of institutions, whether non-governmental or governmental, that can represent the geodetic and geophysical activities of the adhering country.
  - 2.1.2. Both Adhering (or Member) Countries of the Union and Countries in Associate status with the Union (i.e., countries not participating financially with the Union) are qualified to appoint delegates to the General Assemblies (see Statute IV) of the Association. However, consistent with Union, National Members in Associate status with the Union have restricted rights of participation in some of the Association's activities (e.g., see Statute XI, Article 26.1, and By-Law I, Paragraph 2).

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

- 2.1.3. National Members of the Association may participate in the governance and activities of the Association through a number of mechanisms, including directly through their National Committee for the Union, through a National Committee (or Sub-Committee) for the Association, or by appointing a National Delegate to (or National Correspondent with) the Association.
- 2.1.4. The general duties and responsibilities of the National Members include: selection of a Delegate to represent their nation at General Assemblies of the Association; participation in the nomination and election of capable and effective officers of the Association; oversight and promotion of the interests and success of the Association; approval of the financing of the Association; and, along with the officers and members of the Association and its Commissions, promotion of the advancement of meteorology and atmospheric sciences in their country and throughout the world.
- 2.1.5. National Members have the opportunity and responsibility to present proposals to host General and Scientific Assemblies and other meetings associated with the Association and its Commissions.
- 2.1.6. The Secretary General (see Statute IX) shall be the primary contact point with the Association's National Members, including communicating with them about the upcoming meetings and activities of the Association, and responding to their requests and queries.
- 2.2. Scientific Members of the Association are individual scientists with primary interests in meteorology and atmospheric sciences who are or have been an officer of the Association, a National Delegate attending a General Assembly of the Association, an officer or member of a Scientific Commission or other scientific entity sponsored by IAMAS, awarded honorary membership, or whose application to the Secretary General to be included as a Scientific Member of IAMAS has been approved by the Bureau of the Association.
  - 2.2.1. Applications for admission as Scientific Members should include a brief summary of the applicant's education, scientific research, and publications in the field of atmospheric sciences and a statement indicating the interest in and efforts to promote the objectives of the Association. Approval should be granted based on an indication that the applicant is of the caliber of those who would be approved to present a paper at a Scientific Assembly of the Association.
  - 2.2.2. The Secretary General shall keep a listing of the Scientific Members of the Association. The initial list of members shall be created from the listing of past officers of the Association, of the officers and members of the Scientific Commissions, and National Delegates that have attended the General Assemblies of the Association.
  - 2.2.3. There is no fee for being a Scientific Member of the Association. Membership shall be for life unless a resignation from the Scientific Member is received or membership is revoked by a two-thirds vote of those present at a regular meeting of the Executive Committee or of all Executive Committee members if the vote is taken by electronic means.
  - 2.2.4. Scientific Members are able to participate in the Association through a number of mechanisms, including participation in the Scientific Assemblies (see Statute V), serving as officers of the Association (see Statute VI), serving as members and officers of the Scientific Commissions and Joint Scientific Committees, voting on resolutions of the Association dealing with scientific matters, submitting nominations for officers of the Association, and otherwise contributing to the objectives of the Association.
  - 2.2.5. Scientific Members of the Association and activities in which they participate may be recognized by the Association for their contributions and accomplishments, as provided for in By-Law IV.
- 2.3. Affiliate Members are other scientific or professional organizations at the international, regional, or national level that are involved in study of the atmosphere, helping to educate the public about

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

the atmosphere, or otherwise promoting the objectives of IAMAS, and that have been admitted to Affiliate membership by the General Assembly of the Association.

- 2.3.1. Affiliate Members are not permitted to vote on administrative or scientific matters coming before the Association, but may join with the Association in activities to promote the objectives of the Association and may be invited to make presentations before bodies of the Association, including the General Assembly.

Statute III - Time Schedule of the Association

3. The fundamental time interval for the Association is a 'period,' which is defined as the interval elapsing between the conclusion of the final Plenary Session of the Association at one Ordinary General Assembly (see Statute IV) and the conclusion of the final Plenary Session of the Association at the succeeding Ordinary General Assembly. This interval is generally four years.

Statute IV - General Assemblies of the Association

4. Representatives of the National Members of the Association will meet regularly to conduct the business of the Association in Ordinary General Assembly. The Association's Ordinary General Assembly will normally be at the time and place of the Ordinary General Assembly of the Union.

- 4.1. The General Assembly of the Association will be composed of Delegates appointed by the National Committees of the National Member countries (see Statute II). These appointments will be brought to the notice of the Bureau officially before the opening of the first Plenary Session of the General Assembly. The National Committees will designate the particular National Delegate who, in case of voting by countries, will hold the right to vote for their country. A quorum shall be considered present with the attendance, in person or by proxy, of at least three of the elected officers and Delegates from a minimum of at least 10% of the Member Countries of the Union (excluding members in Associate status).
- 4.2. The agenda of a Plenary Session of a General Assembly of the Association will be determined by the Bureau (see Statute VIII), which will have previously invited the National Committees of the IUGG Adhering Countries to submit proposed topics for consideration. This agenda will be communicated to the Committees at least four months before the opening of the General Assembly. Questions not contained in the agenda may be considered during the sessions only with the agreement of at least half of the countries represented, or of the Delegates present at the General Assembly, accordingly, as the question is administrative (including financial) or scientific.
- 4.3. The Bureau will have the responsibility for preparing the schedule of business for the General Assembly. In general, an opening Plenary Session will be held near the start of the General Assembly to cover business matters of the Association including: to hear the reports of the President and Secretary General, to consider for approval the decisions and actions of the officers and committees of the Association, to receive nominations for Officers and Members of the Executive Committee, to agree on appointment of appropriate committees to function during the General Assembly, to hear proposals from Delegates of Member Countries to host upcoming Scientific Assemblies (see Statute V), and to hear presentations of reports from at least some of the Scientific Commissions, as may be appropriate at the first plenary. A second plenary session will be held towards the close of the General Assembly, during which financial reports will be made, remaining reports of the Scientific Commissions will be heard, resolutions or recommendations will be decided (see By-Law V for the procedure for considering and approving resolutions), elections will be held, and other appropriate business conducted.
- 4.4. The General Assembly is responsible for hearing a report from the Executive Committee on the status of the Scientific Commissions, and for, if necessary, amending and/or acting on any recommendations, including changes in the objectives and continuation, establishment, or termination of any of the Scientific Commissions. The General Assembly will also consider the establishment, continuation and termination of any Joint Scientific Committees that have been established.

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

- 4.5. By vote of the National Delegates, the General Assembly may, at its discretion, propose, enact, modify, and/or amend By-Laws defining Association procedures. This responsibility includes consideration of any amendments or new By-Laws proposed or approved on an interim basis by the Executive Committee over the preceding period.
  - 4.6. At the General Assembly, both National Delegates and Individual Members that are present will have the right to vote on resolutions and issues of scientific interest. Voting is expected to be on the basis of each individual's scientific knowledge and understanding.
  - 4.7. In the election of Officers of the Association and on administration matters without financial implications, voting by National Delegates at the General Assembly will be by country and each country will have one vote, subject to the condition that the country will have paid its subscription to the Union up to the end of the year preceding the voting.
  - 4.8. On financial questions, and particularly with respect to the budget of the Association for the period from the January 1 following the General Assembly to the December 31 following the next General Assembly, voting at the General Assembly will be by country, provided that the country will have paid its subscription up to the end of the year preceding the voting. The number of votes assigned to each country will be one greater than the number of its category of membership in the Union. In case of doubt as to which class a question belongs, and in all cases of equality of votes on a question, the decision will rest with the President or Presiding Officer.
  - 4.9. In the event that a designated National Delegate from a country cannot be present for voting, the National Delegate from that nation may in writing designate a Delegate from another country to cast the vote(s) on behalf of the country of the aforementioned National Delegate. No designated Delegate may represent more than two countries in addition to their own.
  - 4.10. A National Member country not represented by a National Delegate may, by post or in a printable electronic form, forward its vote on any specific agenda question that has been distributed in advance. The postal or electronically provided ballot must be received by the Bureau in advance of the Plenary Session in which the voting takes place.
  - 4.11. The decision on all voting matters will be by simple majority of those Delegates or those countries present, including votes received by post or in a printable electronic form, counting for the purpose of determining a majority only those votes cast for or against a particular matter. In case of a tie vote, that of the President or Presiding Officer will decide.
  - 4.12. Except as indicated in the Statutes and By-Laws, conduct of IAMAS meetings shall be conducted according to Robert's Rules of Order, Newly Revised.
5. If the need should arise, the President of the Association, with the concurrence of the Executive Committee, may convene an Extraordinary General Assembly of the Association, during the interval between two Ordinary General Assemblies of the Union. Delegates to an Extraordinary General Assembly will have the same powers and be subject to the same rules as the Ordinary General Assemblies.
- 5.1. An Extraordinary General Assembly must also be convened by the President upon the request of at least half of the National Members.
  - 5.2. If the date and place of such an Extraordinary General Assembly have not been agreed upon during the preceding Extraordinary or Ordinary General Assembly, that will be determined by the Executive Committee of the Association and communicated to the National Member countries at least six months in advance. The date and time will at the same time be communicated to the bureaus of the Union and its constituent Associations.
6. Ordinary and Extraordinary General Assemblies will be open to the public. All interested scientists may participate in the discussions, and may take the floor after being recognized by the President or Presiding Officer, whether those scientists be formally accredited Delegates or not, and whether they are from National Member countries or not. However, voting will be conducted according to the procedures outlined in Article 4 above.

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

Statute V - Scientific Assemblies of the Association

7. The Association may, upon decision taken at an Ordinary or Extraordinary General Assembly, organize and conduct Scientific Assemblies.

- 7.1. The Association will organize Scientific Assemblies in cooperation with other associations of the Union to coincide with the Ordinary General Assemblies of the Union and the Association.
- 7.2. The Association may organize and conduct Scientific Assemblies at times other than the General Assemblies of the Union. These Scientific Assemblies may be arranged by the Association alone, or they may be held jointly with other Associations of the Union, with other bodies of the International Council of Science, or in cooperation with international organizations or research programmes.
- 7.3. Plans for such Scientific Assemblies will be communicated to the National and Scientific Members of the Association and to the bureaus of the Union and its constituent Associations at least six months in advance.
- 7.4. Proposals of National Members to host a Scientific Assembly will normally be made to the Executive Committee at least four years prior to the intended Assembly, where a proposal may receive preliminary approval. Formal approval to hold a Scientific Assembly separate from the Union's General Assembly would normally be at the Ordinary General Assembly prior to the Scientific Assembly.
- 7.5. Financial responsibility for Scientific Assemblies held separately from the Union General Assembly must be accepted by the proposing National Member Country. The host country has responsibility for preparing the budget for the Scientific Assembly, the solicitation of supporting funds, and for any shortfall or surplus resulting from the conduct of the Scientific Assembly. The host Country also has authority to set the registration fee for the Assembly (including provisions for reduced rates for students or other special categories), subject to approval of the Bureau and the addition of any IAMAS fee (e.g., head tax).
- 7.6. IAMAS will participate in overall support for the Assembly by contributing to the costs for travel, lodging, and/or registration for selected early career scientists and atmospheric scientists from resource-limited countries who have applied for support by the announced procedure to the Association. The Association may also advance funds to cover organizing and preparatory costs for the Scientific Assembly, with reimbursement made following the Scientific Assembly. In the event that the Scientific Assembly generates a surplus, any contribution to the Association (e.g., by rebating all or part of the contribution to the support for participation of qualifying scientists) will be used to augment support for qualifying scientists to participate in following Scientific Assemblies.
- 7.7. Preparation of the scientific programme is the responsibility of the Executive Committee, assisted by a representative of the host country (see Statute X).
- 7.8. The Association may set a fee (head tax) for participation of scientists at Scientific Assemblies. The funds collected are to be deposited in the general bank account of the Association and used in support of the conduct of the Assembly, including especially the enhancement of participation by scientists from resource-limited countries.

Statute VI – Officers of the Association

8. The Officers of the Association will include a President, two Vice-Presidents, a Secretary General, and five Members-at-Large. By the Statutes of the Union, the elected Officers of the Association must be from National Member countries (i.e., Adhering Countries that are up-to-date on their dues). Officers of the Association will be chosen, as far as is possible, on the basis of competence, experience, scientific specialty, gender, and geographical coverage. No elected officer of IAMAS may simultaneously serve as an officer of the Scientific Commissions.



XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

- 8.1. The President will be elected at the final Plenary Session of each Ordinary General Assembly (see Statute IV). The term of office for the position of President will be for one period (see Statute III), and the individual serving will not be eligible for re-election.
  - 8.1.1. If the office of the President becomes vacant between two Ordinary General Assemblies, the senior Vice-President will become President. In the event that the two Vice-Presidents are equal in seniority (i.e., each having been elected for the first time at the same Ordinary General Assembly), the Executive Committee will decide which Vice-President will become President.
- 8.2. Two Vice-Presidents will be elected at the final Plenary Session of each Ordinary General Assembly. Their terms of office will be for one period. They will be eligible for immediate re-election, but only for one additional period.
  - 8.2.1. If one or both offices of the Vice President become vacant between two Ordinary General Assemblies, the Executive Committee may decide to elevate a Member-at-Large to the Office of Vice President.
- 8.3. The Secretary General, who also serves as the Treasurer, will be elected at the final Plenary Session of each Ordinary General Assembly except when the office holder is completing their first period of service. The initial term of office of the Secretary General will be for two periods. A Secretary General completing their first term will be eligible for immediate re-election, but only for one additional period.
  - 8.3.1. If the office of the Secretary General becomes vacant between two Ordinary General Assemblies, a Secretary General will be nominated by the President to occupy the office until the next Ordinary or Extra-ordinary General Assembly. In the event of election at an Extraordinary General Assembly, the initial term of the office will consequently be somewhat shorter than two full periods.
  - 8.3.2. At the conclusion of the service of a Secretary General, the Bureau may appoint the individual for a term of no more than nine months as a special Deputy Secretary General in order to assist the incoming Secretary General in completing the financial matters pertaining to: (a) the General and Scientific Assemblies at which the term of the Secretary General ended, (b) the full calendar year of the assemblies, and (c) transfer of the location of the Secretariat.
- 8.4. Five Members-at-Large, each from a different National Member country (see By-Law I for an interpretation of this provision), will also be elected as officers of the Association. Their term of office will be for two periods, with their terms of office staggered so that at least two positions are up for election at the final Plenary Session of each Ordinary General Assembly. Members-at-Large will not be eligible for immediate re-election.
  - 8.4.1. If a vacancy occurs among the Members-at-Large, a replacement will be chosen by the General Assembly in the course of the next appropriate Plenary Session, for a period which will expire at the time when the member Member-at-Large so replaced would have terminated his/her office.

Statute VII - Components of the Association

9. The internal organization of the Association shall consist of the following organs, each defined in succeeding Statutes:
  - 9.1. The Bureau (see Statute VIII).
  - 9.2. The Secretariat and Seat of the Association (see Statute IX).
  - 9.3. The Executive Committee (see Statute X).
  - 9.4. The Scientific Commissions (see Statute XI).

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

9.5. The Joint Scientific Committees (see Statute XII).

10. All officers and members of the Bureau, the Secretariat, the Executive Committee, the Scientific Commissions, and the Joint Scientific Committees serve on a voluntary basis without receiving a salary or honorarium from the Association.

Statute VIII - The Bureau

11. The Bureau is chaired by the President, and also includes the two Vice-Presidents and the Secretary General. The Bureau of the Association will, on a continuing basis and as necessary, direct and coordinate all scientific and related activities of the Association in the interval between Ordinary General Assemblies. Critical responsibilities include:

- 11.1. Preparation of the agendas for General Assemblies of the Association, as indicated in Article 4.2.
- 11.2. Promoting understanding of meteorology and atmospheric sciences in accord with the objectives of the Association.
- 11.3. Promoting the development of the theme and the scientific programme of the Scientific Assemblies convened by the Association.
- 11.4. Encouraging the development of proposals for the convening of future Scientific Assemblies.
- 11.5. Promoting the recognition of leading scientists and leading scientific accomplishments within the scope of the Association's activities. Awards and other recognitions may be made pursuant to the procedures described in By-Law IV.
- 11.6. In the event of significant disagreements or of concerns about possible malfeasance in the conduct of the Association's affairs among members of the Bureau, the matters shall be referred to the Executive Committee, which shall have authority for determining appropriate actions, up to and including reassigning responsibilities for the financial and other actions of the Association and referral to the General Assembly of a recommendation for removal of any of the officers of the Association.

12. The President, with input from and, as necessary, assisted by the other members of the Bureau, has responsibility for the following:

- 12.1. Presiding at General Assemblies of the Association.
- 12.2. Serving as Chair of the Executive Committee.
- 12.3. Serving as the IAMAS representative on the Executive Committee of the Union.
- 12.4. With concurrence of the Executive Committee, appointing atmospheric scientists to serve as the scientific liaisons from IAMAS to Joint Scientific Committees and appropriate international scientific and governmental organizations. Normally those appointed will be members of the Executive Committee or the Scientific Commissions. Organizations to which IAMAS officers and Scientific Members currently make appointments are listed in By-Law VI.
- 12.5. Working with the Secretary General to expedite the activities and operations of the Association.

13. The Vice-Presidents of the Association, with input from and, as necessary, assisted by other officers of the Association and Scientific Commissions, have lead responsibility for:

- 13.1. The Vice Presidents, in priority senior to junior in terms of date of election, shall act in place of the President whenever the President is not present or is unable to perform the duties of the President.

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

- 13.2. The Vice Presidents, consistent with their capabilities and interests, shall carry out activities assigned to them by the President and the Bureau. Among those meriting their specific participation, as appropriate with other members of the Bureau, are:
  - 13.2.1. Development, organization, and implementation of education and outreach activities of the Association.
  - 13.2.2. Monitoring and reporting to the Bureau on the activities of the Scientific Commissions and Joint Scientific Committees.
  - 13.3.3. Annual or more frequent reviews of the finances of the Association.
  - 13.3.4. Other activities as assigned by the President, Bureau, or Executive Committee.

Statute IX – Secretariat and Seat of the Organization

14. The Secretary General establishes the Secretariat and the legal seat of the Association, which shall normally coincide with the location of employment and/or residence of the Secretary General.

14.1. To the extent possible, support for the direct and indirect costs of the Secretary General and of the office for the Secretariat are expected to be covered by the hosting nation.

15. The Secretary General is responsible for expediting the current business of the Association in cooperation with the President of the Association. The Secretary General has primary responsibility for:

- 15.1. Management of the affairs of the Association, including responsibility for the official communications of the Association with the Union, with Members of the Association, and with other scientific bodies.
- 15.2. Management of the financial resources of the Association in accord with best practices for non-profit organizations. Management of the financial resources will be understood to include:
  - 15.2.1. The right to open both checking and savings accounts in the name of the Association. Both the President and Secretary General shall have individual signing authority.
  - 15.2.2. Subject to the Association's budget, the authority to accept and disperse funds in the conduct of the Association's business.
  - 15.2.3. Based on decisions of the Association, the responsibility for awarding funding for expenses (but not salaries or other personal remuneration) to the Scientific Commissions and Joint Scientific Committees and monitoring their expenditures based on procedures recommended by the Secretary General and approved by the Executive Committee.
  - 15.2.4. The costs of operating the office, including consumables, costs of publications, purchase and maintenance of office equipment, expenses of correspondence, postage and shipping, incidental expenses, and, with the approval of the Bureau, costs of necessary computational and office equipment and, with approval of the Executive Committee, rental for the office of the Secretariat if not provided by the host organization or nation. Borrowing, purchase, and disposal of Association equipment should be carried through for the benefit of the Association.
  - 15.2.5. The responsibility for sustaining a Contingency Fund to be used to ensure the continuity of IAMAS through at least one period at a restricted funding level in the event of high-consequence financial contingencies that might arise and seriously impact the income of the Association. The amount to maintain shall be approved as a component of the draft budget, and the distribution of a contingency expenditure should be considered by the Executive Committee upon recommendation of the Bureau.
  - 15.2.6. Responsibility for soliciting applications and making awards for travel, lodging, and/or registration to Scientific Assemblies of the Association to deserving early career scientists and atmospheric scientists from resource-limited countries.
  - 15.2.7. To the extent not covered by their home countries or other organizations and within the limits of the approved budget, authority to cover the travel, lodging, meal, and communication expenses that are necessary for the President and the Secretary General to conduct the official business of the Association. Travel and lodging costs for other members

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

of the Executive Committee may be paid provided that: (a) participation is in connection with meetings or other events on specific Association business; (b) when those concerned represent the Association and not National Member countries or other organizations; and (c) in special cases where those concerned cannot draw proper allocations from their own national sources and it is especially important for the Association to be represented. Such payments may cover traveling costs and a reasonable contribution to other expenses.

- 15.2.8. The responsibility to report on the income, expenses, and financial condition of the Association to the Ordinary General Assembly of the Association and the Union, comprising in particular, a statement of receipts, expenditures assets, and liabilities of the Association for the period from the first of the January prior to the preceding Ordinary General Assembly, to the thirty-first of the December prior to the current General Assembly (i.e., the financial year being from January 1 through December 31).
  - 15.2.9. Preparation of a draft budget (estimate of expected income and expenses) for the Association for the financial years up to that of the next Ordinary General Assembly.
  - 15.2.10. To seek approval of the Bureau and Members-at-Large for any expenditure that would lead to a significant exceedance (i.e., by more than 20% or \$5000, whichever is less) of the approved budget of the Association. On the initiative of any two of the members of the Bureau and the Members-at-Large, the decision may be appealed to the Executive Committee.
- 15.3. Administrative, financial, and logistical support of the General and Scientific Assemblies of the Association, including maintaining the roster of National, Scientific, and Affiliate Members of the Association, and acceptance of and action on letters of application to become Scientific and Affiliate Members of the Association.
  - 15.4. Administrative, financial and logistical support and arrangements for General and Scientific Assemblies, including fulfillment of the decisions of the Association at General Assemblies. In addition, the Secretary General, in support of the Executive Committee, shall coordinate organization of the scientific programme for the Scientific Assemblies (see Statute V).
  - 15.5. Administrative, financial, and logistical support, as necessary, for the Bureau, the Commissions, and the Joint Scientific Committees.
  - 15.6. Preparation, printing, and distribution of publications of the Association, including newsletters, reports and other documentation.
  - 15.7 Maintenance of the presence of the Association on the Web and other electronic media.
  - 15.8. Maintaining the financial and historical records of the Association.
  - 15.9. Undertaking other activities in support of the objectives of the Association as they may be assigned by the Bureau or Executive Committee and that are within the budget of the Association.
16. The Bureau together with the Members-at-Large may, at their discretion, appoint a Deputy Secretary General, who would be assigned specific functions of the Secretariat and also share duties with the Secretary General. The term of the appointment would be for the same interval as for the Secretary General. The Deputy Secretary General would report to the Secretary General and be an ex officio member of the Bureau. Normally the Deputy Secretary General will be from an area of science complementary to that of the Secretary General.
  17. The Secretary General may, with the approval of the Bureau, appoint an Assistant Secretary General, normally resident in the same general geographical area as the Secretary General. The period of the appointment would be at the discretion of the Secretary General, but not to exceed the term of the Secretary General. The Assistant Secretary General would be expected to:
    - 17.1. Become familiar with the routine operations of the Secretariat.
    - 17.2. Have signing authority (together with the President and Secretary General) for cheques on the Association bank account, only to be used on written instruction from the President or Secretary General.

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

17.3. Assist the Secretary General as appropriate.

Statute X – Executive Committee

18. The Executive Committee will be composed of the members of the Bureau, the five elected Members-at-Large, the Presidents of the Commissions, and the Past President of the Association.

18.1. The Executive Committee will be chaired by the President of the Association.

19. The President of a Commission may delegate to the Vice President or the Secretary of that Commission the right to participate in a meeting of the Executive Committee if the President cannot do so.

20. The Executive Committee will normally meet at General Assemblies. Meetings of the Executive Committee may also be convened by the Bureau in the interval between two General Assemblies (particularly at Scientific and Extraordinary Assemblies).

20.1. The Executive Committee is responsible for reviewing the objectives of the Scientific Commissions every four years, and making recommendations to the General Assembly for determination of adjustments and status of the Scientific Commissions.

20.2. The Executive Committee may develop, enact, and, without contravening specific changes of the General Assembly, amend or add to the By-Laws establishing procedures of the Association. New and modified By-Laws will come into effect immediately or as provided in their approval; they will also be explicitly considered by the National Members at the succeeding General Assembly.

20.3. The Executive Committee may appoint subcommittees to prepare materials for consideration by the full Executive Committee.

21. The Executive Committee will be consulted by the Bureau, by postal or electronic correspondence, on questions of importance, administrative or scientific, that arise between General Assemblies. With one week's notice by electronic means, meetings of the Executive Committee may be convened between assemblies by electronic means.

22. The Executive Committee has responsibility for appointing a Nominating Committee. The governing procedures for the Nominating Committee are presented in By-Law I.

23. With the organizing support and overall coordination of the Secretary General, the Executive Committee, working also with representatives of the host Country of the Scientific Assembly, is responsible for development of the scientific programme, including IAMAS symposia led by its Scientific Commissions and, as appropriate, joint symposia held with other Associations and Union symposia held in conjunction with General Assemblies of the Union.

24. All decisions of the Executive Committee will be taken by a simple majority vote of those voting. If the votes are equally divided, that of the President will decide.

Statute XI – Scientific Commissions

25. Scientific Commissions for the study of particular aspects of meteorology and atmospheric sciences may be constituted by the General Assembly. The list of approved Scientific Commissions and their scientific scope is maintained in By-Law II.

25.1 The scopes of the Scientific Commissions approved by the General Assembly will be reviewed every four years by the Executive Committee. Recommendations, as appropriate, for changes in the scope or status of a Scientific Commission will be presented at a Plenary Session of each Ordinary General Assembly, which will decide on the continuation of the research and works of each Scientific Commission or on its termination.

25.2 To better fulfill their scope and objectives, each Scientific Commission may formulate and approve their own set of Statutes and/or By-Laws and control their own administration and finances, all subject to the provisions provided in the Statutes, By-Laws, and positions of the

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

Association, and as appropriate, of the Union and ICSU. Review of proposed changes by the Bureau of the Association is encouraged.

26. The members of the Scientific Commissions will be scientists with expertise in or closely related to the subject area of the Commission (i.e., Scientific Members of the Association).

26.1 The Scientific Commissions may elect new members by a simple majority vote of the members voting in the election. These members must be from IUGG (i.e., National Member) Adhering Countries. Members may also be appointed from IUGG non-Adhering Countries by the President of a Commission, after consultation with members of the Commission. Due regard should be paid to geographical representation in the composition of the Commissions. The terms of Commission members will normally be for two full periods. The results of membership elections and appointments will be promptly reported to the Secretary General, who will convey the results to the General Assembly.

27. Each Commission will elect a President and a Secretary from among their membership. A Vice President may also be elected if the Commission desires. Their terms of office will normally be for one four year term. They will be eligible for re-election for one additional term. Officers will be from National Member countries, except IUGG Associate Countries.

28. When a new Scientific Commission is constituted, the first President will be appointed by the Executive Committee. The Commission President will invite appropriate scientists to be on the Commission. These appointments will be voted upon by the Commission at its first meeting.

29. The Scientific Commissions should, in general, conduct their elections of officers and members at the times of the Ordinary General Assemblies of the Association. In this case these elections should be held prior to the final Plenary Session of the General Assembly so that the results, along with other business conducted by the Commissions, may be reported to the General Assembly. Alternatively, Commissions may decide to elect their officers at a Commission meeting/symposium that is independent of the Ordinary General Assembly, or by postal or electronic correspondence. The General Assembly will have the right to comment on the work of the Commissions, which the Commissions may wish to consider at subsequent business sessions.

30. The Scientific Commissions may meet, organize conferences, and have symposia when convened by their President outside the meetings of the General and Scientific Assemblies of the Association. Such activities may be arranged jointly between interested Commissions, or jointly with other appropriate bodies of the IUGG or International Council of Science (ICSU), or with other relevant organizations (e.g., the World Meteorological Organization).

31. A Scientific Commission may, at the discretion of its President and, as appropriate, in cooperation with other scientific bodies, appoint Sub-Commissions, Committees, Working Groups, Scientific Steering Committees or other similar panels to undertake planning and conduct of research activities or programmes designed to enhance scientific understanding of relevant aspects of meteorology and atmospheric and related sciences. The members of such sub-bodies need not be members of the Commission. They should be appointed by the President of the Commission, after due consultation with members of the Commission. Findings or recommendations of such sub-bodies must be approved by the parent Commission or an equivalent independent body or process before promulgation. In addition to reporting on their own activities, Commissions have an obligation to periodically report to the Association on the arrangements and findings from cooperative activities with other organizations.

32. All decisions of Commissions will be taken by a simple majority of votes of the members voting (individual votes). In case of equal votes for and against, that of the President will decide.

33. Each Scientific Commission should have an officer responsible for its financial affairs. The Association may make financial awards to Scientific Commissions in support of their activities and symposia. In accepting funds from the Association or any other source, the Scientific Commissions agree to provide financial statements to the Association no less often than every two years, at the direction of the Secretary General. In addition, the Scientific Commissions agree that, by vote of the Executive Committee, they will cooperate with the Secretary General or an individual or committee appointed by the Secretary General in review and examination of their finances.

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

- 33.1. In the event of the termination of a Scientific Commission, any assets and balances in its account(s) will be turned over to the Association.

Statute XII – Joint Scientific Committees

34. Joint Scientific Committees (which also include entities that may be named Joint or Inter-Association Commissions or Working Groups, etc.) between the Association and other Associations on scientific questions of mutual interest may be constituted by the Associations concerned, acting directly in cooperation with the other Associations or through the Union. In the case of IAMAS, formal approval of Joint Scientific Committees or similarly named entities will be confirmed by a General Assembly, although approval in principle may be granted at an earlier date by the Executive Committee. The list of approved Joint Scientific Committees and their scientific scope is maintained in By-Law III.

- 34.1. With the concurrence of the Executive Committee, adjustments in the policies and rules governing the operation of Joint Scientific Committees may be made to ensure concurrence with the policies and rules of other organizations that are co-sponsoring the Joint Scientific Committee.

35. The members of Joint Scientific Committees will be expert scientists nominated by the respective Associations, each of which will normally nominate the same number of members.

36. The Joint Scientific Committees may propose new members whose nomination must be ratified by the respective Associations at the occasion of their General Assembly. The term of office of members will be for one period. They will be eligible for re-appointment.

37. Each Joint Scientific Committee will elect a President and Secretary who will not both have been appointed by the same Association, and whose term of office will be for one period. They will be eligible for re-election for one additional period.

38. The Joint Scientific Committees will formulate their programme of work and will organize their meetings, insofar as possible, during the course of the sessions of the General Assembly of the Union. The proceedings of the Joint Scientific Committees will be appended to the minutes of the Associations concerned.

- 38.1. The Joint Scientific Committees may meet when convened by their President outside the meetings of the General or Scientific Assemblies, on condition that the bureaus of the respective Associations are advised beforehand. They may meet at the same time as related Commissions or Joint Scientific Committees constituted by other Associations of the Union or by other Unions, in order to study and resolve together problems which interest more than one Association of the Union or more than one Union.

39. Requests from a Joint Scientific Committee for financial support must be presented and supported by the Associations concerned.

40. Every Joint Scientific Committee may refer in a consultative capacity to experts who are not members of the Joint Scientific Committee.

41. All decisions of Joint Scientific Committees will be taken by a simple majority of votes of the members present (individual votes). In case of equal votes for and against, that of the President will decide.

42. The IAMAS Executive Committee will review the continued participation of IAMAS in each Joint Scientific Committee at each Ordinary General Assembly.

Statute XIII – Financial Arrangements

43. The Secretary General is responsible for the financial operations of the Association (see Statute IX, Article 15.2).

- 43.1 The financial year of the Association is the calendar year, and the budget period is four calendar years.

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

44. At least two months prior to the General Assembly, the President shall appoint a Finance Committee consisting of up to three members, not more than one of which is on the Executive Committee and at least one of which will be a Delegate from a National Member country. Prior to the first Plenary Session of the upcoming General Assembly, the Finance Committee, with the cooperation of the Secretary General, shall examine the budget and the accounts for the years since the prior General Assembly (including a provisional estimate of income and expenditures for the current year). The Committee will also examine and offer comments on the draft financial summaries and the draft budget for the ensuing period that the Secretary General is called upon to prepare for consideration at the General Assembly. At the first plenary session General Assembly, the Finance Committee will offer its findings and recommendations. The General Assembly and/or the Finance Committee may request that further examination of the accounts be conducted and/or that the accounts be audited by a qualified accountant, with follow-up to be carried through by the Executive Committee.

45. The Association will draw its resources from several sources, including that part of the subscriptions of the National Member countries that is allotted to the Association by the Union. To this income may be added other receipts from, for example, the sale of publications, interest on bank accounts, contributions made by other interested organizations to support symposia or other meetings, and a share of the registration fees at Assemblies (e.g., head tax).

46. The income will be assigned in the first place for the payment of the expenses of the Secretariat, the maintenance of the Contingency Fund, and support for the conduct of scientific meetings, as enumerated in Article 15.2.

47. Upon application to the Secretariat and approval of the Bureau, the balance of receipts will be devoted primarily to grants to support the success of scientific symposia or special meetings. As far as possible, funds are expected to be used to contribute to the participation of early career scientists and atmospheric scientists from resource-limited countries who cannot obtain adequate travel allocations from other sources and who desire to come to General or Scientific Assemblies of the Association and/or its Scientific Commissions and Joint Scientific Committees. In general, it will be expected that such participants will obtain partial support from the Association's funds with the balance coming from national or other sources.

48. Unless provided for specifically by the General Assembly, Association resources are not to be used to fund honoraria for speakers at symposia and other events.

Statute XIV – Dissolution of the Association

49. If the Association should be dissolved, its financial assets will fully revert to a non-profit association for the atmospheric sciences (e.g., a national meteorological society) or the appropriate national adhering body of the Union of the country where the current Secretary General resides. The receiving national association shall pass the financial assets on to the Union to be used exclusively for the continuation of scientific and educational activities, such as the organization of scientific meetings and symposia, the dissemination of scientific information, and the coordination of international research activities.

Statute XV – Changes in the Statutes of the Association

50. Only National Member countries, members of the Executive Committee, including ex officio members, and officers of the Scientific Commissions may propose changes to any article in these Statutes and By-Laws. These changes must reach the Secretary General at least six months before the announced date of the General Assembly at which it is to be considered. The Secretary General will notify National Member countries and Executive Committee members of proposed changes at least four months before the General Assembly meeting. Adjustments to the proposed amendments may be announced at the General Assembly before the voting.

51. The Statutes and By-Laws can be modified by a two-thirds vote of the National Delegates present or represented by designation (see Article 4.9) or proxy (see Article 4.10) at a Plenary Session of the General Assembly. Such changes will come into effect at the close of the General Assembly at which they are approved.

Statute XVI – Official Languages of the Association

52. The Association will observe the official languages recognized by the Union, namely English and French. Documents, reports, and abstracts of presentations may be submitted for presentation or publication in either of these languages.



53. For the interpretation of the Statutes, the English text shall be considered authoritative.

## BY-LAWS

### By-Law I – Governing Procedures of the Nominating Committee

1. The Executive Committee will appoint a Nominating Committee at the Scientific Assembly two years before a General Assembly. This committee will be responsible for nominating candidates for President, two Vice Presidents, elected members of the Executive Committee, and a Secretary General, when required. The Nominating Committee will consist of a chairperson (the Past-President, if available) and at least two other members plus the President as an ex-officio member, each of whom should be Individual Members of the Association.

2. The Nominating Committee will contact the adhering body of the National Member countries of the Association and the Executive Committee at least six months before the General Assembly and request nominations for the positions indicated above to reach them at least four months before the General Assembly. Individual Members of the Association will also be invited through a Web site posting that they may also submit nominations; any such nomination should be seconded by two additional Individual Members.

3. The Nominating Committee will consider nominees from National Member countries, from Commissions and from Individual Members and may also consider nominations from other sources. The Nominating Committee will prepare a list of nominations for consideration at the General Assembly, and may propose a single slate of candidates. The nominees must be from National Member countries, except Associate Countries (see paragraph 4 for interpretation of this provision). The slate of candidates for office will be communicated to National Member countries and the Executive Committee at least two months before the General Assembly.

4. Recognizing the internationalization of science and the intent of the Statutes to encourage widespread participation in the governance of the Association, this By-Law is included to provide guidelines for the interpretation of the first sentence of Statute 8.4, which states that “Five Members-at-Large, each from a different National Member country, will also be elected as officers of the Association” and Paragraph 3 of By-law I:

4.1. The nation of affiliation of a scientist shall be defined as the nation where the scientist has been and is expected to be primarily based for the greatest number of years over the period from 5 years before the election to 5 years after the election, assuming that a scientist’s affiliation will remain the same unless a prior arrangement is in place.

4.2. In the event that paragraph 4.1 leads to a scientist being affiliated with a nation that is not an Adhering Member of the IUGG in paying status, the basis for national affiliation may be determined by considering the years spent in a member nation where the scientist has held a formal appointment in the 20 years prior to the present appointment.

4.3. In the event that a scientist’s primary affiliation is with an international organization or program office other than in the nation of the scientist’s citizenship or previous research position, the national affiliation may be either the nation where the position is or has been located or the nation of citizenship.

4.4. To the extent possible, not more than two of the members-at-large shall be from the same continent, excluding any scientist primarily affiliated with an international organization.

4.5. In considering the national affiliations of the President, Past President, Secretary General, two Vice-Presidents, and five Members-at-Large, the Nominating Committee should endeavor to ensure that at least four of the world’s continents are represented.

5. Any nominations for President or Secretary General should be accompanied by an indication of available resources for the operation of the respective offices.

6. At the first Plenary Session of the General Assembly the Nominating Committee will, if one is prepared, formally table its slate of candidates. Nominations from the floor for all positions except Secretary General can

be made at that time. All nominations require the agreement of the individual to serve if elected. The election will take place during the final Plenary Session of the General Assembly.

By-Law II -- Approved Scientific Commissions

1. The General Assembly approves Scientific Commissions to carry through the Objectives of the Association in specific scientific areas. As described in Statute XI, the continuation and scope of each of these Commissions is to be reviewed at each General Assembly.

2. The following Scientific Commissions have been either accepted (in the case that their formation predates formation of the Association) or established by the General Assembly:

2.1. The International Radiation Commission (IRC). The scope of the IRC encompasses atmospheric radiation and related disciplines. The IRC was founded in 1896 and accepted into IAMAS in 1948.

2.2. The International Ozone Commission (IOC). The scope of the IOC encompasses the amounts, characteristics and processes of ozone in the atmosphere. IOC was originally approved in 1948.

2.3. The International Commission on Clouds and Precipitation (ICCP). The scientific scope of ICCP encompasses the characteristics and processes governing clouds and precipitation in the atmosphere. ICCP was originally approved in 1956.

2.3.1. The Committee on Nucleation and Atmospheric Aerosols is a subcommittee of the ICCP formed in 1966 to bring together scientists covering the following subject areas: nucleation theory and experiment, tropospheric and stratospheric aerosols, cloud drop and ice nucleation, and aerosol-climate interactions.

2.4. The International Commission on Atmospheric Chemistry and Global Pollution (ICACGP). The scientific scope of ICACGP encompasses the chemistry and composition of the atmosphere, especially aspects that contribute to solving the basic societal issues of water supply, food production and human/ecosystem health. ICACGP was originally approved in 1957 as the International Commission on Atmospheric Chemistry and Radioactivity, and renamed in 1971.

2.5. The International Commission on Dynamical Meteorology (ICDM). The scope of the ICDM encompasses dynamical meteorology. ICDM was originally approved in 1967.

2.6. The International Commission on Climate (ICCL). The scientific scope of ICCL encompasses the characteristics, fluctuations, and changes of climate on all time scales, covering the past, present and future. ICCL was originally approved in 1977.

2.7. The International Commission on Planetary Atmospheres and their Evolution (ICPAE). The scope of ICPAE encompasses planetary, cometary and satellite atmospheres and their evolution (including the Earth, when considered as a member of the Solar System). The ICPAE was originally approved in 1977.

2.8. The International Commission on the Middle Atmosphere (ICMA). The scientific scope of ICMA encompasses the middle atmosphere, defined loosely as stretching from the tropopause into the lower thermosphere. The ICMA was originally approved as the International Commission on Meteorology of the Upper in Atmosphere in 1979, and renamed in 1987.

2.9. The International Commission on Atmospheric Electricity (ICAE). The scientific scope of ICAE encompasses electrical phenomena in the atmosphere. ICAE was originally approved in 1989.

2.10. The International Commission on Polar Meteorology (ICPM). The scope of the ICPM encompasses the meteorology and climatology of the Arctic and Antarctic. The ICPM was originally approved in [year to be inserted].

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

By-Law III -- Approved Joint Scientific Committees

1. IAMAS approves Joint Scientific Committees to carry through the Objectives of IAMAS in cooperation with other Associations. As described in Statute XII, the continuation and scope of each of these Committees is to be reviewed at each General Assembly.
2. Participation in the following Joint Scientific Committees (names of which can vary based on IUGG conventions) has been concurred in by the Executive Committee and, if so indicated, approved by the IAMAS General Assembly:
  - 2.1. The Committee on Mathematical Geophysics (CMG). The CMG is formally an IUGG Union Commission. The aims of CMG are to encourage exchange of ideas and information in all areas of geophysics, with emphasis on the application of mathematics, statistics and computer science to geophysical problems, and to promote the development and application of mathematical methods and appropriate theoretical techniques for the solution of problems across the complete spectrum of geophysical disciplines. CMG was formed as a Working Group in 1964 and reconstituted as the CMG in 1971.
  - 2.2. The Union Commission on Geophysical Risk and Sustainability (GeoRisk). The scope of GeoRisk encompasses the interaction between hazards, their likelihood and their wider social consequences as a result of the vulnerability of societies. GeoRisk was formed by IUGG in 2000 and approved by IAMAS in 2003.
  - 2.3. The Union Commission for Data and Information (UCDI). The scope of UCDI is to provide a focused and sustainable organizational structure that supports and strengthens IUGG science through integrated scientific information activities. UCDI was established by IUGG in 2008 with Executive Committee concurrence in 2009 (formal IAMAS General Assembly approval pending).
3. The President, with the approval of the Executive Committee, is responsible (as indicated in Statute 12.5) for appointment of members of Joint Scientific Committees who serve on behalf of IAMAS to represent its objectives.

By-Law IV -- Procedures for the Recognition of  
Scientific Expertise and Accomplishments

1. The General Assembly has established the following types of recognition of individual scientists (i.e., Scientific Members) and scientific accomplishments. Implementation of these types of awards, including protocols and criteria, is assigned to the Executive Committee, upon recommendation by the Bureau:
  - 1.1. Recognition of an individual scientist whose career has contributed to the advancement of international research in meteorology and atmospheric sciences through appointment as an honorary member, which will be recognized by a suitable memorial the Association.
  - 1.2. Recognition of an individual scientist for significant scientific accomplishments over a career or prolonged research programme through a suitable memorial and passage of a resolution of the Association calling special attention to the accomplishment.
  - 1.3. Recognition of one or more early career scientists at a Scientific Assembly through award of a certificate or other suitable reward.
  - 1.4. Other awards or recognition as determined by the Executive Committee or General Assembly.
2. The Executive Committee may choose to implement this By-Law at its discretion, choosing to offer or not offer any of the recognitions at any of the General or Scientific Assemblies.

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

By-Law V -- Procedures for Proposing and Approving Resolutions

1. Resolutions expressing the views of IAMAS must be approved by the General Assembly. Between General Assemblies, the Executive Committee may express its views in the form of a resolution of that body.
2. Resolutions of IAMAS will normally be addressed to scientific bodies, to organizations responsible for the conduct and governing of scientific research, and/or to the public. Through the president, IAMAS may join with IUGG or other Associations in resolutions that reflect the views as expressed by the IAMAS General Assembly and/or Executive Committee.
3. The content of resolutions must be in furtherance of the objectives of the Association and not for partisan purpose. The General Assembly or Executive Committee may amend or modify a draft of the resolution before considering it for final approval. When developing joint resolutions with other bodies, the President and/or Secretary General or their designees may revise draft resolutions in the interests of IAMAS.
4. For consideration at the final Plenary Session of a General Assembly of the Association, a draft of the resolution must be provided to the Secretary General in time for consideration by the IAMAS General Assembly by the close of its first Plenary Session.
5. The Secretary General is responsible for the official transmittal of resolutions of the Association to those to the entities to whom the resolution is addressed.
6. The Secretary General shall maintain a cumulative record of the resolutions of the Association and of the resolutions made in partnership with other Associations and the IUGG.

By-Law VI -- Liaison Appointments of the Association

1. As a constituent association of the Union, officers of the Association and its Scientific Commissions, upon nomination and approval of the Union, serve as the Union's liaison to and/or ex officio members of the following scientific organizations:
  - 1.1. Executive Committee of ICSU's Scientific Committee on Oceanic Research (SCOR).
  - 1.2. The World Meteorological Organization (WMO).
  - 1.3. The Joint Scientific Committee of the World Climate Research Programme (WCRP).
2. Acting in partnership with other IUGG associations, IAMAS makes appointments to Joint Scientific Committees, Inter-Association Commissions, Union Commissions, and Working Groups. These presently include:
  - 2.1. The Committee on Mathematical Geophysics (CMG).
  - 2.2. The Union Commission on Geophysical Risk and Sustainability (GeoRisk).
  - 2.3. The Union Commission for Data and Information (UCDI).
3. In representing the interests of the Association in other international bodies, the Association may, in cooperation with the relevant Scientific Commission, make additional liaison appointments.

## **STATUTES AND BY-LAWS OF THE INTERNATIONAL ASSOCIATION FOR THE PHYSICAL SCIENCES OF THE OCEANS**

### **STATUTES**

*(Adopted October 1967, Berne, Switzerland, revised December 1979, Canberra, Australia, revised by mail ballot 1998, and revised July 2007, XXIV IUGG General Assembly, Perugia, Italy)*

#### **I. Objects, Composition and Membership of the Association**

1) The International Association for the Physical Sciences of the Oceans (IAPSO) hereafter referred to as the Association is a constituent of the International Union of Geodesy and Geophysics hereafter referred to as the Union. The Association is subject to those articles of the Statutes and By-Laws of the Union which apply to Associations, and also to these Statutes.

2) The objects of the Association are:

(a) to promote the study of scientific problems relating to the ocean and interactions taking place at its boundaries, chiefly insofar as such study may be carried out by the aid of mathematics, physics and chemistry;

(b) to initiate, facilitate and coordinate research into and investigations of those problems of the ocean which require international cooperation;

(c) to provide for discussion, comparison and publications; and

(d) to organize Assemblies, which include symposia on the most interesting and up-to-date problems of physical and chemical oceanography.

3) Those Adhering Bodies that adhere to the Union are Members of the Association, and are hereafter referred to as "Members".

By resolution of an Association Assembly, other international organizations that are concerned with the study of physical sciences of the oceans may be admitted to Membership, with the status of guests.

#### **II. Administration**

4) The Authority of the Association shall be vested in the Members, and exercised collectively by their accredited delegates. The Association will hold a meeting of delegates at General Assemblies of the Union and at Association Assemblies occurring during interim periods between General Assemblies.

5) The Association shall convene scientific symposia and/or workshops and hold business meetings of the Members' delegates at the General Assemblies of the Union, to be held normally once every four years. The Association may recommend to the Executive Committee of the Union, at a General Assembly of the Union, arrangement of joint sessions of two or more Associations or of joint meetings of two or more Committees or Commissions for the discussion of topics of an interdisciplinary character. With the concurrence of the Executive Committee of the Union, the Association may arrange General Assemblies and other meetings of its own in the interval between the General Assemblies of the Union, either singly to deal with topics of specific interest, or jointly with another Association or other Associations.

(a) Meetings of Members' delegates are restricted to the delegates, members of the Association Executive Committee, and persons invited by the Association President when their attendance is deemed necessary to make reports or presentations to the delegates.

(b) Meetings of the Association Executive Committee are restricted to members of the Executive Committee and persons invited by the Association President when their attendance is deemed necessary to make reports or presentations to the Executive Committee.

6) The President, the two Vice Presidents, the Secretary General, and the Treasurer of the Association shall be elected by delegates to the Association in accordance with Section III.

7) The Bureau of the Association shall consist of the President, Past President, the Secretary General and the Treasurer. Its duties shall be to conduct the affairs of the Association in accordance with the decisions of the foregoing meetings of the delegates. It shall prepare the Agenda for meetings of delegates. With the advice of the Association Executive Committee, it shall prepare the scientific program for Assemblies.

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

8) In accordance with Section III, the delegates from countries having Members shall elect six persons who, together with the President, immediate Past President, Vice Presidents, Secretary General, and Treasurer, shall constitute the Executive Committee of the Association.

9) The Executive Committee may establish Association Commissions, Working Groups or Services to address particular scientific areas of oceanography, and may abolish such Commissions, Working Groups and Services by a majority vote of the Executive Committee members. The Executive Committee may also approve Association participation in joint Commissions, Working Groups and Services with other Associations or scientific bodies, and may withdraw Association participation by a majority vote of the Association Executive Committee members.

10) A Nominations Committee of four persons from countries having Members will be appointed by the Executive Committee. The Nominations Committee will normally include the immediate Past President as its Chairperson. Its function will be to scrutinize nominations received for positions on the Executive Committee which become vacant, to seek additional nominations where appropriate, to ensure disciplinary and geographical distribution, and to prepare a final slate of candidates for election at the General Assembly.

11) The Executive Committee of the Association may establish medals and awards to recognize individuals for their accomplishments in advancing the knowledge of the physical and chemical sciences of the oceans.

### **III. Voting**

12) On scientific matters, each delegate present shall have one vote.

13) In questions of administration or of mixed, administrative and scientific character not involving questions of finance, voting shall be by Members, each Member having one vote with the provision that its subscription shall have been paid up to the end of the year preceding the voting.

14) In questions involving finance, voting shall be by Member delegates, with the same provision as for administrative questions. The number of votes for each Member delegate shall be equal to the number of its category of membership to the Union.

15) In case of doubt as to which class a question belongs, and in all cases of equality of votes, the chairman shall decide.

16) A delegate shall represent only one Member. An adhering Member not represented by a delegate may forward by post its vote on any specific question of an agenda.

17) Guests will not vote.

### **IV. General**

18) These Statutes shall be changed only by a majority of two thirds of the votes cast by delegates at an Association Assembly or by post in accordance with Section III. In cases where voting is by post, the changes must be endorsed by the delegates at the next Association Assembly.

19) The Association may make By-Laws which may be changed by a simple majority of the votes cast by delegates at an Association Assembly or by post in accordance with Section III. In cases where voting is by post, the changes must be endorsed by the delegates at the next Association Assembly.

20) This English text shall be the authoritative text of the Statutes of the Association.

## **BY-LAWS**

*(Adopted October 1967, Berne, Switzerland, modified December 1979, Canberra, Australia, modified August 1995, Honolulu, USA, modified 1998, and modified July 2007, XXIV IUGG General Assembly, Perugia.)*

### **I. Membership of the Association**

1) It is recommended that each adhering Member shall form a National Sub-Committee for the Physical Sciences of the Oceans, to which correspondence may be addressed.

2) Each adhering Member and each international member may contribute to the Agenda of Association Assemblies.

## II. Administration

3)

(a) The President and the Vice Presidents shall be elected for one four-year term. Their terms shall be the interval between the ends of two successive General Assemblies of the Union. A Vice President may be elected for one additional four-year term.

(b) The term of the immediate Past President shall run from the end of the General Assembly at which the new President is elected until the end of the next General Assembly.

(c) The Secretary General and the Treasurer shall be elected for two periods, and may be re-elected for the subsequent single period.

4) The President shall:

(a) provide general leadership for the Association in all matters;

(b) represent the Association on the Union Executive Committee;

(c) serve as chairperson of those meetings of Members' delegates and the Association Executive Committee held at Association Assemblies;

(d) represent the Association in communications with the International Association for Biological Oceanography (IABO) either directly or through scientific committees of the International Council for Science (ICSU);

(e) appoint qualified ocean scientists to serve as liaisons between the Association and other scientific organizations as appropriate; and

(f) prepare Association responses on inquiries of a scientific nature received from other organizations.

5) The Vice Presidents shall:

(a) perform such tasks as may be assigned by the President or the Association Executive Committee; and

(b) act as the President whenever the President is not present or is unable to perform any of the President's duties. The acting President shall perform such tasks as required by the President.

6) The Secretary General shall:

(a) serve as Secretary of the Association Assemblies, the Member meetings, the Executive Committee and the Bureau; arrange for meetings of these Bodies; prepare and distribute promptly the agenda and the minutes of all their meetings;

(b) manage the affairs of the Association, attend to correspondence, preserve the records;

(c) maintain an Association web page on the World Wide Web, either as part of or linked to the Union web page. The web page shall include all general details of the Association; its activities; abstract books of Association Assemblies when available; and other information of use to Members and associated scientists;

(d) at least three months before the General Assembly of the Union, forward to all the Members a report on the administration of the Association since the last General Assembly, and present a summary of this to the delegates meeting at General Assembly itself; and

(e) perform such other duties as may be assigned by the Association Bureau.

7) The Treasurer of the Association shall be responsible for the financial administration of the Association in accordance with directions issued by the Association Bureau. The Treasurer shall:

(a) prepare the yearly budget of the Association and distribute to the Association Bureau for approval;

(b) collect the funds of the Association and disburse them in accordance with the approved budget;

(c) maintain records of all the financial transactions of the Association and submit annual financial reports thereon to the Association Bureau and to the Treasurer of the Union;

(d) assemble, at the end of the calendar year preceding a General Assembly, the complete accounts of the Association for the past period for presentation to the Association Bureau and the Treasurer of the Union at least three months prior to the General Assembly and at the Member meeting at the Assembly; and

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

(e) pay traveling expenses and per diem subsistence to members of the Executive Committee attending Association Assemblies and meetings with Association support, where those concerned cannot draw proper allocations from their national sources (see By-Law 18).

8) Of the six persons referred to in Article 8 of the Statutes, not more than three may be elected to an additional term.

9) The Executive Committee shall:

(a) prepare for the Executive Committee of the Union recommendations concerning the arrangement, at a General Assembly of the Union, of scientific meetings to be confined to joint sessions of two or more Associations or of Joint meetings of two or more Committees or Commissions, for the discussion of topics of an interdisciplinary character;

(b) at its meetings during an Assembly, select the themes of Association symposia for the next Assembly, and recommend conveners for the symposia;

(c) seek for the concurrence of the Executive Committee of the Union for the arrangement of General Assemblies and other meetings of the Association in the intervals between the General Assemblies of the Union, either singly to deal with topics of specific interest, or jointly with another Association or other Associations;

(d) fill any vacancy which may occur among the officers of the Association between General Assemblies. Such appointments shall be subject to the subsequent approval of the next General Assembly. Tenure of office for part of a period shall not be counted as a period for the purpose of these By-Laws;

(e) consider matters of general administration and finance, and report thereon to the General Assembly;

(f) make recommendations on matters of policy;

(g) frame the budget for the ensuing period and report to the General Assembly of the Association and to the Secretary General of the Union. The budget period of the Association coincides with the budget period of the Union;

(h) advise upon the distribution of funds; and

(i) consider proposals for changes in the Statutes and By-Laws, and report thereon to the General Assembly.

10) Officers designated by these By-Laws for special duties or for special committees may appoint substitutes in their stead. Notice of the intention to do so must be sent in writing to the President or Secretary General. No substitute shall represent more than one officer.

11) Decisions and actions of the Officers and Committees of the Association, taken during and between Association Assemblies, shall be reported to the delegates' business meeting at the Assembly.

12) Proposals for the Agenda of the meeting of delegates at General Assemblies of the Union and Association Assemblies shall reach the Secretary General six months before the meetings. The Secretary General shall send the Agenda to the Members and their accredited delegates, through the National Sub-Committees where such exist, at least four months before the meeting. No question not previously placed on the Agenda shall be discussed unless approved by two thirds of the votes of the Members represented at the Assembly.

13) Medals and Awards

(a) The Executive Committee shall establish protocols for awarding medals or other awards established by the Association.

(b) The Prince Albert I Medal shall be awarded at each Association Assembly to a distinguished ocean scientist for career achievements in advancing the knowledge of the physical and/or chemical sciences of the oceans.

(c) The Eugene LaFond Medal will be awarded at Association Assemblies to a student or scientist from a developing country in recognition of the student's or scientist's presentation of an outstanding paper. Not more than one Medal will be awarded at any Assembly. The Executive Committee may decline to present the Medal at a particular Assembly.

14) Nominations Committee

(a) The terms of members of the Nominations Committee referred to in Article 10 of the Statutes will expire at the end of the General Assembly following their appointment.



XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

- (b) A call for nominations for candidates for positions on the Executive Committee will be issued by the Secretary General of the Association at least six months prior to a General Assembly where an election is to take place.
- (c) Nominations must be accompanied by a brief Curriculum Vitae, and will not be accepted later than three months prior to the General Assembly, except for additional candidates identified by the Nominations Committee in accordance with Article 10 of the Statutes.
- (d) The Nominations Committee will prepare a slate of candidates one month prior to the General Assembly, and will confirm that the members of this slate are prepared to serve if elected.
- (e) In the event of a vacancy occurring on the Executive Committee during its term of office as a result of the resignation or demise of a member, the Nominations Committee will assist the Executive Committee in finding a suitable replacement.

**III. Finance**

- 15) The President and Treasurer shall individually have power to sign documents on behalf of the Association.
- 16) All disbursements of Association funds shall be made by the Treasurer in consultation with the Association Bureau.
- 17) The Treasurer shall receive the allocation of funds from the Union, maintain financial accounts, obtain receipts for disbursement of funds and maintain financial records.
- 18) Traveling expenses may be paid by the Treasurer, but only
  - (a) in connection with meetings on specific Association or Union business; when the travelers represent the Association and not the Members or other organizations; and where those concerned cannot draw proper allocations from their national sources; and
  - (b) to cover the traveling costs of a person receiving an award from the Association.
  - (c) Such payments may cover traveling costs at economy rates and a reasonable contribution to other expenses when attending such meetings.

## STATUTES AND BY-LAWS OF THE INTERNATIONAL ASSOCIATION OF SEISMOLOGY AND PHYSICS OF THE EARTH'S INTERIOR

### Statutes

*(Adopted 1975, Grenoble, France, amended in July 2011, XXV IUGG General Assembly, Melbourne, Australia, and in June 2015, XXVI IUGG General Assembly, Prague, Czech Republic)*

#### **I. Objectives of the Association**

1. The International Association of Seismology and Physics of the Earth's Interior is a non-governmental and non-profit organization with the purposes:
  - a. To facilitate research on theoretical, observational and applied seismology, such as the propagation of seismic waves, the comparison of instruments used in different countries, the adoption of standards for observatory practice and data storage, and generally all matters related to seismology
  - b. To promote multidisciplinary research related to earthquake science, internal structure, properties and processes of the Earth
  - c. To initiate and co-ordinate the conduct and communication of related research which depends on co-operation between different countries.
  - d. To organize and support international conferences and meetings focusing on the above-mentioned topics and to support, including financially if the budget allows, the participation in such meetings of young researchers and of scientists from developing countries.

#### **II. Members of the Association**

1. Each country having adhered to the International Union of Geodesy and Geophysics (IUGG) is a member.
2. Each scientist participating in IASPEI activities and in the Scientific Assemblies is an individual IASPEI member. Any member attending the General Assemblies or participating in other activities of the Association in the past ten years is considered to be an active individual member.

#### **III. National Committees**

1. Each National Committee for the IUGG (or national organisation adhering to IUGG) where possible should nominate a section, or sub-committee, for Seismology and Physics of the Earth's Interior. The functions of this section or sub-committee are to facilitate and co-ordinate in their respective countries the study and practice of Seismology and Physics of the Earth's Interior, in accordance with the objects of the Association. Each National Committee and the Section or Sub-Committee shall be empowered to refer to the Association matters for discussion falling within the competence of the Association.
2. The National Committee (or adhering organization) names in each country a correspondent (hereafter National Correspondent), whose duty is to provide liaison between the IASPEI executive and the Section in each country.
3. The National Committee, on the recommendation of the Section or Sub-Committee, nominates the delegate or delegates who shall represent it at the General Meeting of the Association. One of these delegates shall be designated as the principal delegate of the country and shall cast the vote of that country whenever a "national vote" is required (refer section VIII.2). If a National Committee does not formally appoint a delegate, the (older in age in case of two) National Correspondent(s) present at the General Meeting is the principal delegate.
4. Official communications sent by the International Association of Seismology and Physics of the Earth's Interior to an adhering country shall be addressed to that country's IASPEI National Correspondent or, in default, to its National Committee for the IUGG.

#### **IV. Administration of the Association**

1. The work of the Association shall be directed by the Association Plenary Meeting of the delegates of the Member countries of IUGG, and of the individual IASPEI members.
2. The Plenary Meeting of the Association shall elect the following: a President, a First and Second Vice-President, a Secretary General, a Treasurer and four additional persons. These, plus the immediate past President shall constitute the voting members of the Executive Committee of the Association.
3. A single person may, with the approval of the Executive Committee, be elected both Secretary General and Treasurer.
4. The President, the Vice-Presidents, the Secretary General and the Treasurer shall constitute the Bureau of the Association.

5. Elections shall be held at an Association Plenary Meeting held in conjunction with the quadrennial General Assembly of the International Union of Geodesy and Geophysics. The President may not be re-elected to the same office, and no person may hold any one office for more than twelve consecutive years.
6. Should a vacancy occur among the elected offices, the Bureau shall fill the position provisionally by nomination, and an election shall be held for this office at the next General Meeting of the Association.
7. The transfer of duties takes place at the close of the Association Plenary Meeting at which the election occurs. The interval between successive elections (normally 4 years) is called a period.
8. The President, in consultation with the Executive Committee, may appoint individuals to committees as may be needed, and may approve the terms of reference of such committees.
9. Urgent matters arising in the interval between Association Assemblies shall be referred by the Bureau to the Executive Committee.
10. The Executive Committee may appoint an Associate Secretary who will be an ex-officio member of the Executive Committee, but without vote.
11. The Executive Committee may appoint an Association Webmaster who will be responsible for maintaining the website of the Association.

#### **V. Secretariat**

A Secretariat placed under the direction of the Secretary General shall conduct the correspondence, preserve the administrative archives, maintain a register of the National Correspondents, delegates and active membership, arrange the Association Assemblies and other meetings, and ensure the records of the Assemblies and Commission reports are preserved in an accessible web location.

#### **VI. Budget and Finance**

1. The financial resources of the Association are derived from: The allocation by the Union; The sales of publications, subscriptions, advertisements, etc.; A quota of the registration to the Association Assemblies; Grants; Contracts; Donations.
2. The Treasurer shall administer and disburse these resources under the direction of the Executive Committee. The administration of resources shall include the permanent delegation of authority to manage any bank accounts or investments held in the name of the Association.
3. The Treasurer shall alone retain responsibility toward the Association for all banking operations. As a precaution, however, the right to sign as an authorized agent for any account opened in the name of the Association shall be extended to at least one other Member of the Executive Committee.
4. The Treasurer shall provide annual financial reports as required by IUGG.
5. The Treasurer shall arrange for independent external audit of, and prepare and submit to the Association Plenary, the Accounts of Receipts and Expenditures for the preceding period, together with an estimated budget for the following financial year.
6. An audit committee, authorised by the Plenary Meeting shall examine the accounts prepared by the Treasurer and submitted to the Plenary Meeting for the preceding period, and give discharge to the Treasurer for those accounts.

#### **VII. General Meetings of the Association**

1. Scientific Assemblies of the Association shall be held in conjunction with General Assemblies of the International Union of Geodesy and Geophysics, and normally at least once between successive IUGG meetings. At least one Plenary Meeting of the Association shall be held at each Scientific Assembly.
2. In the intervals between the Scientific Assemblies the Association may, either separately or jointly with other Associations, hold or sponsor additional scientific meetings.
3. The Bureau of the Association, on the request of the majority of the members of the Executive Committee may conduct an extraordinary meeting of the National Correspondents using e-mail or web-based tools, in order to resolve an urgent question. National Correspondents shall have at least one week notice of any resolution that requires a national vote.
4. The agenda to be transacted at an Association Plenary Meeting held in conjunction with a Scientific Assembly is to be prepared by the Bureau and posted at least two working days before the Plenary Meeting.
5. The agenda may only be modified with the consent of the majority of the IASPEI members present at the Plenary Meeting.
6. The Executive Committee approves a Local Organising Committee for the Scientific Assemblies conducted between the General Assemblies of IUGG, on the basis of a proposal submitted by the approved hosting country.
7. The Scientific Programme for a Scientific Assembly is the responsibility of the Secretary General, who will approve symposia and appoint convenors, in consultation with the Executive and the Commission chairs.

8. Registration and abstract submission to the Scientific Assembly are open to all members of the international scientific community.

### **VIII. Voting**

1. In a Plenary Meeting of the Association, two types of resolution may be put to the meeting: A. Procedural, and B. Scientific
2. Elections of the President and Procedural resolutions shall be decided on the basis of one vote per country present at the Association Plenary. That vote is to be exercised by the principal delegate of each country (refer paragraph III.2) or his proxy and is referred to here as a "national vote". In any vote a delegate may represent only one country.
3. A country that is not represented at the Association Plenary Meeting may appoint a proxy, or forward its vote, by notifying the Secretary General in writing before the election.
4. Scientific resolutions and the election of the members of the Bureau and Executive Committee, apart from the President, shall be decided by a majority of the votes cast by all IASPEI members present at the Association Plenary.
5. The Resolutions Committee will decide which category any specific resolution falls into, before it is presented to the Association Plenary. If any principal national delegate objects to that classification, the delegate may request that a national vote be used to decide which category a specific resolution falls into, before the resolution is voted on.
6. When there is an equal division of votes, the President shall have a deciding vote.
7. The election of the President will be conducted by open ballot and requires the approval by the majority of the principal national delegates or their proxies present at the Plenary Meeting. If requested by one principal national delegate the election has to be conducted by written ballot.
5. The election of all other Association Offices and of the Executive Committee members will be conducted by open ballot and requires the approval by the majority of the IASPEI members present at the Plenary Meeting.

### **IX. Validity of Statutes**

1. These statutes may be revised by a two-thirds majority vote of the member countries represented by principal national delegates at an Association Plenary Meeting.
2. The proposed revision must be posted at least one month in advance of the vote.
3. The English text shall be used exclusively in interpreting these statutes.

### **X. Commissions and Working Groups**

1. The Association, on the recommendation of the Executive, may establish Commissions to study scientific topics and to stimulate and coordinate research on specific topics or research related to a specific region.
2. The Association may also establish joint Commissions or Working Groups with other organizations.
3. Commission chairs (or co-chairs) will be nominated by the President.
4. Working Groups may be established or disbanded by the Commission chair, who will appoint the chair of the Working Group.
5. Commission and Working Group members will be invited to participate by the respective chair.
6. Commission or Working Group chairs shall not hold the same office for more than two periods.
7. Commission chairs will provide annual reports to the Secretary General (including reports on their Working Groups) prior to the Annual Bureau Meeting.
8. A Commission may be disbanded by decision of the Executive Committee if in the view of that Committee the Commission is no longer needed.

## **By-Laws**

The following by-laws are established in order to provide for continuing guidance in conducting the affairs of the Association. The by-laws may be amended by majority decision of the Executive Committee.

### **XI. Definitions**

In the context of the Statutes and By-laws, the term "posted" will be taken to indicate an e-mail sent to a prepared list of the Association National Correspondents and posted on the IASPEI web site. The term "mail" will be taken to include e-mail. The term "period" indicates the period between elections of the Association Officers, normally four years.

### **XII. Resolutions**

1. Before the General Assembly, the President shall appoint a Resolutions Committee consisting of one officer of the Association and two other persons.
2. All resolutions to be presented at the Plenary Meeting of the Association must be transmitted in writing to the Resolutions Committee at least two days before the said meeting. It is the responsibility of the Resolutions Committee to word the resolutions consistently with the terminology of the Association and of the Union.
3. The Resolutions Committee shall post all Resolutions at least one day before the Association Plenary Meeting.

### **XIII. Nominations**

1. At least two years before an election, the President shall appoint a Nominating Committee whose charge is to bring before the Plenary Meeting of the Association at the quadrennial General Assembly a slate of candidates for election to the Association Offices and the Executive Committee. The candidates for election shall be announced at least 4 days in advance of the Plenary Meeting.
2. The Nominating Committee should keep in mind the need for persons of executive ability, comprehensive scientific interests, and broad geographical representation and should consult, where possible, with former Presidents of the Association.
3. At the Plenary Meeting, additional nominations for each office may be made from the floor but they should reflect the same criteria that the Nominating Committee has to abide, in particular, the broad geographical representation.

### **XIV. Meetings of the Bureau and of the Executive Committee**

1. The Bureau of the Association should meet at least every year. The Executive Committee should meet as often as necessary and at least once during each Association Assembly. If necessary and practicable, such meetings may be held using web-based communications, recognising that face-to-face meetings are preferable for most purposes.
2. The Association will normally cover Bureau travel expenses incurred for such meetings.

### **XV. Conduct of Meetings**

Except if otherwise provided in the Statutes and By-laws, meetings shall be conducted according to Robert's Rules of Order

## **STATUTES AND BY-LAWS OF THE INTERNATIONAL ASSOCIATION OF VOLCANOLOGY AND CHEMISTRY OF THE EARTH'S INTERIOR**

(Revised July 2011, XXV IUGG General Assembly, Melbourne, Australia, and June 2015, XXVI IUGG General Assembly, Prague, Czech Republic)

### **STATUTES**

#### **I. Objectives of IAVCEI**

- a) To promote the study of volcanoes, volcanic processes and their deposits, past and present, and of the chemistry of the Earth's interior;
- b) To encourage, initiate, and coordinate research and to promote international cooperation in these studies;
- c) To arrange for the dissemination and discussion of research results and policy matters on volcanology at major conferences (IAVCEI General Assemblies, IAVCEI Scientific Assemblies, Cities on Volcanoes Conferences), and Research Commission Workshops and Field Workshops;
- d) To arrange for the publication of the results of scientific research on volcanology and on the chemistry of the Earth's interior through its dedicated journal, *Bulletin of Volcanology*, and book series;
- e) To encourage volcanologists to alert appropriate authorities to the importance of adequate surveillance of active and potentially active volcanoes and of volcanic risk assessment;
- f) To be the international reference body for advice on scientific policies relating to volcanic processes, hazards and risks;
- g) To provide guidelines to professional volcanologists on protocols and principles in the conduct of their work, and to help them understand their responsibilities, the expectations and consequences of their actions, in their countries of employment and service

#### **II. Relationship of IAVCEI to IUGG**

2. IAVCEI is a constituent association of the International Union of Geodesy and Geophysics (IUGG), but is autonomous in its governance structure and processes, as defined below.
3. IAVCEI will contribute to IUGG through the IUGG Bureau, Executive Committee and Council through nomination of office bearers for the Bureau, participation of its President, and by invitation, Secretary General, in IUGG Executive Committee meetings, and their attendance at IUGG Council meetings when invited, to contribute the views of IAVCEI and its members, to the business of IUGG.
4. IAVCEI will receive from IUGG an annual capitation fee, based on the number of IAVCEI delegates who register and attend IUGG General Assembly conferences as IAVCEI members.

#### **III. Membership of IAVCEI**

5. In accordance with the Principle of Freedom of Participation in Learned Societies (see Appendix), anyone who has interests in volcanology or geochemistry can become a member of IAVCEI, irrespective of country of origin, and participate in the governance of IAVCEI.
6. Those wishing to become members of IAVCEI must apply on-line for membership through the IAVCEI website, and must pay the annual fee to maintain membership.

#### **IV. Administration of IAVCEI**

7. IAVCEI will be managed by a democratically elected Executive Committee, that is elected every 4 years, immediately prior to the IAVCEI General Assembly.
8. The Executive Committee will consider business brought to it by members of the Committee, individual members of IAVCEI and the IUGG Bureau and Executive Committee.
9. The IAVCEI Executive Committee will conduct its business progressively during its 4-year term through meetings of the Committee at IAVCEI Scientific and General Assemblies, and in the interim as e-business and video conferences.
10. The IAVCEI Executive Committee is empowered to make policy decisions on behalf of IAVCEI and

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

- its members, but major policy decisions should be ratified by members through an on-line plebiscite, or at meetings of members during IAVCEI General and Scientific Assemblies.
11. The Executive Committee of the Association shall consist of 11 members. Candidates for the following 9 positions are democratically nominated by, and elected by, IAVCEI members:
    - President
    - Secretary General
    - two Vice-Presidents
    - four Ordinary Committee Members
    - an Early Career Researcher, aged 35 or less at the time of nomination
  12. In addition, the the immediate past-President will be an ex-officio member of the Executive Committee for one term to provide continuity and offer advice to the new committee.
  13. The Editor of Bulletin of Volcanology is invited to be a non-voting observer on the Executive Committee to provide insight from his/her dealings with IAVCEI members through the association's publication processes. She/he may also be nominated to become an elected member of the Executive Committee.
  14. The President may only serve for one term as President.
  15. The Secretary General is elected for two 4-year terms.
  16. All other members of the Executive Committee are elected to serve for one term of 4 years in the first instance, but may serve one extra term if nominated and elected for a second term at the next election.
  17. No more than two members from the same country can be elected to the Executive Committee during one 4-year term of office.
  18. An Assistant Secretary may be appointed by the Secretary General to help with his/her duties, including the role of web-master for the IAVCEI website.
  19. The Executive Committee shall have the power to fill any vacancy that arises on the Executive Committee during the interval between successive elections for the IAVCEI Executive Committee.
  20. The Executive Committee shall have the power to appoint the Executive Editor of the Bulletin of Volcanology, as well as of other publications of the Association.
  21. The Executive Committee shall have the power to create and disband Research Commissions and Task Groups of the Association.
  22. Only members of IAVCEI can present papers at IAVCEI conferences, but scientists wanting to present papers at IAVCEI conferences can join IAVCEI at the time of registering for the conference. Distinguished invited keynote speakers may be exempted from this requirement.
  23. Countries that are represented by individual members may apply to the IAVCEI Executive Committee to have a National Correspondent for IAVCEI to represent their national volcanological community.
  24. National Correspondents are also appointed by the IUGG adhering scientific organisations in each IUGG financial member country, but it is recommended that appointments of such member country National Correspondents be done in consultation with the IAVCEI Executive Committee.
  25. National Correspondents are required to act as conduits of information flow between IAVCEI and national volcanological communities, and may make representations on behalf of their national volcanological communities to the IAVCEI Executive Committee.

#### **V. Nomination and Voting for the IAVCEI Executive Committee**

26. Only individuals who are members of IAVCEI can be nominated for election to the IAVCEI Executive Committee.
27. Only members of IAVCEI can nominate another member for election to the IAVCEI Executive Committee.
28. Candidates for election to the IAVCEI Executive Committee can be from any country, except candidates for the Presidency, who must come from IUGG member countries, according to IUGG Statutes.
29. Only members of IAVCEI can vote in the election for the IAVCEI Executive Committee.
30. Nominations for candidates for election to the IAVCEI Executive Committee, must be seconded by three other current individual members, each from countries other than that of the candidate.
31. The outgoing Executive Committee has the power to nominate candidates for particular positions on the Executive Committee, when only one, or no candidates are nominated by members.
32. Nominations must be called for and submitted to the Chairperson of the IAVCEI Nominating or Election Committee no later than six months before the General Assembly.
33. The voting process will be anonymous and conducted electronically through the IAVCEI web site and will be initiated by the Secretary General and President at least three months before, and must close no later than one month before, the IAVCEI General Assembly.

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

34. The Secretary General and Assistant Secretary are responsible for establishing a secure on-line voting site and process, that ensures that only IAVCEI members registered as members at a defined date can vote, and that members can only vote once.
35. A Nominating or Election Committee will be responsible for overseeing the voting process to ensure that it is undertaken in accord with the current IAVCEI statutes and by-laws.
36. The members of the Nominating Committee will be proposed by the President and endorsed by the Executive Committee no later than nine months before the IAVCEI General Assembly.
37. The Nominating Committee will consist of no less than five current individual members of IAVCEI, one of whom, usually the Past President bar one, will be nominated to be the Chairperson.
38. All nominations of candidates for election to the IAVCEI Executive Committee shall be considered by the Nominating or Election Committee, which will produce a shortlist of at least one, but no more than three candidates for each of the positions on the new Executive Committee, except for the 4 general committee positions, for which no more than 12 candidates should be proposed.
39. Not more than two candidates from the same country, can be proposed by the Nominating Committee as candidates for election to the Executive Committee as a whole.
40. The Nominating Committee is also responsible for scrutinising the results and reporting the results to the President and Secretary General within a month following the close of voting.
41. The candidate(s) with the largest number of votes for each position will be elected.
42. The President-elect must be endorsed by a majority of IAVCEI National Correspondents from IUGG member countries. A non-response from a National Correspondent will be taken to be an endorsement for the President-elect.
43. In case of a tie the Executive Committee at the time of the election will elect the candidate from among those with the same number of votes.
44. The Secretary General will communicate through the website to all IAVCEI members the results of the elections before the General Assembly, and the new officers of the Executive Committee will be officially appointed during the General Assembly.

#### VI. IAVCEI Awards

45. To honour outstanding achievements in research and contributions to volcanology and to IAVCEI, IAVCEI will make awards at the General Assembly and Scientific Assembly to the most suitable candidates who have been nominated.
46. The awards to be made are:
  - a) The *George Walker Award* is for an early career researcher within 7 years of being awarded the PhD degree at the time of nomination. This is awarded every 2 years at each General and Scientific Assembly. Detailed criteria are available on the IAVCEI website.
  - b) The *Wager Medal* is for a mid-career researcher within 15 years of being awarded the PhD degree at the time of nomination. This is awarded every 2 years at each General and Scientific Assembly. Detailed criteria are available on the IAVCEI website.
  - c) The *Thorarinsson Medal* is awarded to a senior researcher with an outstanding international research record. The medal is awarded only at the Scientific Assembly. Detailed criteria are available on the IAVCEI website.
47. Candidates for IAVCEI awards must be members of IAVCEI.
48. Candidates for IAVCEI awards can only be nominated and supported by IAVCEI members.
49. Nominations for all IAVCEI awards must be made in writing by one member, and supported with supporting letters by no more than 3 other members.
50. The principal nominator and the 3 supporting members must be from different countries to ensure that all candidates have international profiles, and have contributed to volcanology at the international level.
51. An Awards Sub-Committee will be established by the President 6 months before a General Assembly or Scientific Assembly. The President will be Chairperson of the Awards Committee and will invite at least 4 other members with significant international research profile and experience, representing different geographic regions around the world and ensuring gender balance, to join the committee. Each member of the Awards Committee will have an equal say in the outcome for each award.
52. In addition, at each Scientific Assembly, the IAVCEI Executive Committee may decide on and award Honorary Life Membership to up to 3 members for their contributions and services to volcanology and IAVCEI over an extended period of time.



## **VII. Alteration and Interpretation of Statutes**

53. These statutes shall be changed only by a majority of at least two thirds of votes by members in attendance at the General Assembly business meeting for members, or through an on-line plebiscite for members.
54. Any individual member may propose in writing an alteration, or alterations, to the Statutes, provided the proposal is supported by three other, current individual members in writing.
55. The Executive Committee may also propose changes to the Statutes.
56. The Executive Committee shall have the power to decide whether the proposal will be distributed to members to vote on through an on-line plebiscite or at a General Assembly.

## **BY-LAWS**

### **I. National Volcanological Communities/Organisations, and National Correspondents**

1. Individual countries are encouraged to establish national volcanological communities/organisations, with the following functions:
  - a) To foster volcanological research within their own country, and encourage membership of IAVCEI;
  - b) To nominate through their National Committee a National Correspondent who will act as the principal contact between IAVCEI and their national community and have the power to represent their country's views at IAVCEI General Assemblies;
  - c) To submit topics for discussion at the General Assemblies of the Association. Topics so submitted should be notified to the Secretary General of the Association at least three months before the General Assembly;
  - d) To facilitate and coordinate, as appropriate and necessary, the dissemination of IAVCEI NEWS, correspondence and other information relating to the affairs of IAVCEI.
2. National Correspondents of IUGG member countries are asked to endorse the IAVCEI President-elect at the General Assembly.

### **II. Duties of Officers of the Association**

3. The function of the Executive Committee is to exercise general oversight of the affairs of the IAVCEI. It should meet during each General Assembly and Scientific Assembly, and when possible during other IAVCEI meetings. At other times the Executive Committee will conduct the affairs of the Association by email exchange among its members. Its duties include the following:
  - a) To consider proposals for changes to the Statutes and By-Laws
  - b) To fill committee vacancies arising between elections for the Executive Committee.
  - c) In the event of the President's position becoming vacant between General Assemblies, the Executive Committee shall appoint one of the Vice Presidents to act as President until the next General Assembly.
  - d) To assist in preparing the agenda and making arrangements for General Assemblies and other meetings
  - e) To appoint a Nominating Committee for the short-listing of candidates for election as new office bearers and the conduct of the election
  - f) To appoint the Executive Editor and Associate Editors of the Bulletin of Volcanology and other publications
  - g) To endorse Commissions and Working Groups proposed by the Vice-Presidents.
  - h) To consider applications for funding to the Executive Committee by Commissions, IAVCEI Conference organizing committees, individual members seeking support to attend conferences, and special purpose grants from affiliated organisations
  - i) To determine the membership fee structure and membership fees
  - j) To promote the interests of the Association.
4. The Executive Committee will also conduct the business of the Association between General Assemblies and take on the particular responsibility of pro-actively fostering the objectives and interests of the Association, the Commissions and Task Groups. The Executive Committee is responsible also for establishing Sub-committees to deal with specific aspects of the work of the Association.

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

5. The duties of the President are to
  - a) Preside at General Assemblies and Scientific Assemblies of the Association and, in consultation with the Secretary General, to regulate the business of the Association.
  - b) Sign documents on behalf of the Association.
  - c) Select and chair the Awards Committee.
  - d) To appoint Task Groups to address specific issues and to liaise and work with them to ensure the goals of the Task Group are achieved in a timely manner.
  - e) Be responsible for all protocol aspects related to the Association.
6. The duties of the Vice-Presidents are to
  - a) Preside at General Assemblies and Scientific Assemblies in the absence of the President.
  - b) Be prepared to become President should the presidency become vacant between elections.
  - c) Foster pro-actively the objectives and interests of the Association.
  - d) Manage the IAVCEI Commissions and Task Groups program, and have the responsibility for ensuring that all Commissions and Task Groups are active and functioning effectively.
7. The duties of the Secretary-General of the Association are:
  - a) To carry on all correspondence relating to the affairs of the Association;
  - b) To maintain and preserve the records of the Association;
  - c) To maintain a mailing list of members of the Association, and to receive and process membership applications;
  - d) To administer the funds of the Association, to prepare at the end of the calendar year preceding a General Assembly the accounts of the Association, and to arrange that they shall be properly audited
  - e) To prepare annual Financial and Activities reports for members and for IUGG
  - f) To ensure that the annual reports of the Association are published and distributed;
  - g) To prepare a budget for the ensuing four-year term.
  - h) In consultation with the President and members of the Executive Committee, to prepare the agenda and make arrangements for the next General Assembly, and
  - i) To cooperate with the other Associations of IUGG in arranging the scientific program for IUGG/IAVCEI General Assembly conferences, and with the local organising committee for the IAVCEI Scientific Assembly conferences.
8. The duties of the Assistant Secretary, in the case where one has been appointed, are to assist the Secretary-General in carrying out the duties of the Secretary General, especially in maintaining the membership register, email address list of members, and the Association website. The Assistant Secretary may be appointed Secretary-General in the event of that position becoming vacant between General Assemblies.
9. The duties of the webmaster, in case of one having been appointed, are to assist the Secretary-General in managing the website of the Association.
10. The Executive Editor of the Bulletin of Volcanology shall normally be appointed for no more than 6 years, and shall:
  - a) Administer the process of receipt of manuscripts and their distribution to the Associate Editors for review and acceptance (or otherwise).
  - b) Be responsible for maintaining high standards of content and presentation of the Bulletin of Volcanology.
  - c) Be empowered to sign documents on behalf of the Association that are pertinent to the Bulletin of Volcanology.
  - d) Appoint Associate Editors, with the approval of the Executive Committee; AEs will normally serve for periods not exceeding four years.

### **III. Commissions, Working Groups, Task Groups, and other committees**

11. The Executive Committee, on the advice of the Vice Presidents, may establish any Research Commission devoted to the international promotion of research in any speciality of volcanology and chemistry of the Earth's interior.
12. Commissions are usually initiated by submission of an application to the Vice-Presidents and Executive Committee by a group of members with common, but well-defined research interests, which can be presented an important research theme. Commissions may also be initiated by the Executive Committee to fill a need or gap in the research activities of IAVCEI, by contacting groups of members

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

- to encourage them to form a Commission.
13. Each Commission will have one or more leaders.
  14. At least one leader should be an early career researcher.
  15. The leaders will present proposals for the objectives, program, and membership of the Commission for approval by the Executive Committee.
  16. Leaders normally will serve for periods not exceeding four years.
  17. Leaders are expected to solicit interest and participation from IAVCEI members who may be interested in the research theme(s) of the Commission, and build up a contact list of such members.
  18. Leaders should regularly provide information to and solicit suggestions from their network of members on proposed activities, and make arrangements to organize Commission activities.
  19. Every Commission is *required* to propose and organize at least one symposium research theme for every IAVCEI General Assembly and Scientific Assembly.
  20. The convenors of every Commission hosted symposium must include at least one Early Career scientist.
  21. Commissions are also encouraged to organize workshops and field workshops affiliated with the major IAVCEI conferences, or outside of these, or jointly with other commissions within IAVCEI, or with Commissions from other IUGG Associations, which have related research interests.
  22. Commissions may propose the formation of Working Groups to explore research interests that represent a sub-theme of related research theme to that of the Commission.
  23. Working Groups should also submit an application to the Vice-Presidents, with the endorsement of the Commission leaders, with a specified life-span and clearly enunciating the goals of the Working Group.
  24. At the end of the term of the Working Group it is expected to submit a report to the Vice Presidents, summarizing the outcomes.
  25. At the end of the term of a Working Group, it may be terminated, or if the members of the Working Group feel there is continuing momentum, then the Working Group may submit an application to become a Commission.
  26. All Commissions and Working Groups are required to submit a brief one to two page report of activities annually to the Vice-Presidents.
  27. The President in consultation with the Executive Committee may establish Task Groups devoted to the short-term completion of specific scientific tasks, at the end of which term, a report(s) will be submitted to the President and the Executive Committee.
  28. The President in consultation with the Executive Committee may also establish small committees devoted to the completion of specific administrative tasks.
  29. These will include the Awards Committee whose responsibility, under the chairmanship of the President, is to prepare recommendations for the IAVCEI Awards at the time of the Association's General Assemblies or Scientific Assemblies, and the Election Nominating Committee, which will oversee the election process.

#### **IV. Alteration and Interpretation of By-Laws**

30. These By-Laws shall be changed only by a majority of at least two thirds of votes by members in attendance at the General Assembly business meeting for members, or through an on-line plebiscite for members.
31. Any individual member may propose in writing, alteration, or alterations, to Statutes and By-Laws, provided the proposal is seconded (in writing) by three other current individual members.
32. The Executive Committee may also propose changes to the By-Laws.
33. The Executive Committee shall have the power to decide whether the proposal will be distributed to members to vote on through an on-line plebiscite, or at a General Assembly.

#### **APPENDIX**

##### **Principle of Freedom of Participation in Learned Societies**

IAVCEI adheres to the Principle of Freedom of Participation in Learned Societies for all scientists:

- a) All scientists should be able to apply for, and be accepted for, individual membership of scientific learned societies or associations, and should be able to participate freely irrespective of age, cultural background, race, religion, political or scientific views, disability, gender, gender orientation, country of origin, country of residence, or financial status of those countries in the learned society or association.

XXVI General Assembly of the International Union of Geodesy and Geophysics  
Statutes and By-Laws of the Associations

- b) All scientists who become individual members of scientific learned societies or associations should be able to participate in the activities of such societies or associations, including attendance at conferences and other activities, voting on matters that are brought to the membership, nominating others for committee positions, being nominated for committee positions and serving in those capacities if voted in by the membership.
- c) Membership of a learned society or association may only be rejected or cancelled if the candidate or member has been guilty of (i) professional malpractice, (ii) discrimination against others on the grounds of age, cultural background, race, religion, political or scientific views, disability, gender, gender orientation, country of origin, country of residence, or financial status of those countries in the learned society or association, or (iii) bringing the society or association into disrepute by unfairly maligning it.
- d) Disagreeing with the policies of the association or society in good faith is not deemed to malign the learned society or association, but represents the democratic right of any member of an enlightened learned society or association to state their views.

# **Part III**

## **Assembly Statistics**

**ASSEMBLY REGISTRATION BY COUNTRY**

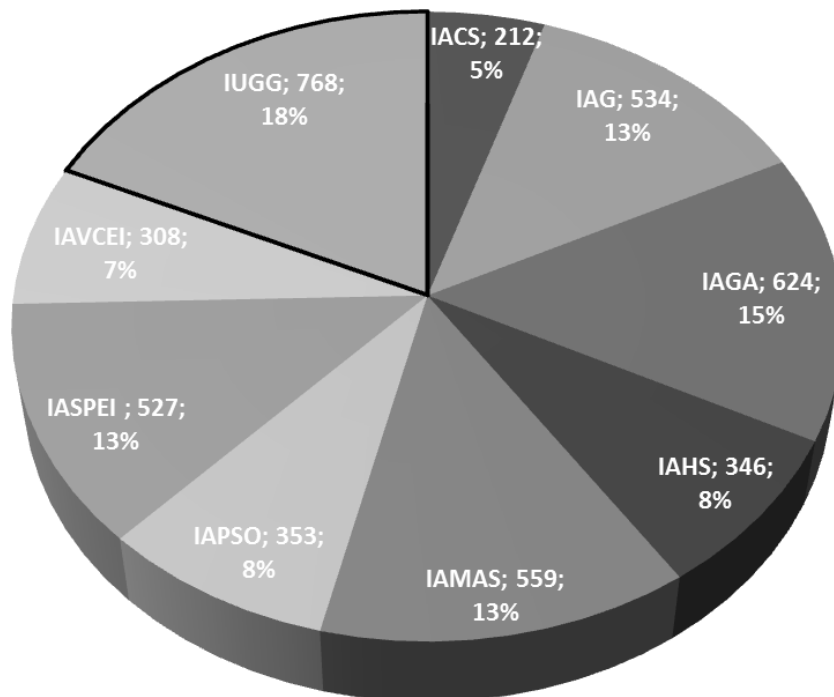
**IUGG 2015 Prague**

Country	Delegates	Country	Delegates	Country	Delegates
ALGERIA	3	GEORGIA	3	NIGERIA	6
ARGENTINA	23	GERMANY	390	NORWAY	66
ARMENIA	1	GREECE	33	PAKISTAN	3
AUSTRALIA	118	HUNGARY	33	PERU	3
AUSTRIA	69	ICELAND	13	POLAND	60
AZERBAIJAN	4	INDIA	55	PORTUGAL	16
BANGLADESH	1	INDONESIA	8	ROMANIA	24
BELGIUM	25	IRAN	21	RUSSIA	193
BRAZIL	62	IRELAND	6	SAUDI ARABIA	6
BULGARIA	4	ISRAEL	22	SERBIA	2
CANADA	85	ITALY	189	SINGAPORE	7
CHILE	17	JAPAN	417	SLOVAK REPUBLIC	15
CHINA	295	JORDAN	1	SLOVENIA	4
CHINA-TAIPEI	58	KAZAKHSTAN	7	SOUTH AFRICA	28
CONGO, D.R.	2	KENYA	2	SPAIN	76
COLOMBIA	3	KOREA, REPUBLIC OF	90	SRI LANKA	3
COSTA RICA	5	KYRGYZSTAN	1	SWEDEN	46
CROATIA	13	LEBANON	2	SWITZERLAND	143
CUBA	1	LITHUANIA	1	THAILAND	7
CYPRUS	2	LUXEMBOURG	6	TRINIDAD AND TOBAGO	1
CZECH REPUBLIC	143	MALAYSIA	1	TUNISIA	5
DENMARK	34	MALTA	1	TURKEY	41
ECUADOR	10	MEXICO	28	UKRAINE	5
EGYPT	7	MONGOLIA	2	UNITED ARAB EMIRATES	4
ESTONIA	8	MONTENEGRO	1	UNITED KINGDOM	275
ETHIOPIA	1	MONTserrat	2	USA	504
FINLAND	47	NEPAL	1	VIETNAM	3
FRANCE	216	NETHERLANDS	41	<b>Grand</b>	<b>4231</b>
FRENCH GUIANA	2	NEW ZEALAND	47		
FRENCH POLYNESIA	1	NICARAGUA	1		

## ASSEMBLY REGISTRATION BY ASSOCIATION

### IUGG 2015 Prague

Association	Number of Registered Delegates
IACS	212
IAG	534
IAGA	624
IAHS	346
IAMAS	559
IAPSO	353
IASPEI	527
IAVCEI	308
IUGG	768
<b>Total</b>	<b>4231</b>



\*Name of the association; number of delegates; percentual value from total of 4231 delegates