



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

## **The IUGG Electronic Journal**

**Volume 19 No. 2 (1 February 2019)**

This monthly newsletter is intended to keep IUGG Members and individual scientists informed about the activities of the Union, its Associations and interdisciplinary bodies and about the actions of the IUGG Secretariat, Bureau, and Executive Committee. Past issues are posted on the IUGG website (<http://www.iugg.org/publications/ejournals/>). E-Journals may be forwarded to those who will benefit from the information. Your comments are welcome.

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### **1. Invitations to host the 28th IUGG General Assembly in 2023**

By the deadline of 8 January 2019, five invitations were received to host the 28th General Assembly of IUGG in 2023 (IUGG2023), in *Athens* (Greece), *Berlin* (Germany), *Geneva* (Switzerland), *Guadalajara* (Mexico), and *Izmir* (Turkey). The bids were sent to the members of the IUGG Site Comparison Committee: Eduard Petrovsky, Chair (Czech Republic), Xiao Cunde (China), Laura Gallardo Klenner (Chile), Stefania Sparnocchia (Italy), and Alik Ismail-Zadeh (Germany/Russia, ex-officio). The Committee was asked to evaluate the invitations received against the criteria published (<http://www.iugg.org/assemblies/>). Based on the evaluation of the written invitations as well as possible visits to the proposed venues of the general assembly, a report will be prepared and presented at the Council meeting to be held at the 27<sup>th</sup> General Assembly of IUGG in Montréal, Canada in 2019, to assist the Council in its voting on the venue for the IUGG2023. In addition, the Site Comparison Committee will hold a hearing of all bids on 12 July 2019 in Montréal, Canada, which will be open to Council Delegates. Based on the hearing of the bids and comments from Council Delegates, the Site Comparison Committee will prepare a short list containing two candidate cities and deliver the shortlist to the IUGG President as Chair of the Council. The shortlisted bids will be presented at the last session of the Council meeting on 16 July 2019, when the host city will be decided by Council vote.

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## 2. Abstract deadline for the 27th IUGG General Assembly in Montréal, Canada

The deadline for submission of abstracts of the papers to be presented at the XXVII IUGG General Assembly in Montréal, Canada 9-17 July 2019 is **18 February 2019**. Other important deadlines are:

- **Monday, 18 February 2019**, due date for travel grant application;
- **Saturday, 30 March 2019**, due date for the notification of paper acceptance and decisions on grant application; and
- **Friday, 5 April 2019**, due date for early bird registration.

Please read carefully the abstract submission guidelines before submitting your abstract at: <http://www.iugg2019montreal.com/abstract-submission.html>. For all abstract submission and registration details, and the scientific program outline, go to: <http://www.iugg2019montreal.com>.

The 27th IUGG General Assembly will be held at the Palais des Congrès in Montréal. This is a special opportunity for participants from Canada and around the world to come together and share their science and culture. 2019 marks the 100th anniversary of IUGG; we will look back on the accomplishments of the previous century of Earth and space science research, and forward to the next century of scientific advancement. The scientific program includes nine Union Lectures (<http://iugg2019montreal.com/union-lecturers.html>) and a wide variety of Union, inter-Association, and Association symposia (<http://iugg2019montreal.com/iugg-program.html>).

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## 3. New Honorary Members (Fellows) of IUGG announced

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 (IUGG By-Law 22). Based on the IUGG Fellows Selection Committee recommendation, on 10 January 2019, the IUGG Bureau announced seven elected Union Fellows:

- **Anny Cazenave** (France) for invaluable research and tireless contributions to the science of understanding the Earth system evolution, including mean sea level variations;
- **Sierd Cloetingh** (The Netherlands) for his outstanding contributions to the study of lithosphere dynamics and tectonics, and his active promotion of international science cooperation in Earth and space sciences;
- **Shuanggen Jin** (China) for his contribution to satellite navigation and space geodesy and his active promotion of international cooperation in Earth and space sciences;
- **Barbara Romanowicz** (France/USA) for her seminal contribution in seismological studies from crust to inner core, including obtaining robust 3-D models of inelasticity on a global scale, locating the origin of the Earth's hum and launching GEOSCOPE, the first global broadband seismological network;
- **Soroosh Sorooshian** (USA) for his exceptional contributions and international cooperation leadership in hydrologic sciences from basic to applied research and to operational use worldwide;
- **Philip Woodworth** (UK) for his significant advancement of sea-level science and outstanding contributions to international scientific cooperation, and especially his leadership of the Permanent Service for Mean Sea Level (PSMSL)
- **Jun Xia** (China) for his outstanding contributions to hydrological science including the basis for sustainable water utilization by developing a nonlinear time-variant system approach, and

international cooperation for sustainable water management as an engine for social and economic sustainable growth.

A certificate of IUGG Fellowship, Silver Medal, and IUGG Fellow pin will be presented to the elected Fellows by the IUGG President at the Award Ceremony of the XXVII IUGG General Assembly on 13 July 2019 in Montréal, Canada.

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#### **4. Report on the 2018 International EMSEV Meeting**

The 2018 biennial International Workshop organized by the IUGG EMSEV Inter-Association Working Group on Electromagnetic Studies of Earthquakes and Volcanoes (<http://emsev-iugg.org/>) was held in Potenza, Italy, from September 17 to 21 (<http://web.unibas.it/emsev2018/>). This workshop was supported by IAGA, IAVCEI and IASPEI, and was hosted by the University of Basilicata and the Institute of Methodologies for Environmental Analysis of the Italian National Research Council with the strong support of the National Institute of Geophysics and Volcanology. Professor Valerio Tramutoli in association with Professor Nicola Pergola efficiently organized the four-day meeting with the local organizing committee. The meeting took place at Theatre Francesco Stabile and the National Museum of Archeology “D. Adamesteanu” reminding us that our scientific studies are not only achieved for the emergence of new scientific findings on Natural Hazards, but also and surely for the benefits of the inhabitants of our planet.

The workshop primarily focused on the observation and understanding of various kinds of electromagnetic phenomena associated with earthquakes and volcanic eruptions, particularly from a multidisciplinary point of view. This meeting was also the first opportunity to discuss the preliminary observations from the new Chinese micro-satellite Zhangheng 1 (also called CSES-1), which was put into a solar polar orbit above the Earth in February 2018. It was the first step in the new cooperation built between the Institute of Crustal Dynamics and the Chinese Earthquake Administration with EMSEV and validated by a Memorandum of Agreement signed on May 12, 2018 during the 10<sup>th</sup> anniversary of the 2008 M8.0 Sichuan earthquake (<http://www.4thicce.com/>).

In this frame, the EMSEV workshop began with sessions related to the Zhangheng 1 mission. Then, several themes were successively developed and discussed: (1) Electromagnetic methods for seismicity and volcano monitoring, (2) Theoretical and laboratory studies for understanding seismic and volcanic phenomena, (3) Satellite observations for volcanic and seismic hazard assessment and monitoring, (4) Earthquake and volcano related phenomena investigation by multi-disciplinary and multi-parametric approaches, (5) Magnetospheric, ionospheric and atmospheric phenomena associated with seismic activities, and (6) Electromagnetic signals associated with earthquakes and volcanic eruptions.

More than 110 participants from 25 different countries coming from four continents attended the meeting and presented their most up-to-date results in oral presentations and with posters. Each session was highlighted by one or two invited talks showing some advanced results in the domain. Each poster benefited from a two-minute oral presentation during plenary sessions. Posters were displayed during the meeting in the room where people had their break between sessions thereby favoring regular interactions and networking. After the initiation of the best poster award at EMSEV 2016 in Lanzhou (China), we made the award to the young student and researcher Roberto Colonna for his work on the “Development and assessment of a robust GPS-TEC data analysis (RSTTEC) for the identification of ionospheric perturbations possibly related to impending earthquakes: The case of L’Aquila (April 6th, 2009, Mw=6.1) earthquake”.

*Participants of the EMSEV meeting (courtesy: J. Zlotnicki)*

The presentations during the meeting clearly show the progress in the observation of reliable electromagnetic signals related to earthquakes and volcanic activity during the seventeen years of EMSEV's existence. Individual teams have regrouped in larger consortiums, most often at the international scale. The topic favors multi-disciplinary approaches investigating the physical mechanisms generating earthquakes and volcanic eruptions. During recent years, satellite observations based on dedicated satellite missions/sensors have vastly improved the capability of detecting signals emitted by active faults and volcanoes or generated in the ionosphere. However, they are not still able to replace ground observations which can be more accurately performed with continuous records operated by multi-parameter higher resolution devices. Both satellite and ground observations have to be managed together in high potential hazard zones in order to refine the physical mechanisms involved prior to earthquakes and volcanic eruptions. EMSEV promotes activities on volcanoes (Taal in the Philippines) and on active faults (Kyrgyzstan). Each activity involves powerful consortia for joint observations. In the Philippines, EMSEV and Japanese teams have educated young Filipino researchers. After 14 years of cooperation, the Philippines Institute of Volcanology and Seismology (<https://www.phivolcs.dost.gov.ph/>) should be able to lead research and monitoring of Taal and EMSEV should reduce its activity there. About 8 joint papers have been published. In Kyrgyzstan, joint efforts involve researchers from Kyrgyzstan, Russia, Japan, France, Greece, and China. The identification of signals related to the transient disturbances of the ionosphere that might be associated with earthquakes is the target of this cooperative effort. More information on EMSEV activities can be found at <http://www.emsev-iugg.org/emsev/>.

J. Zlotnicki, M.J.S. Johnston, T. Nagao, V. Tramutoli and N. Pergola, EMSEV leadership

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## **5. Report on the International Symposium on Asteroids and Comets Gravity and Interiors (SAGI 2018)**

Asteroids and comets are leftovers from the formation of our solar system about 4.6 billion years ago. Shattered remnants of accreted planetesimals, or even made of never heated pristine materials, contain important clues about the early our solar system and the origin of water and life on Earth. The topic “asteroids and comets gravity and interiors” is among the important topics in deep space exploration. The Rosetta spacecraft built by the European Space Agency (ESA) finished its mission in 2016. The OSIRIS-REx mission operated by the National Aeronautics and Space Administration (NASA) was launched in 2016 to study the asteroid 101955 Bennu, a carbonaceous asteroid, and return a sample to Earth in 2023. The Japan Aerospace Exploration Agency (JAXA) launched the Hayabusa2 mission in 2014, which reached near-Earth asteroid 162173 Ryugu in 2018 and will also return a sample to Earth in 2020. A Chinese asteroid mission has also been put on the agenda, and several targets have been preliminarily selected.

*SAGI 2018 participants (photo: S. Jin)*

The first International Symposium on Asteroids and Comets Gravity and Interiors (SAGI 2018) was held on December 17-19, 2018, Wuhan, China and co-sponsored by the IUGG Union Commission on Planetary Sciences (UCPS), International Association of Planetary Science (IAPS), Wuhan University, and China University of Geoscience at Wuhan. The topics were focused on precision orbit determination of the solar system asteroid probes, asteroid orbit determination (ephemeris), asteroid gravity field, internal structures and geological evolution. About 120 participants attended SAGI 2018 with two-day of oral presentations. SAGI 2018 provided a very good platform for communication and discussion on the gravity and interiors of asteroids and comets.

Shuanggen Jin, SAGI 2018 Co-Chair

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## **6. News from the International Science Council (ISC)**

### ***Report on the 31<sup>th</sup> General Assembly of CODATA***

CODATA is the Committee on Data of the International Science Council (ISC). The CODATA General Assembly (GA) was held at the University of Botswana in Gaborone, Botswana, on 9-10 November 2018. Delegates from 17 National Member countries (Australia, Botswana, Canada, China, Finland, India, Israel, Japan, Kenya, Korea, Mongolia, Netherlands, Russia, South Africa, China, UK, USA), eight Unions of the International Science Council (ISC) including IUGG, and co-opted members (WDS, ICSTI, RDA, WCCF) attended the GA, with altogether more than 25 participants and observers. The first day of the GA began with the reporting session. The CODATA Executive Director Simon Hodson reported on the past activities of the organization. Among new activities for the last two years the Data Integration Initiative and the African Open Science Platform were highlighted, and among continuing activities the report mentioned successful summer schools for young scientists and the Data Science Journal that was launched several years ago. The financial report was presented by Treasurer John Broom followed by the report from President Geoffrey Boulton on the CODATA Strategic Plan.

The first session was continued by the discussion on national membership activities and priorities, which was led by Bonnie Carroll, Executive Committee Member. The second part of the day was devoted to the revised CODATA constitution. The revised Constitution retains largely the same structure as the previous one, but it has been updated throughout. The Executive Committee had attempted to simplify and normalize the language and the new version of the document was distributed among CODATA Members in advance. More substantively, adjustments have been made to membership categories and to specific governance timescales to allow CODATA to function more effectively and efficiently. Proposed amendments by the International Union of Crystallography (IUCr) and the US National Committee were intensively discussed. Among the principal issues was the membership of the Unions. The importance of the engagement of ISC members was highlighted by all the GA members. It was concluded that Unions are free from membership dues to CODATA but will not vote on financial matters. In addition to that, the suggestion from the US National Committee to increase the number of Executive Members from 8 to 10 people was also endorsed. The revised Constitution will be posted shortly.

On 10 November, the second day of the GA, the elections of the new CODATA officers took place. Barend Mons (The Netherlands) was elected President. Alena Rybkina (Russia, nominated by IUGG), and Jianhui Li (China) were elected Vice Presidents. The Executive Committee Members elected were: Toshihiro Ashino (Japan), Ernie Boyko (Canada), Simon Cox (Australia), Richard Hartshorn (New Zealand), Daisy Selemetsala (South Africa), Joseph Wafula (Kenya), Tyng-Ruey Chuang (Taipei), and Virginia Murray (UK). GA endorsed the following Task Groups: (1) Advanced mathematical tools for data-driven applied systems; (2) Applying Data Integration and Data Science Tools toward Research of Urban Life and Smart Cities; (3) Digital Representation of Units of Measure (DRUM); (4) Improving Data Access and Reusability (IDAR-TG); (5) Agriculture Data, Knowledge for Learning and Innovation; (6) CODATA–WDS TG on Citizen Science for the SDGs – Aligning Citizen Science outcomes to the United Nations Sustainable Development Goals; (7) Linked Open Data for Global Disaster Risk Research (LODGD); (8). Preservation of and Access to Scientific and Technical Data in/for/with Developing Countries (PASTD)

Alena Rybkina, IUGG Liaison (alternate) to CODATA

## 7. Awards and Honors

IUGG Fellow *Anny Cazenave* was a joint winner of the 2019 BBVA Foundation Frontiers of Knowledge Award in the Climate Change.

IUGG Fellow *Sierd Cloetingh* was elected honorary Fellow of the Royal Astronomical Society.

Nature journal selected *Valérie Masson-Delmotte* (IACS Executive Committee Member and co-Chair of the IPCC WG1) as one of ten people who mattered in the year 2018.

*Catherine Johnson* (Canada) has been awarded the 2019 Shen Kuo Award for Interdisciplinary Achievements of the International Association of Geomagnetism and Aeronomy (IAGA) of IUGG, *Martin Berg* (Norway) has been awarded the 2019 IAGA Long Service Medal, and *Tomasz Gonet* (UK), *Deepak Kumar Karan* (India), *Evgenii Shirokov* (Russia), and *Kseniia Tlatova* (Russia) are the recipients of the 2019 IAGA Young Scientist Awards.

Congratulations to all!

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## 8. Meeting calendar

A calendar of meetings of interest to IUGG disciplines (especially those organized by IUGG Associations) is posted on the IUGG website (<http://www.iugg.org/calendar.php>). Individual Associations may list more meetings on their websites according to their disciplines.

### February

- 11-15, AGU, Pasadena CA, USA, Chapman Conference on Scientific Challenges Pertaining to Space Weather Forecasting Including Extremes. Web: <https://connect.agu.org/aguchapmanconference/upcoming-chapmans/space-weather-forecasting>

### March

- 9-15, URSI, New Delhi, India, 2019 URSI Asia-Pacific Radio Science Conference. Web: <http://aprasc2019.com/>
- 11-13, IAHS, WMO, New York City NY, USA, MOXXI 2019. Measurements and Observations in the 21<sup>st</sup> Century. Web: <https://iahs.info/Commissions--W-Groups/Working-Groups/MOXXI/Information/MOXXI-2019.do>

### April

- 2-4, GEO, Amsterdam, The Netherlands, Geospatial World Forum. Web: <https://geospatialworldforum.org/>
- 3-7, PAIGH, Washington DC, USA, American Association of Geographers Annual Meeting 2019. Web: <https://annualmeeting.aag.org/AAGAnnualMeeting/Home.aspx?hkey=9c5fc57b-feba-472d-9918-f23136815c1b&WebsiteKey=5c824785-24cf-4da2-80b9-d257a3acc8af>
- 4-5, IAMAS, Cambridge, United Kingdom, 1st QUIESCENT (Quantifying the Indirect Effect: from Sources to Climate Effects of Natural and Transported aerosol in the Arctic) Workshop. Web: <https://sites.google.com/view/quiescent-arctic/workshops/1st-quiescent-workshop>

- 7-12, EGU, Vienna, Austria, European Geosciences Union General Assembly 2019. Web: <https://www.egu2019.eu/>
  - 18-20, IUGG, Mandi, India, C2E2 Himalaya 2019. International Workshop on Climate Change and Extreme Events in the Himalayan Region. Web: <http://www.c2e2himalaya.iitmandi.ac.in/>
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*IUGG Electronic Journal Volume 19 Number 1 (1 February 2019)*

Editors: Tom Beer, Alik Ismail-Zadeh (Editor-in-Chief), Franz Kuglitsch (Associate Editor), and Kathryn Whaler.

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