



**INTERNATIONAL UNION OF GEODESY AND GEOPHYSICS
UNION GEODESIQUE ET GEOPHYSIQUE INTERNATIONALE**

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IUGG Annual Report 2014

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Alik Ismail-Zadeh**

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IUGG OFFICERS FOR 2011-2015

IUGG Bureau

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| | Ian Allison (until July 2013) | AUSTRALIA |
| IAG President: | Chris Rizos | AUSTRALIA |
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Association Presidents and Secretaries General

International Association of Cryospheric Sciences

| | | |
|--------------------|-------------------------------|-------------|
| President: | Charles Fierz | SWITZERLAND |
| | Ian Allison (until July 2013) | AUSTRALIA |
| Secretary General: | Andrew Mackintosh | NEW ZEALAND |

International Association of Geodesy

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| President: | Chris Rizos | AUSTRALIA |
| Secretary General: | Hermann Drewes | GERMANY |

International Association of Geomagnetism and Aeronomy

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| President: | Kathy Whaler | UK |
| Secretary General: | Mioara Mandea | FRANCE |

International Association of Hydrological Sciences

| | | |
|--------------------|--------------------------------|-----------------|
| President: | Hubert Savenije | THE NETHERLANDS |
| | Gordon Young (until July 2013) | CANADA |
| Secretary General: | Christophe Cudennec | FRANCE |

International Association of Meteorology and Atmospheric Sciences

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|--------------------|------------------|---------|
| President: | Athéna Coustenis | FRANCE |
| Secretary General: | Hans Volkert | GERMANY |

International Association for the Physical Sciences of the Oceans

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| President: | Eugene Morozov | RUSSIA |
| Secretary General: | Johan Rodhe | SWEDEN |

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

| | | |
|--------------------|-------------------|-------------|
| President: | Domenico Giardini | SWITZERLAND |
| Secretary General: | Peter Suhadolc | ITALY |

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

| | | |
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| President: | Ray Cas | AUSTRALIA |
| Secretary General: | Joan Martí | SPAIN |

Union Commission Officers

Union Commission on Climatic and Environmental Changes (CCEC)

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| President: | Tom Beer | AUSTRALIA |
| Secretary: | Keith Alverson | USA |

Union Commission on Mathematical Geophysics (CMG)

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| President: | Yehuda Ben-Zion | USA |
| Secretary: | Ilya Zaliapin | USA |
| | Claudia Pasquero | ITALY |
| | (until July 2013) | |

Union Commission on Geophysical Risk and Sustainability (GRC)

| | | |
|------------|--------------------|-----------|
| President: | Kuniyoshi Takeuchi | JAPAN |
| Secretary: | Diana Greenslade | AUSTRALIA |

Union Commission on Studies of Earth's Deep Interior (SEDI)

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| President: | Satoru Tanaka | JAPAN |
| Secretary: | Michael Bergman | USA |

Union Commission for Data and Information (UCDI)

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|------------|---------------|-------|
| President: | Peter Fox | USA |
| Secretary: | Adelina Geyer | SPAIN |

Inter-Unions Commission: International Lithosphere Program (ILP)

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| President: | Sierd Cloetingh | THE NETHERLANDS |
| Secretary: | Magdalena Scheck-Wenderoth | GERMANY |

IUGG BUSINESS MEETINGS

The IUGG Bureau meeting was held in Baku, Azerbaijan, from 11 to 12 June 2014. The next IUGG Business meetings will take place during the XXVI IUGG General Assembly in Prague, Czech Republic, from 22 June to 2 July 2015.

reports of the President, Vice President, Secretary General, Treasurer and Executive Secretary were presented and approved. The activities of the Union Commissions, ad-hoc and Standing Union Committees were reviewed, and the memberships of several Standing Committees were renewed. The Bureau considered a proposal to set up an IUGG Outreach Committee and approved the Terms of Reference of the Committee. The Bureau paid special attention to an individual membership issue to compliment National membership, which is actively discussed by the Executive Committee (EC) since the last EC meeting in Prague. The Bureau decided to ask the Associations for their opinion about individual membership answering several basic questions: how would National and Individual memberships complement each other and contribute constructively to IUGG activities? What would be the benefits to IUGG of having individual members and the benefits to individuals of becoming members of IUGG? How would a geoscientist become an individual member of the IUGG, and should individual membership be fee-based or free?

The Bureau also considered (i) the current status and future development of the Grants Programme and Science Education Programme, (ii) Special publication series of IUGG; (iii) a draft Budget for 2016-2019; (iv) updates of the XXVI IUGG General Assembly in Prague; (v) a draft Agenda of the 2015 Council Meeting; (vi) relationships with ICSU, its Committees (including WDS, CODATA, IRDR and others), and Regional Officers; and (vii) cooperation of IUGG with international and intergovernmental organizations. The next meeting of the Bureau is scheduled to be held in Prague on 21 June 2015.

A day before the Bureau meeting, the Azerbaijan National Committee for Geodesy and Geophysics (ANCGG) and the ANAS Presidium together with IUGG organized the conference “Future Earth, Disaster Risk and Sustainability” held in the historical building (*Ismailiyya Palace*) of the ANAS Presidium. I. Guliev, ANCGG President and ANAS Vice President, opened the conference. The participants were welcomed by H. Gupta, IUGG President, and A. Ali-Zadeh, ANAS President. G. Babayev, ANCGG Secretary General, presented a report on the recent activity of the National Committee. The official part of the meeting was followed by six lectures delivered by IUGG scientists: *The Global Geodetic Observing System and its Applications* by M. Sideris (University of Calgary, Canada); *Ocean Observations - Opportunities and Challenges* by I. Ansoorge (University of Cape Town, South Africa); *The 2011 Great East Japan Earthquake and Tsunami and the Lessons We Learned* by K. Satake (University of Tokyo, Japan); *Kinematics and Deformation of Earth's Crust of Azerbaijan and Adjacent Territories* by F. Gadirov (Institute of Geology and Geophysics, ANAS, Baku, Azerbaijan); *Features of Seismicity in Azerbaijan for 2004-2013* by G. Yetirmishli (Republican Seismic Survey, ANAS, Baku, Azerbaijan); and *Potential Space Weather Impacts on Technological and Biological Systems* by E. Babayev (The Nasraddin Tusi Shemakha Astrophysical Observatory, ANAS, Shemakha; also, the Azerbaijan Science Foundation, Baku, Azerbaijan).

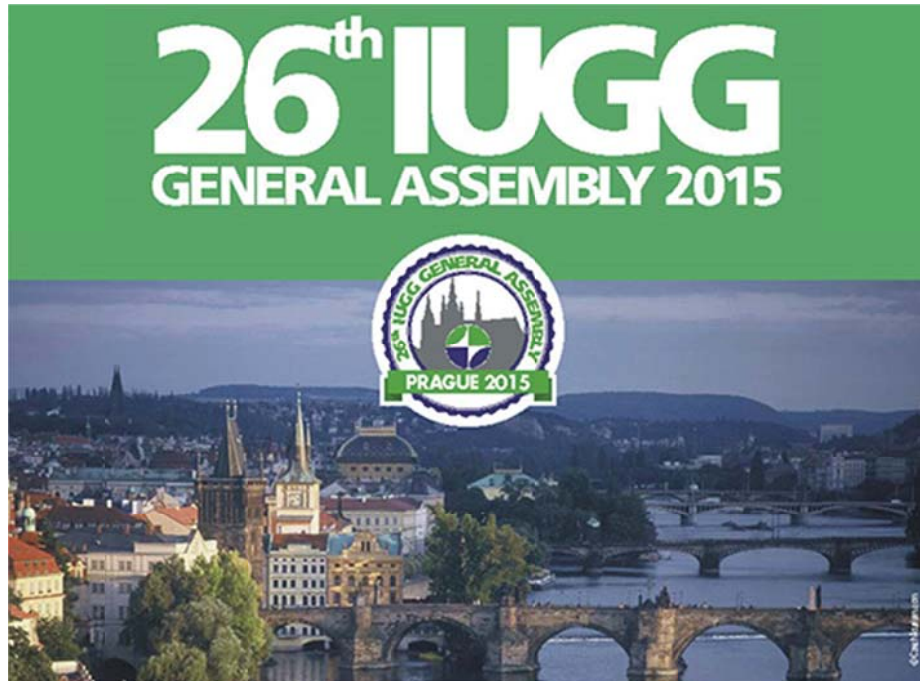
Preparations for the IUGG General Assembly 2015

The Czech invitation to host the 26th IUGG General Assembly in Prague (22 June – 2 July 2015) was accepted by the IUGG Council in 2011 and subsequently the Local Organizing Committee (LOC) was established to guarantee a successful accomplishment of this commitment. The LOC consists of Vladimir Cermak (Chairman & IUGG Liaison), Petr Holota (Deputy Chairman & News), Eduard Petrovsky (Secretary & Scientific Program), Marta Tuckova (Treasurer), Iva Pelanova (Exhibition & Sponsoring), Vladislav Babuska and Vladislav Rapprich (Scientific field trips), Marcela Svanberkova and Jaroslava Plomerova (Media & Community). The C-IN company, a professional conference organizer, will ensure practical activities required for the successful planning and management of the whole event.

The Agreement between the Geophysical Institute of the Czech Academy of Sciences, the Czech National Committee of Geodesy and Geophysics and the C-IN company to prepare and organize the IUGG2015 Assembly was signed in February 2013. The Memorandum of Understanding between the IUGG and the LOC to hold the 26th General Assembly of the International Union of Geodesy and Geophysics was signed in September 2013.

The IUGG2015 website was launched early 2013 (<http://www.iugg2015prague.com>). The theme of the IUGG2015 is “Earth and Environmental Sciences for Future Generations”. Numerous promotion

and information materials were prepared, such as postcards, leaflets, posters and video presentation, distributed by e-mail as well as personally to participants of all five IUGG Associations Scientific Assemblies held in 2013; namely, at the joint IACS-IAMAS assembly in Davos (Switzerland); the IAVCEI assembly in Kagosima (Japan); the joint IAHS-IAPSO-IASPEI assembly in Gothenburg (Sweden), the IAGA assembly in Mérida (Mexico), and the IAG assembly in Potsdam (Germany). We expect to welcome more than 5,000 participants of the assembly.



The Scientific Program Committee for the IUGG 2015 (SPC) was set up in 2012 and comprises of Eduard Petrovsky (Chair, Czech Republic), Alik Ismail-Zadeh (IUGG Secretary General, Germany), Andrew Mackintosh (IACS Secretary General, New Zealand), Hermann Drewes (IAG Secretary General, Germany), Mioara Mandea (IAGA Secretary General, France), Christophe Cudennec (IAHS Secretary General, France), Hans Volkert (IAMAS Secretary General, Germany), Johan Rodhe (IAPSO Secretary General, Sweden), Peter Suhadolc (IASPEI Secretary General, Italy), Joan Marti (IAVCEI Secretary General, Spain), and Harsh Gupta (IUGG President, India). In addition, Franz Kuglitsch (IUGG Executive Secretary, Germany) and eight Czech national members acting as liaison persons of the individual associations, take part in the SPC activities (without the right to vote).

The first SPC meeting was held on 24 September 2013 in Prague. During this meeting, the SPC members visited the venue of the Assembly and discussed the basic philosophy of the scientific program. SPC decided to develop the scientific program to take place on nine days. A road map towards the scientific program and its basic features were determined. Besides e-mail communication, SPC held two teleconferences in March and April 2014. The second face-to-face meeting of SPC was held in Vienna (Austria) on 27 April 2014. During this period, all the activities focused on the organization of scientific symposia at all (Union, Inter-Association and Association) levels. At present, Union symposia are well defined in terms of conveners and co-conveners, in most cases descriptions are available and published on the Assembly's website. Lists of solicited speakers of individual symposia are in advanced phase of preparation. The preparation of Inter-Association and Association symposia is progressing well. In most cases conveners and co-conveners are defined and the symposia are being intensively prepared. Our aim is to publish the scientific program at the beginning of July 2014, when also the registration and abstract submission tools should be available. Two more face-to-face meetings of SPC are foreseen (October 2014 and February 2015) to finalize the timing and space allocation of the symposia (Vladimir Cermak, Chair of the LOC-Prague, and Eduard Petrovsky, SPC Chair)

SCIENTIFIC MEETINGS OF THE IUGG UNION COMMISSIONS

First Workshop of the IUGG Union Commission on Climatic and Environmental Change (CCEC)

The first workshop of CCEC brought together scientists from Australia, China, Denmark, France, Japan, Kenya, Luxembourg, Turkey, and the United States gathered at the Institute for Atmospheric Physics of the Chinese Academy of Sciences in Beijing from 11-12 April 2014 to discuss and examine the ways to strengthen multi-disciplinary research on climatic and environmental changes and to establish a strong link to Future Earth – a new interdisciplinary research program that is being established as a successor to the Earth System Science Partnership (<http://www.futureearth.info/>). Tom Beer and Jianping Li were the Co-chairs of the Science Program Committee, and Keith Alverson was the Secretary General.

The first day of the workshop concentrated on inter-disciplinary geophysical research activities. Presentations were made by Pingfan Rao, President of the International Union of Food Science and Technology (IUFoST), Jun Chen, the International Society of Photogrammetry and Remote Sensing (ISPRS) and a Skype presentation by Frans Berkhout, the Executive Director of Future Earth. These global perspectives were complemented by regional perspectives from Guoxiong Wu, Chair of the Chinese Committee of IUGG, and from Tetsuzo Yasunari, a member of the Future Earth Science Committee both of whom focused on Asian perspectives of Future Earth. Serhat Sensoy, a WMO representative, and Keith Alverson, a UNEP representative, pointed out a recent international research Programme of Research on Climate Change Vulnerability, Impacts and Adaptation - PROVIA (<http://www.unep.org/provia/>), also sponsored by UNESCO.

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. These linkages 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 geodesy is linked to hydrology through satellite missions (such as GRACE) providing data on gravity field, the total radial mass at a given point on the earth's surface, and the hydrological cycle. 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: (i) Climate Extremes and Food (IAMAS/IAVCEI), (ii) East Asia and the Monsoon (IAMAS/IAHS), (iii) Sea Level Rise (IAPSO/IACS), (iv) Space Weather and Sustainability (IAGA / IAMAS), (v) Urban Risks, and (vi) Water Resources (IAHS/IAG).

The workshop was hosted by the State Key Laboratory of Numerical Modelling for Atmospheric Sciences and Geophysical Fluid Dynamics (LASG) of the Institute of Atmospheric Physics (IAP). It was proposed and generously co-sponsored by the International Union of Geodesy and Geophysics (IUGG) via CCEC, the China Association for Science and Technology (CAST), the National Natural-Science Foundation of China (NSFC), the Chinese Academy of Sciences (CAS), the Chinese National Committee for IUGG (CNC-IUGG), the International Association of Meteorology and Atmospheric Sciences (IAMAS), the IAMAS International Commission on Climate (ICCL), and the National Basic research Program of China (973 Program): “Air-Land-Sea interactions in Asia and their role in the global change (ALS)” (2010CB950400). More information is available at: <http://www.ccec-iugg.org/> (Jianping Li, CCEC Vice Chair)

SEDI2014 International Symposium

The IUGG Union Commission on the Study of the Earth's Deep Interior (SEDI) held its 14th SEDI International Symposium in Shonan Village Center, Kanagawa, Japan, from 3 to 8 August 2014. It was 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. About 150 participants attended, coming from fourteen different countries (Australia, Canada, China, Denmark, France, Germany, India, Japan, Netherland, Norway, Switzerland, Taiwan, UK and USA). The SEDI symposium was organized by eight sessions led by discussion leaders. Each session had one keynote talk and two shorter more focused talks

The **Gold Medal** is the highest Union honor to be awarded to Earth and space scientists for outstanding contributions to geodesy and geophysics and for unselfish international research cooperation. The Awardee is bestowed the Medal, a Medal certificate and an Honorary Membership (Fellowship) of IUGG.



The IUGG Gold Medal is bestowed on Sir **Brian J. Hoskins** (Imperial College of London, UK) for “*his scientific contributions that have been pioneering and profound in almost all aspects of the atmospheric and climatological sciences, with strong linkages to IUGG and its Associations*”, in the words of the jury’s citation. “Professor Hoskins has over a period of four and half decades pioneered and been at the forefront of almost every major development in atmospheric dynamics. These developments have opened up strikingly elegant new vistas, and purposeful and practical techniques and approaches, for this increasingly important and significant sub-discipline of the Earth Sciences”, Huw Davies (ETH, Zurich, SWITZERLAN) tells.

The *Gold Medal Committee* was chaired by E. R. Engdahl (USA). Members of the Committee were C. Brunini (Argentina), L. Gallardo Klenner (Chile), A. Ismail-Zadeh (Germany/Russia), D. Koutsoyiannis (Greece), J. Marti (Spain), L. Mysak (Canada), O. Solomina (Russia), and M. Yamamoto (Japan).

The **Fellowship (or Honorary Membership)** is a tribute 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. A list of elected and conferred Fellows can be found in Section “Awards and Honors” of the Report.

The *Fellows Selection Committee* was chaired by Joyce E. Penner (USA). The Members of the Committee were Isabelle Ansorge (South Africa), Hugo Delgado Granados (Mexico), Jan Laštovicka (Czech Republic), Harald Schuh (Germany), Konrad Steffen (Switzerland), and Kuni Takeuchi (Japan).

The **Early Career Scientist Award** honors early career scientists for their outstanding research in Earth and space sciences and for their international research cooperation. IUGG Early Career Scientist awardees are bestowed a certificate. IUGG supports travel of the awardees to attend the General Assembly. The awardees will be invited to give a talk at the General Assembly. On 5 November 2014 IUGG bestowed the Early Career Scientist Awards upon ten scientists for their outstanding research in Earth and space sciences and for international research cooperation. A list of the Awardees can be found in Section “Awards and Honors” of the Report.

The *Award Committee* was chaired by Jenny Baeseman (Norway). The Committee Members were Salvatore Grimaldi (Italy), Thorne Lay (USA), Satheesh Shenoi (India), Laszlo Szarka (Hungary), and John Turner (UK).

NEW IUGG MEMBERS

National Membership

Nicaragua

On 21 March 2014 an application for admission of Nicaragua to IUGG as a Regular Member (Category 1) was received from the National Water Authority of Nicaragua. The IUGG Executive Committee welcomed this application, and it was placed before the IUGG Adhering Bodies in Regular status for a vote by correspondence. The vote is now complete: the IUGG Secretariat received ballots from 34 Member countries (of 47 Member countries eligible to vote). The results of the vote on the admission of Nicaragua as a Regular Member: 33 affirmative and 1 abstained.

According to paragraph 14 of the IUGG By-Laws: “Any admission accepted by a simple majority is provisional until approved by the 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.” Therefore, Nicaragua becomes a Regular Member of IUGG (provisionally). The IUGG Council should make the final decision at the XXVI IUGG General Assembly in Prague, Czech Republic, 22 June – 2 July 2015.

The Adhering Body is the National Water Authority of Nicaragua (Minister-Director *Luis Angel Montenegro Padilla*). The Adhering Body established the Nicaraguan National Committee for IUGG with *Heyddy Calderon* as President and *Yelba Flores* as Secretary General. Correspondents to the Associations are *Marvin Corriols* (IAG), *Heyddy Calderon* (IAHS), *Edwin Obando* (IASPEI), and *Angelica Muñoz* (IAVCEI).

Affiliate Membership

Commission for the Geological Map of the World (CGMW)

On 17 October 2013, an application for admission to IUGG as an Affiliate Member was received from the Commission for the Geological Map of the World (CGMW). The IUGG Executive Committee welcomed this application, and it was placed before the IUGG Adhering Bodies in regular status for a vote by correspondence. The vote is now complete, and the application was accepted. According to the IUGG Statutes and By-Laws, the Affiliate membership of CGMW is provisional until the next meeting of the IUGG Council in Prague, Czech Republic, in June 2015, when a final vote will be taken. The Commission for the Geological Map of the World (CGMW) is responsible for promoting and coordinating the preparation and publication of solid Earth Sciences maps of continents, oceans, major regions of the earth, and promoting those of national territories, and for developing cartography in the solid Earth Sciences. The CGMW organizes international coordination for the study of problems concerning Earth Science cartography and undertakes bibliographic and cartographic studies necessary to carry out its mission. This implies an active role in the evolution of thematic cartography, demanding imaginative new approaches to the representation of data sets. The CGMW is a truly international-scientific organization: under the guidance of an international Bureau, geoscientists of all nations participate in projects that encompass the many facets of Earth Science. To the rapidity of acquiring data today corresponds a need for accelerated map compilation and publication.

Young Earth Scientist (YES) Network

On 22 January 2014, the IUGG Secretariat received an application for admission to IUGG as an Affiliate Member from the Young Earth Scientist (YES) Network. The IUGG Executive Committee welcomed this application, and it was placed before the IUGG Adhering Bodies in regular status for a vote by correspondence. The vote is now complete, and the application was accepted. According to the IUGG Statutes and By-Laws, the Affiliate membership of the YES Network is provisional until the next meeting of the IUGG Council in Prague, Czech Republic, in June 2015, when a final vote will be taken.

The YES Network is an international network of early career Earth scientists from more than 120 countries representing all regions of the world. The YES Network was formed as a result of the International Year of Planet Earth (IYPE) in 2007. In 2009, in collaboration with the IYPE and under the patronage of UNESCO, the YES Network organized its first international Congress at the China University of Geosciences in Beijing, China. The Congress focused on climate, environmental and geoscience challenges facing today’s society, as well as career and academic pathway challenges faced by early-career geoscientists. The YES Network aims to establish an interdisciplinary global network of individuals committed to solving these challenges, and furthering the IYPE motto of “Earth Sciences for Society”. The YES Network promotes the development of the geosciences through the following activities: (i) improving the communication of geosciences between disciplines, spatially around the globe, to policy makers and to the general public; (ii) providing professional development resources and opportunities for early-career geoscientists; (iii) fostering international collaborations

between early-career geoscientists; (iv) raising the public profile of the geosciences through educational outreach and service activities that focus on global scientific and policy issues; (v) promoting scientific, professional, and academic collaborations between early-career and senior geoscientists.

International Association for Geoethics (IAGETH)

On 22 July 2014, the IUGG Secretariat received an application for admission to IUGG as an Affiliate Member from the International Associations for Geoethics (IAGETH). The IUGG Executive Committee welcomed this application, and it was placed before the IUGG Adhering Bodies in regular status for a vote by correspondence. The vote is now complete, and the application was accepted. According to the IUGG Statutes and By-Laws, the Affiliate membership of the IAGETH is provisional until the next meeting of the IUGG Council in Prague, Czech Republic, in June 2015, when a final vote will be taken.

IAGETH is a nonprofit organization born in 1992 at Příbram, Czech Republic. IAGETH aims (i) to promote and encourage the advancement of Geoethics – primarily through educational and publishing activities and research; (ii) to foster geoethical ways of thinking and acting – especially in Geosciences (because of their significance for any support and help in developing realistic sustainability concepts); (iii) to improve teaching and training in Geoethics; (iv) to realize the goals defined by the International Declaration of Geoethics approved in October 2011 by the AGID Working Group for Geoethics; and (v) to collect, evaluate and disseminate the results of geoethical activities on a world wide basis.

American Geosciences Institute (AGI)

On 18 September 2014, the IUGG Secretariat received an application for admission to IUGG as an Affiliate Member from the American Geosciences Institute (AGI). The IUGG Executive Committee welcomed this application, and it was placed before the IUGG Adhering Bodies in regular status for a vote by correspondence. The vote is now complete, and the application was accepted. According to the IUGG Statutes and By-Laws, the Affiliate membership of the AGI is provisional until the next meeting of the IUGG Council in Prague, Czech Republic, in June 2015, when a final vote will be taken.

The AGI is a nonprofit federation of geoscientific and professional associations that represents more than 250,000 geologists, geophysicists, and other earth scientists. Founded in 1948, AGI provides information services to geoscientists, serves as a voice of shared interests in our profession, plays a major role in strengthening geoscience education, and strives to increase public awareness of the vital role the geosciences play in society's use of resources, resilience to natural hazards, and the health of the environment.

International Association for Mathematical Geosciences (IAMG)

On 24 November 2014, the IUGG Secretariat received an application for admission to IUGG as an Affiliate Member from the International Associations for Mathematical Geosciences (IAMG). The IUGG Executive Committee welcomed this application, and it was placed before the IUGG Adhering Bodies in regular status for a vote by correspondence. The vote is now complete, and the application was accepted. According to the IUGG Statutes and By-Laws, the Affiliate membership of the IAMG is provisional until the next meeting of the IUGG Council in Prague, Czech Republic, in June 2015, when a final vote will be taken.

The aim of the IAMG is to promote international cooperation in the application and use of mathematics in geological research and technology. To this end the activities of the IAMG include (i) the organization of meetings, of field excursions, and of visits to centers of research and technology; (ii) the issue of publications on the application of mathematics in the geological sciences; and (iii) cooperation with other organizations professionally concerned with applications of mathematics and statistics to the biological sciences, earth sciences, engineering, environmental sciences, and planetary sciences.

“Exploring the Connection between Earthquakes and Volcanoes” (Lead Applicant: IAVCEI; Supporting Applicant: IASPEI).

“Future of Earth-Space Sciences and Education” (Lead Applicant: IUGG; Supporting Applicants: Union Associations).

The total amount of funds allocated to the projects is US\$ 80,000.

SCIENTIFIC MEETINGS CO-SPONSORED BY IUGG

IUGG co-sponsors symposia and workshops appropriate to our disciplines of study and supports the participation of young scientists and scientists from developing countries.

For 2014, IUGG supported the following meetings (the name of the IUGG Associations that endorsed the meetings are indicated in brackets):

- Joint model-data workshop for the Late Pleistocene evolution of the Greenland and Antarctic ice sheets, Grenoble, France, 22-24 May (IACS).
- School on Reference Systems - Escuela en Sistemas de Referencia and Symposium on Geocentric Reference System for the Americas (SIRGAS), Santa Cruz, Bolivia, 22 September-1 October (IAG).
- 22nd International Workshop on Electromagnetic Induction in the Earth, Weimar, Germany, 24-30 August (IAGA).
- Geospace revisited: Understanding dynamic processes with new spacecraft and ground-based observations, Rhodes, Greece, 15-20 September (IAGA).
- 16th IAGA Workshop on Geomagnetic Observatory Instruments, Data Acquisition and Processing, Hyderabad, India, 7-16 October (IAGA).
- Evolving Water Resources Systems - Understanding, Predicting and Managing Water - Society Interactions, Bologna, Italy, 4-6 June (IAHS).
- 12th Kovacs Colloquium, Paris, France, 21 June (IAHS).
- 13th Quadrennial iCACGP Symposium and 13th IGAC Science Conference on Atmospheric Chemistry, Natal, Brazil, 22-26 September (IAMAS).
- 3rd "Titan through time" ICPAE-workshop, Laurel, MD, USA, 8-10 April (IAMAS).
- Regional Assembly - Latin American and Caribbean Seismological Commission (LACSC-2014), Bogota, Colombia, 23-27 July (IASPEI).
- Mega earthquakes and tsunamis in subduction-zones: forecasting approaches and implications for hazard assessment, Rhodes, Greece, early October (IASPEI).
- 5th International High Energy Particle Precipitation in the Atmosphere (HEPPA) Workshop, Baden-Baden, Germany, 5-9 May (IAGA, IAMAS).
- Special Symposium - Four paradigms in predicting extremes: Legacy of Vladimir I. Keilis-Borok, Merida, Yucatan, Mexico, 2-4 June (IASPEI, CMG).
- GEORISK 2014: Improving Geophysical Risk Assessment, Forecasting, and Management, Madrid, Spain, 18-21 November (IAVCEI, GRC).
- 40th COSPAR Scientific Assembly, Moscow, Russia, 2-10 August (IAMAS, IAGA, IAG).

SCIENTIFIC MEETING REPORTS

2014 AAAS Symposium - “Santa’s Revenge: The Impacts of Arctic Warming on the Mid-Latitudes”

This event, which took place on 15 February 2014 at the Chicago AAAS Annual Meeting, was spearheaded by the U.S. National Committee for Geodesy and Geophysics, and co-sponsored by the U.S. National Committees for INQUA, Soil Science, and Geological Sciences. The symposium examined high-latitude changes linked to mid-latitude weather and the effect of these complex phenomena on freshwater resources, food availability, and national security. The symposium was organized by Michael MacCracken (Climate Institute), Ester Sztein (National Academy of Sciences), and Robin Muench (Earth & Space Research). Hajo Eicken (University of Alaska) served as the discussant. Speakers included:

- Mark Serreze (National Snow and Ice Data Center, University of Colorado-Boulder): “Impacts on Arctic Pack Ice Predictions of Extreme Weather and Natural Variability”
- James Overland (NOAA/Pacific Marine Environmental Laboratory): “When Will the Summer Arctic be Nearly Sea Ice-Free?”
- Jennifer Francis (Rutgers University): “Evidence Linking Arctic Amplification with Changing Weather Patterns in Mid-Latitudes”
- Jerry Hatfield (Iowa State/USDA-Agricultural Research Service): “Agriculture Impacts and Impacts on International Food Supplies and Prices”
- David Titley (Pennsylvania State University): “Impact of a Warming Arctic on National Security”

This symposium resulted in wide press coverage in the U.S. and around the world, including articles in *The Economist*, *Time*, and *Smithsonian* magazines, BBC, and National Public Radio. The full list of approximately 70 press articles in four languages is available at the NAS/BISO webpage: http://sites.nationalacademies.org/PGA/biso/IUGG/PGA_085951 (Ester Sztein, U.S. National Academy of Sciences).

International High Energy Particle Precipitation in the Atmosphere Workshop

The HEPPA/SOLARIS-2014 workshop was held on 5-9 May 2014 in Baden-Baden, Germany, and was the fifth meeting in a series which started in Helsinki, Finland (2008) and continued in Boulder, USA (2009, 2012), and Granada, Spain (2011). Since 2012, the workshop has been organized in conjunction with the SPARC/SOLARIS-HEPPA community. The theme of the workshop was the mechanisms by which energetic particles and solar irradiance affect the atmosphere and climate. The workshop covered the following topics: i) variability of energetic particle precipitation and solar irradiance; ii) uncertainties in their measurements; iii) observed and modelled impacts of solar forcing on the atmosphere (thermosphere to surface) and climate; and iv) predictions for future scenarios under a weakening sun. The impact of the solar cycle on the European winter climate via the influence on the North-Atlantic oscillations seems now to be a robust feature produced in climate models. One of the scientific highlights was the finding that the impact of energetic particle precipitation on regional North Atlantic climate can be similar in magnitude to solar irradiance forcing, leading to the conclusion that energetic particle precipitation cannot be ignored any longer in climate modelling. The controversy around solar spectral irradiance measurements cannot be considered solved at the current time. Predictions for climate development under a potential future grand solar minimum revealed only minor impact on surface temperature that cannot compensate for the temperature increase due to greenhouse gas emissions.

HEPPA/SOLARIS-2014 (http://www.imk-asf.kit.edu/english/HEPPA_SOLARIS_2014.php) was attended by 72 participants. During the first three days, the contributions were presented as posters, while the topics were introduced by twelve 30/45-min overview talks given by invited speakers.

Topics for the poster sessions were: A) Solar and Particle Variability; B) Solar and Particle Effects on the Stratosphere and Above; C) Solar and Particle Effects on the Troposphere and Climate; D) Atmosphere and Ocean/Atmosphere Coupling; E) Tools for Assessing Solar and Particle Influences (new or improved measurements, models, etc.) In order to provide enough time for poster presentations and related discussions, three hours each day were allocated for the poster sessions. The last two days were dedicated to an overview of on-going international activities and projects, and working meetings of the SPARC/SOLARIS-HEPPA working groups (SolarMIP and HEPPA-II). There was also substantial discussion about future work and the outstanding questions in the field. An upcoming data gap of middle/upper atmosphere observation was identified due to the lack of planned limb sounding missions. The participants of the workshop came from North America, Europe, and Asia. The generous financial support to the HEPPA/SOLARIS-2014 workshop was provided by IUGG/IAMAS, which helped to organize a lively and exciting meeting and brought together the communities of solar irradiance and energetic particle impact on the atmosphere. The next HEPPA/SOLARIS meeting will be held in two years in Helsinki, Finland, while the SPARC/SOLARIS-HEPPA working group will meet in fall 2015 in Boulder, USA (Gabriele Stiller, Chair of the Workshop LOC)

Evolving Water Resources Systems Understanding, Predicting and Managing Water - Society Interactions

The International Symposium on Integrated Water Resources Management (IWRM) is a regular symposium organized by the International Commission on Water Resources Systems (ICWRS) of IAHS. The 6th Edition was co-organized with IUGG and EGU and focused on the topic Evolving Water Resources Systems - Understanding, Predicting and Managing Water-Society Interactions. The 6th edition, which was framed within the Panta Rhei research initiative of the International Association of Hydrological Sciences (<http://www.iahs.info/pantarhei>), brought together more than 200 experts from more than 30 countries from all continents. Participants delivered exciting presentations (90 orals and 134 posters) and stimulated vibrant discussions, showing their research ideas and results to bring hydrology into the future by reaching an improved connection with society.

The scientific contributions focused on a broad variety of topics associated with water resources assessment and management in a changing environment, and concentrated in particular on the two-way interaction between water and society. Main themes of the conference were: (1) Hydrological processes in a changing environment: Coping with uncertainties; (2) Floods, droughts and water risks in a changing socio-hydrological context: Feedbacks between water resources and social systems; (3) Water resources: Monitoring, integrated assessment and management; (4) Optimization of water resources systems: changing boundary conditions, targets and criteria of water management. The Conference Proceedings volume is published as “Evolving Water Resources Systems Understanding, Predicting and Managing *Water - Society Interactions*” (ed. by A. Castellarin, S. Ceola, E. Toth, A. Montanari; IAHS Pub. no. 364, ISSN 0144-7815, IAH Press, pp. 548).

The following experts delivered invited talks at the symposium: Peter Loucks (Cornell University, USA), Berit Arheimer (Swedish Meteorological and Hydrological Institute, Sweden), Tom Evans (Indiana University, USA), Quentin Grafton (Australian National University, Australia), Andreas Schumann (Ruhr-University Bochum, Germany), Ezio Todini (University of Bologna, Italy) and Pieter van der Zaag (UNESCO-IHE, The Netherlands). The conference was financially supported by International Union of Geodesy and Geophysics (IUGG), European Geosciences Union (EGU), and Department of Civil, Chemical Environmental and Materials Engineering (DICAM) of the University of Bologna (Alberto Montanari, Conference Chair).

IASPEI Regional Assembly

The first assembly of the Latin American and Caribbean Seismological Commission (LACSC), an IASPEI regional Commission formed in 2012, was held on 23-25 July 2014 in Bogotá, Colombia. More than 230 participants from 25 countries attended the assembly and presented 242 papers (149 oral and 93 poster presentations). The presenters came from Argentina (10), Brazil (16), Chile (16),

Missions and Theoretical Developments. More than 60 participants from 16 different countries attended the meeting and presented their most up-to-date results in oral presentations and with posters. The posters were displayed in the central meeting area during the meeting with significant results from each identified in short 2-minute summaries before the general poster viewing. In addition, invited talks on global-scale prediction of earthquakes, earthquake mechanics, volcano seismology, and geochemistry contributed to a better identification of the physical mechanisms involved in the generation of electromagnetic signals related to both volcanic and earthquakes activity.

The presentations during the meeting clearly showed the incredible progress made in documentation of reliable electromagnetic signals related to earthquake and volcano activity during the 13-years existence of EMSEV. Many powerful international groups have been set up and cross-correlations between electromagnetic and other geophysical data have successfully emerged. The two activities promoted by EMSEV in under-developed countries related to volcanic (Taal volcano, Philippines) and tectonic (Bishkek, Kyrgyzstan) activities. Now, each involves powerful consortiums for joint observations. For Taal, experts from the Philippines, Japan, France, USA, Belgium, Italy, and Greece are working together while in Kyrgyzstan, joint efforts involve researchers from Kyrgyzstan, Russia, Japan, France, Greece, China and Poland. The identification of signals related to the transient disturbances of the ionosphere that might be associated with earthquakes is the target of a cooperative effort between USA, Japan, Russia, Taiwan, and France. Renewed and enthusiastic interest in using satellites to identify precursory EM signals related to earthquakes and volcanic eruptions will follow the launch of Chinese micro-satellites in 2016. Already, our EMSEV community is getting together on this issue.

The round table at the end of the meeting raised discussions on different topics, particularly the testing of predictability of EM and other geophysical parameters for impending earthquakes and eruptions. If signals are occasionally identified, it is extremely difficult to demonstrate reliable and repeatable estimates of precursor time delay, likely magnitude and likely location for an earthquake, although it is much easier for volcanic eruptions. Some proposals discussed were the importance of re-analyzing very long time series (i.e. over ten years) to build a database of reliable characteristics of signals, to produce 4-window tables corresponding to Anomaly (A) with Earthquake (EQ), A with No EQ, No A and EQ, No A and No EQ, and to work on the repeatability of signals such as in the case of the recurrent seismicity in Taiwan. The methodology on precursory electric signals used in Greece is now in the process of being tested in Kyrgyzstan and Romania.

During the 17th business meeting, Xuebin Du, from Lanzhou Institute of Seismology of China Earthquake Administration, offered to host the next EMSEV meeting in 2016. This proposal was accepted, and Chinese colleagues will discuss how to involve the largest possible Chinese community. Detailed information on EMSEV activities can be found at <http://www.emsev-iugg.org/emsev> (J. Zlotnicki, M. J. S. Johnston, T. Nagao, and J. Blecki, EMSEV officers)

Joint iCACGP/IGAC2014 meeting

The International Commission on Atmospheric Chemistry and Global Pollution (iCACGP) and the International Global Atmospheric Chemistry project (IGAC) held their 13th joint edition of their traditional symposia/conferences (Joint iCACGP-IGAC2014) in Natal, state of Rio Grande do Norte, Brazil, 22-26 September 2014. The topical theme was “Changing Chemistry in a Changing World”: The foci were the 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. Of central significance to the meeting was the knowledge of the fundamental science, which impacts the assessment accuracy of the recent and current impacts of human behavior on the earth system, and of the prediction of future air quality, human health, environmental and climate change.

The Joint iCACGP-IGAC2014 was attended by 422 registered participants from 49 different countries including 161 young scientists and 64 of them from seven Latin American countries. The participant distributions by countries and by continents are presented below.

The conference was organized with six plenary oral sessions and respective poster sessions during five days. The sessions themes were (i) Atmosphere-surface (ocean/vegetation/ice) interactions in a changing climate; (ii) Atmospheric chemistry and the coupling between biogenic and anthropogenic emissions; (iii) Interactions between aerosols, clouds and precipitation; (iv) Atmospheric chemistry and urbanization: from local to the global scales; (v) Atmospheric chemistry fundamentals; and (vi) Atmospheric chemistry in a changing climate. In total, 77 oral talks were presented. Of these, four talks were held by keynote-speakers and another 13 by other invited speakers. 410 posters were presented throughout the conference. The Global Atmosphere Watch (GAW) Program of the World Meteorological Organization (WMO) celebrated its 25-year anniversary at the meeting with a special ceremony dedicated to this occasion including a keynote talk, two other talks, and 20 posters, followed by a celebration cocktail and a photo exhibition about GAW stations and responsible researchers in the world.

A number of excursions were organized during the conference so that the participants could experience some of the beautiful sightseeing that the city and surroundings of Natal offers to the visitor. The conference banquet was served with local typical cuisine options and background live music, before the closing ceremony. This was a moment for people to get together one last time and allowed all participants to relax and experience some of the typical Brazilian menus.

Several events were specially designed for Young Scientists (YS). A workshop was held during the conference, where invited speakers introduced each scientific session topic of the conference providing a general overview of what was going to be presented at the conference. Another event was a luncheon with two invited speakers: Mark Lawrence and Melita Keywood, who each have a speech about time management and how to give a good presentation, respectively. At the Lunch Visioning Meeting young scientists discussed and came up with their own view on the future of the Young Scientist Program. The outcome of this meeting was presented during the Closing Ceremony. All YS posters and oral presentations were evaluated by a specific jury composed of a number of selected senior scientists who chose a winner for each of the six thematic poster sessions as well as a winner of the YS contributions to the conference's oral program.

The support of Young Scientists is one of the main goals of iCACGP Symposia and IGAC Science Conferences. The following institutions (in alphabetical order) provided support for 70 Young Scientists from all over the world, for travel costs, accommodation and registration fees or per diems (partial and full support): IAMAS/IUGG, GAW/WMO, Atmospheric Composition Change – The European Network (ACCENT Plus), Brazilian Ministry for Education (CAPES), European Space Agency (ESA), the Regional Office South America of the International Geosphere-Biosphere Program (IGBP), National Aeronautics and Space Administration (NASA, USA), National Oceanic and Atmospheric Administration (NOAA, USA), National Science Foundation (NSF, USA), Federal University of Rio Grande do Norte (UFRN Brazil). More information: <http://igac-icacgp2014.org> (Judith J. Hoelzemann, LOC Coordinator of iCACGP/IGAC-2014).

SIRGAS School on Reference Systems and the Symposium SIRGAS 2014

The Geocentric Reference System for the Americas (SIRGAS) is the fundamental layer for all kind of positioning and geo-information in science and praxis in Latin America from Mexico to Tierra de Fuego. Nearly all South and Central American countries have adopted it as their official reference system for scientific and practical applications. Besides the establishment and maintenance of the geocentric reference frame for the region, SIRGAS is responsible for the definition and realization of a gravity-field related vertical reference system that guarantees consistency and reliability continent-wide (heights with the same accuracy everywhere) and a long-term stability (heights with the same order of accuracy at any time).

The current activities, advances, and new challenges of SIRGAS are reported, discussed, and re-oriented (if required) in the annual SIRGAS Meetings, which have been held since 1993. In this series, the Symposium SIRGAS 2014 took place in La Paz, Bolivia from 24 to 26 November 2014. In the days prior to the Symposium (from 20 to 22 November), a SIRGAS School on Vertical Reference Systems was held. Both events were hosted by the Instituto Geográfico Militar of Bolivia.

the tutorials was free of charge for registered delegates of the main event and the interest was tremendous. Where places were limited, preference was given to young scientists (students or postdocs). The following social events took place during the workshop: icebreaker on 24 August, mid-workshop excursion on 27 August, workshop dinners in Weimar, and several tours including Naumburger Dom, Wartburg castle, and wine-growing region of Saale-Unstrut.

We acknowledge the generous support of the workshop donors: the German Geophysical Society, the National Science Foundation, IAGA, IUGG, the GW Hohmann Trust, the Dublin Institute for Advanced Studies, and Freunde und Förderer der Universität Freiberg. The workshop was co-sponsored by Phoenix Geophysics, Shell, KMS, Metronix, NordWest, University of Adelaide, emgs, Geophysik GGD, Wintershall, EGU, IMAGIR, Zonge, technoimaging, and BakerHughes (O. Ritter, Chair, LOC of the 22nd EM induction workshop).

XVI IAGA Workshop on Geomagnetic Observatory

The XVI IAGA Workshop on Geomagnetic Observatory Instruments, Data Acquisition and Processing was held from 7 to 16 October 2014 and jointly organized by the National Geophysical Research Institute (CSIR-NGRI) and the Indian Institute of Geomagnetism (IIG), Mumbai, India (http://www.ngri.org.in/iaga13_14). The Golden Jubilee (1964-2014) of the Hyderabad Magnetic Observatory HYB (CSIR-NGRI) was commemorated by this workshop. The Workshop was inaugurated by IUGG President Harsh Gupta who also conducted the ceremonial felicitation of founder members of the Hyderabad Magnetic Observatory. The Workshop was followed by the Council Meeting of INTERMAGNET during 18-20 October 2014. A total of 80 delegates from 31 countries participated in the Workshop. Additionally there were about 20 invited speakers from India and 15 dignitaries bringing the total participants to 115.

Six specialized training sessions were organized including lectures, demonstrations, and practice and attended by twelve trainees and several observers: Geomagnetism (by Nandini Nagarajan); Conrad Observatory (video presented by Barbara Leichter); Measurement of magnetic variations (by Lars Pedersen); Absolute Instruments & measurements (by Alan Berarducci); Observatory practice - Processing of magnetic Data (by Joachim Linthe); and INTERMAGNET (by Joachim Linthe). Three afternoons were devoted to practical training and demonstrations of Absolute and azimuth measurements.

The last session was held in the form of a panel discussion, which became very lively due to participation from panelists as well as other delegates. Observers expressed their desire to learn more about data processing and to have access to codes, error analysis, and dialog with more experienced scientists to continue the learning process. The internet is being successfully used to transmit and share data. It should be used to provide forums for learning and problem solving, since many observers work in comparative isolation. A suggestion was made to have a page on the Division V website where observers could post queries, obtain codes and short articles. Some volunteered to write articles. There is a clear need to include processing as part of the IAGA Workshops. More structured training during the Workshop where processing and baseline determination could be practiced should be planned in workshops henceforth.

In summary, the highlights of the scientific sessions include the developments on new instruments and measurement techniques to arrive at stable baselines. The variety of applications of geomagnetic data right from co-seismic signals, signatures of tsunamis to ionospheric and magnetospheric effects was the second significant highlight. The launch of the new program MAGNIO co-sponsored by the International Council for Science (ICSU) via IUGG with an aim of bringing the magnetic community of the North Indian Ocean region together was the third (Kusumita Arora, Local Organizing Committee).

NATIONAL COMMITTEES FOR GEODESY AND GEOPHYSICS: REPORTS

First Congress of China Geodesy and Geophysics

The First Congress of China Geodesy and Geophysics (CCGG) brought together over 2,000 Chinese scientists and graduate students from universities and research institutes gathered at the China University of Geosciences in Beijing (CUGB), 25-26 October 2014, to exchange information on the latest progress in Earth and planetary sciences made by the Chinese community of IUGG, to discuss how the community can contribute to “Future Earth”, a 10-year international research program, and to plan for the 2015 IUGG General Assembly. The theme of the congress was “From Global Change to Future Earth”. The Congress was composed of an overview session and 43 thematic sessions on all major subjects of IUGG. The “Youth Excellent Thesis Awards” for 10 graduate students were presented at the congress; the award was established to encourage young scholars to get involved in IUGG and Chinese National Committee for Geodesy and Geophysics (CNC-IUGG) activities.

Jianping Li, Secretary General of CNC-IUGG, opened the Congress and Guoxiong Wu, President of CNC-IUGG, and Jianyun Zhang, Vice President of CNC-IUGG, presided at the Opening Ceremony and invited lectures. At the Opening Ceremony, Kechang Xie, Vice President of the Chinese Association of Science and Technology (CAST), Yong Chen, Director of the Academic Division of Earth Sciences, Chinese Academy of Sciences (CAS), and Hongbing Wang, CUGB Secretary of Party, delivered welcome addresses. Dahe Qin, co-Chair of the IPCC Working Group I, and Vice President of CNC-IUGG, Harsh Gupta, IUGG President, Alik Ismail-Zadeh, IUGG Secretary General, and Chengshan Wang, Professor of CUGB, delivered lectures on “Climate Change and Cryospheric Sciences”, “Sustainability of Urbanization and Natural Hazards: Earthquakes and Tsunamis”, “International Cooperation in Geodesy and Geophysics to Benefit the Society”, and “Earth’s Deep Time Insight into Future Earth”, respectively.

CNC-IUGG is a non-governmental, scientific organization, established by CAS and CAST in 1979, dedicated to the promotion and coordination of Chinese scientific studies of Earth (physical, chemical and mathematical) and cooperation and communication with the international geosciences community. The first CCGG was jointly sponsored by the CNC-IUGG, CAST and the CAS Academic Division of Earth Sciences, and co-organized by Institute of Atmospheric Physics, CAS; Key Laboratory of Physical Oceanography, MOE, China; Beijing Normal University; National Administration of Surveying, Mapping and Geoinformation; Wuhan University; and Hebei Mapping Institute (Jianping Li, CNC-IUGG Secretary General).

REPORTS OF IUGG LIAISON OFFICERS

WMO Executive Council 2014

The sixty-sixth session of WMO’s Executive Council was held in Geneva from 18 to 27 June 2014.

Meteorological research and volcanic ash. The brief presentations on meteorological research and aeronautical meteorology made appropriate references to collaboration with IUGG (IAMAS and IAVCEI). Regarding the WMO-IUGG Volcanic Ash Scientific Advisory Group, “the Council, whilst fully supporting the ongoing fruitful cooperation between WMO and IUGG, encouraged the VASAG to review its terms of reference after the Conjoint ICAO/WMO MET Divisional Meeting in July 2014 with a view to proposing any necessary amendments for consideration by EC-67.”

Polar activities. WMO’s polar activities are overseen by a Panel of the Executive Council. In his brief introduction to the work of this Panel, the Secretariat member in charge mention that WMO had a link with IACS amongst many other bodies active in polar research. In discussion, “the Council agreed that the Panel, through the Global Cryosphere Watch (GCW), should further engage with the World Glaciology Monitoring Service (WGMS) to monitor these glaciers using appropriate in-site and space technologies.” Note that the WGMS is a service of the International Association of Cryospheric Sciences (IACS) of IUGG.

The challenge of globalization. Over the last ten to twenty years we have seen a dramatic increase in the ability of institutes in neighboring countries, or even in remote large computing centers, to model and forecast local conditions without the co-operation or even agreement of the National Meteorological and Hydrological Services (NMHSs) that are the national counterparts of WMO. This has been one of the great achievements of meteorology in recent years and no-one denies its benefit to the NMHSs in poorer countries which have difficulty maintaining their national services. However, the meteorological services of many poor countries rely for their very existence on the fees they charge airline companies for the briefings that pilots are obliged to receive before they depart. When the briefings are not up to the standard that the airlines want or the charges are, in their view, too high, they are tempted to look elsewhere for their metrological information. As the aviation world moves inexorably towards greater and greater regionalization, even globalization, of many of its services, this may lead to a call for regional even global meteorological forecasting services. In its debate on trends in aeronautical meteorology, the “Council noted serious concerns expressed by some Members relating to the assigning of the provision of meteorological service for international air navigation to entities outside the NMHS, in some cases, private entities. This issue was considered detrimental for many NMHSs due to loss of revenue from the aviation sector with implications on their viability and sustainability.”

The same technical developments have led a number of institutions in different parts of the world to develop regional flood awareness schemes which are designed to provide early warning of the likelihood of floods to NMHSs. These developments were discussed briefly at the side meeting of hydrologists. Some concern was expressed that some groups appear to be moving in the direction of issuing what would amount to flood forecasts and warning on the internet i.e. to the general public, without any contact with the NMHSs who are legally responsible for issuing such warnings. It is interesting to see that the EU’s European Floods Awareness System (EFAS) is specifically announced as being “an early flood warning system complimentary to national and regional systems. It provides the national institutes and the European Commission with information on possible river flooding to occur within the next three or more days. Since flood warning is a Member State responsibility, only archived flood warnings can be made publically available. The real-time warnings are made available to the national partner institutes only.”

Future meetings. The next session of WMO’s Congress will meet in Geneva from 25 May to 12 June 2015. This will be followed immediately by the next session of its Executive Council from 15 to 17 June 2015. The Council further tentatively scheduled the sixty-eighth session of the Council to be held at the WMO headquarters from 25 May to 3 June 2016. IUGG will be invited to send a representative to all three meetings (Arthur Askew, IUGG Liaison officer to WMO).

IUGG and climate services

The Global Framework for Climate Services (GFCS) is, to quote the official wording, “a UN-led initiative spearheaded by the World Meteorological Organization (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.” There is a lot of support for climate service activities at both national and international levels and the GFCS offers a new and logical framework within which to promote and coordinate such activities. Given the close association between WMO and IUGG over many decades, it was only logical that the Union expressed an interest in being involved in the GFCS. As a result, the Union has been invited to all GFCS meetings and is listed as a member of the Partner Advisory Committee. Having said this, IUGG now faces the challenge of identifying exactly how the Union can contribute to the GFCS and what it would gain by doing so. To this end, a panel discussion will be held during the IUGG General Assembly in Prague, where the Framework will be presented and the IUGG Associations most

concerned will be invited to open a debate on how best the Union can respond to this new invitation to high-level co-operation (Arthur Askew, an IUGG Liaison Officer to the WMO).

COSPAR Council Meeting

The 40th Scientific Assembly of the ICSU Scientific Committee on Space Research (COSPAR) was held in Moscow, Russia, from 2 to 10 August 2014. The COSPAR Council met on Saturday, 2 August, and on Sunday, 10 August 2014 to consider several topics of major importance for the scientific committee. The COSPAR President G. Bignami presented his Presidential report and the COSPAR Executive Director J.-L. Fellous presented the activity report for the period since the 2012 COSPAR Scientific Assembly, including information on the activities of the COSPAR Scientific Advisory Committee. The COSPAR Treasurer presented the financial report including the report of the Finance Committee, execution of the 2012 and 2013 budgets, the 2014 and 2015 COSPAR budget considerations, and 2015 national contributions.

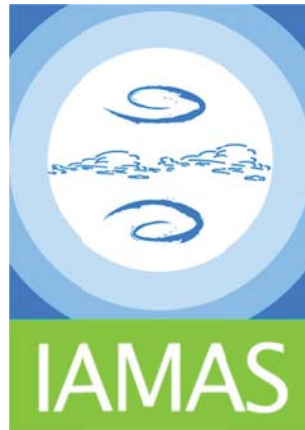
As mandated by the revised By-laws adopted by the Council at its 2012 meeting, by the time of the Assembly voting for the COSPAR President has to have taken place by correspondence. Two candidates were placed on the ballot: G. Bignami (Italy) and L. Fisk (USA). Ballots were counted at the Council meeting. The results of the voting on the election of the COSPAR President were announced: L. Fisk was elected the new President of COSPAR. The Council elected two Vice-Presidents, the Bureau, and the Finance Committee. A concern was expressed regarding the nomination and presentation of the candidates for the COSPAR vacant positions, particularly related to the gender issue and representation of the ICSU Scientific Unions.

The COSPAR Executive Director reported on the Capacity Building Workshops including (i) 16th COSPAR workshop in Beijing, China, September 2012, (ii) 17th COSPAR workshop in Buenos Aires, Argentina, October 2012, (iii) 18th COSPAR workshop in Xuyi, China, September 2013, (iv) 19th COSPAR workshop in Bangkok, Thailand, November 2013, and (v) 20th COSPAR workshop in Bandung, Indonesia, January 2014. Also, the Council was briefed on the 1st COSPAR Symposium which was held in Bangkok, Thailand, 11 – 15 November 2013, as well as on plans for future Symposia. A representative of the Local Organizing Committee of the 41st COSPAR Scientific Assembly (COSPAR 2016) presented a report on the activities related to the preparations to the meeting. The final registration fees were approved, and the Chair of the 2016 Scientific Program Committee was appointed.

COSPAR had received one bid from USA to hold the 42nd COSPAR Scientific Assembly in 2018 in Pasadena, California. Another bid was submitted to the Council members at the meeting from Malaysia. Both bids were presented to the Council. Without discussion and detailed consideration of each bid, the voting on the venue of the 42nd COSPAR Scientific Assembly was held. The results showed that the majority of votes went to Malaysia. At the next session of the Council, COSPAR Executive Director J.-L. Fellous and Vice President J. Wu informed the Council that the COSPAR Bureau considered the two bids carefully and expressed major concerns related to organization of the COSPAR Assembly in Malaysia in 2018. They presented the statistics related to Malaysian and US bids and the Bureau concerns to the Council. After intensive discussions, the Council decided to ask the Bureau to investigate the case within 1-2 months and to come with a report regarding the possibility of Malaysia to organize a COSPAR assembly in 2018.

At the second session of the Council, M. Panasyuk, Chair of the Local Organizing Committee (LOC) reported on the registration statistics and other salient aspects of the 2014 COSPAR Assembly. 2,232 people from 74 countries attended the Assembly. In total 2,527 talks and 1,344 posters were presented. Two public lectures were delivered by V. Fortov, President of the Russian Academy of Sciences (“Extreme State of Matter on the Earth and in the Space”) and V. Sadovnichii, Rector of the M.V. Lomonossov Moscow State University (“Space Education and Research: the Role of Universities”).

The Council was informed of the officers of the COSPAR Commissions/Panels elected or appointed by the Bureau. The reports of COSPAR Scientific Commissions and Technical Panels were distributed among the Council members. Particularly, (i) Commission A (Space Studies of the Earth's Surface, Meteorology and Climate) proposed to host a dedicated session on Geodesy/Solid Earth Geophysics at



International Association of Meteorology and Atmospheric Sciences (IAMAS)

www.IAMAS.org

INTRODUCTION

IAMAS is the specialized association of the International Union of Geodesy and Geophysics (IUGG) that 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' 10 International Commissions (IC), which are in alphabetical order the:

- International Commission on Atmospheric Chemistry and Global Pollution (ICACGP)
- International Commission on Atmospheric Electricity (ICAE)
- International Commission on Climate (ICCL)
- International Commission on Clouds and Precipitation (ICCP) including the Committee on Nucleation and Atmospheric Aerosols (CNAA)
- International Commission on Dynamical Meteorology (ICDM)
- International Commission on the Middle Atmosphere (ICMA)
- International Commission on Planetary Atmospheres and their Evolution (ICPAE)
- International Commission on Polar Meteorology (ICPM)
- International Ozone Commission (IOC)
- International Radiation Commission (IRC)

All ICs, and IAMAS as a whole, play a leading role in global coordination, communication and discussion of the latest research through organization of and participation in a wide range of scientific meetings that are open to all scientists.

ADMINISTRATION

The Bureau did not change during 2014. During the year its members communicated closely by email and telephone conference calls. The annual Bureau meeting took place on 17/18 July 2014 in Munich and Oberpfaffenhofen, Germany, where the Sec.-Gen. is affiliated with DLR-IPA. As during the previous years, Zheng (Jenny) LIN, from CAS in China, provided most useful support as Assistant Sec.-Gen. by, e.g., coordinating regular correspondence between the Commissions as well as the National Correspondents inter alia by help of regular Info-Emails (www.IAMAS.org/NewsLetters).

ACTIVITIES

The Sec.-Gen. contributed to the organization of the World Weather Open Science Conference, which took place under the auspices of WMO in August in Montréal, Canada and experienced considerable input by members of ICDM. He also met with members of the Scientific Programme Committee for IUGG-2015 in April in Vienna. The IAMAS web-portal was maintained at the secretariat.



Samples from Opening Ceremonies of large conferences with IAMAS involvement in 2014: 13th Quadrennial Symposium of ICACGP in Natal, Brazil (left); Michel Jarraud, Sec.-Gen. of WMO (middle), and Gordon McBean, president elect of ICSU (right), welcoming the participants of the World Weather Open Science Conference in Montréal, Canada.

Highlights from the International Commission within IAMAS

ICACGP (www.icacgp.org)

The highlight was the 13th quadrennial ICACGP symposium. It took place 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/> (cf. fig.).

ICAE (<http://icae.jp>)

The 15th 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)

Commission members published a detailed meeting summary entitled “Decadal climate variability and cross-scale interactions: ICCL expert assessment workshop” (which took place in the previous year) in the Bull. Amer. Meteorol. Soc. (<http://journals.ametsoc.org/doi/abs/10.1175/BAMS-D-13-00201.1>).

ICCP (www.iccp-iamas.org)

A special issue appeared in *Atmospheric Research* containing a preface and 15 research articles (www.sciencedirect.com/science/journal/01698095/142) from presentations of the quadrennial conference in 2012. Two workshops were organized, the 5th International Nucleation Workshop in November in Karlsruhe, Germany, and one on Data Analysis and Cloud Microphysical Measurements in conjunction with the general Cloud Physics Conference of the American Meteorological Society in July in Boston, Mass., USA.

ICDM (<http://icdm.atm.ucdavis.edu>)

Commission members are contributing to and editing a volume in the *IUGG special Publication Series* with *Cambridge University Press* originating from presentations at an international workshop held in 2012 in Kunming, China. The commission made significant input to 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; cf. Fig. 1).

ICMA (www.icma-iamas.org)

Recent workshops organized or co-sponsored by ICMA members include the 5th international HEPPA workshop in May 2014 in Baden-Baden, Germany (www.imk-asf.kit.edu/english/1486.php) and the 13th quadrennial solar-terrestrial physics symposium in October 2014 in Xi'an, China (<http://stp13.csp.escience.cn>).

IO3C (<http://ioc.atmos.illinois.edu>)

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). A press release on the state of the ozone layer was issued (<http://ioc.atmos.illinois.edu/press/IO3C%20Press%20Release%20-%202014.pdf>) in September.

ICPAE (<http://icpae.physics.ox.ac.uk/Welcome.html>)

The commission 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)

The commission 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) and it was much involved in organizing the 9th workshop on Antarctic Meteorological Observations, Modeling & Forecasting in June in Charleston, South Carolina, USA (<http://amrc.ssec.wisc.edu/meetings/meeting2014/>).

IRC (www.irc-iamas.org)

Commission members contributed to the formulation of the *Statement of Radiation Management for Climate Engineering* (http://www.irc-iamas.org/files/IRC_Statement_Climate_Engineering.pdf).

IAMAS liaisons to other organizations

SCOR: Athena Coustenis attended the 32th General Meeting in September at the University of Bremen, Germany.

WMO: Hans Volkert visited the WMO-Secretariat in Geneva in April and November and contributed to the preparation of WWOSC and the wrapping-up of the THORPEX initiative, respectively. More information about both liaising activities can be found in the detailed reports to IUGG.

FUTURE ACTIVITIES

All commissions are engaged in the planning of symposia at the 26th IUGG General Assembly in summer 2015 in Prague, Czech Republic (<http://www.iugg2015prague.com/scientific-program.htm>). At this occasion, the Bureau for the period 2015-2019 will be elected. The following IAMAS assembly will be held jointly with IAGA and IAPSO in August 2015 in Cape Town, South Africa.

Submitted by
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