



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

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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. IUGG's Centennial Anniversary – historical note III

The general assemblies (GAs) of the IUGG in Lisbon (1933), Edinburgh (1936), and Washington, D.C. (1939) are overviewed in this historical note.

Fifth General Assembly (17-24 September 1933, Lisbon, Portugal)

At the Fifth General Assembly, the term “section” introduced at the founding assembly of IUGG in 1919 was replaced by “international association”, and the associations become semi-autonomous, each responsible for specific scientific topics. Due to the great economic depression during the 1930s, the number of attendees decreased considerably compared to the GA in Stockholm in 1930; the membership dues for the coming three years were reduced by one quarter, and provision was made for further reduction in exceptional cases even though this reduction shrank scientific activities of the Union Associations. Despite the world economic perturbation and the onset of political unrest and military disturbance, the Second International Polar Year (IPY) was conducted in 1932-1933. Magnetic, auroral and meteorological data were collected from stations located in the Arctic and Antarctic and were used to study the phenomena associated with terrestrial magnetism and weather forecasting. Some time was dedicated at the GA to discussing these data (IUGG, 1933; SIPY, 1933).

This was the last GA to be held under the presidency of Charles Lallemand (France). William Bowie (USA) was elected President of the Union.



Participants at the Fifth General Assembly (modified after Ismail-Zadeh and Joselyn, 2019)



Participants at the Sixth General Assembly (Ismail-Zadeh and Joselyn, 2019)

Sixth General Assembly (17-25 September 1936, Edinburgh, UK)

Delegates from IUGG Member countries and guests from several non-member countries, including Austria, Germany, India, and Russia, attended the VI General Assembly in Edinburgh. At the opening ceremony, the President of the Royal Society, the Lord Provost of Edinburgh, the Principal of the University of Edinburgh, and the President of the Royal Society of Edinburgh welcomed the delegates. The scientific work of the Union that had been conducted by the international associations was presented at scientific sessions. Two evening Union Lectures, delivered by A. L. Day (USA) on

volcanoes, and by Felix A. Vening-Meinesz (The Netherlands) on gravity measurements in submarines, were the first public lectures given at a GA. Social hospitality was accorded to the Union by H.M. Government and the City of Edinburgh. Cooperation between Union Associations was strengthened by setting up a special joint commission of the Associations to study the Earth's crust under the oceans. The International Association of Oceanography adopted a resolution urging more effective collection of meteorological data over the oceans. Dan la Cour (Denmark) was elected IUGG President, serving the Union until his death in 1942. The dues for membership to the Union continued at the same level as for the period 1933-1936 (about 160 to 800 British pounds per annum according to the national population), and a substantial part of the Union's funds were divided among the seven Associations as before (IUGG, 1936).

Seventh General Assembly (4 – 15 September 1939, Washington, D.C., USA)

The Seventh General Assembly was overshadowed by the beginning of WWII. Out of 35 countries adhering to IUGG, representatives of just 20 were present; scientists of several non-member states participated in the scientific part of the GA. Meanwhile, a record number of delegates (805 including 225 non-US scientists) attended the General Assembly. The US National Research Council hosted the Assembly, the first in North America, and the American Geophysical Union (AGU) performed the duties of the organizing committee. The Honorable Cordell Hull, US Secretary of State, sent a welcoming address (IUGG, 1939; Fleming, 1940).

Preceding the Assembly, normal communication between Member countries had become impossible. By the end of August, President D. la Cour and Secretary General H. St. J. L. Winterbotham, after consulting the US Local Organizing Committee (President R. M. Field and Secretary J. A. Fleming), cabled to all Adhering Organizations that the GA would be held, but that the IUGG Executive Committee agreed that its activities would be confined to scientific matters only. It was expected that many delegates would be absent from the GA due to the war and, in fact, the whole French delegation and many of the British delegates, including Secretary General Winterbotham, were recalled back to their countries. Several business items from the original agenda were excluded, such as discussion of administrative matters, proposed amendments of the statutes, and the election of new officers and executive committees for the Union and its seven Associations. The existing officers continued their terms as an emergency measure. William Bowie, former President of the Union, was chosen as Acting Secretary General. The GA agreed to continue the financial management of the Union and scientific programs, so far as available funds allowed. Fortunately, IUGG (and some of the Associations) had accumulated reserves, and it was hoped that the work of the Union and its Associations could be continued until peace was restored (Fleming, 1940).

The absence of administrative business enabled all of the time of the Assembly to be devoted to scientific discussion, including joint meetings among Union Associations. Scientific meetings of the GA were held in the buildings of George Washington University. There were two public lectures: "Geodesy and Mapping in the British Empire" by H. St. J. L. Winterbotham. and "From the Mexican Gulf to the Arctic Sea: the Gulf Stream and its Significance" by Bjørn Helland-Hansen (Norway); 490 papers were presented during the GA (Fleming, 1940). It was agreed that the scientific discussions had been most useful and successful, and that the GA had been as valuable as it was harmonious. There were 19 resolutions adopted by the General Assembly, to be brought to the attention of governments and institutions (IUGG Archive, 1939).

Despite the declaration of war and the fact that some delegates had to leave the GA, a good deal of scientific work was done before the closure. At the GA's closing ceremony, IUGG President la Cour said: "Now it is a reality that the Washington General Assembly of the International Union of Geodesy and Geophysics has been held and that it has been an extremely important meeting, furthering our science and showing to the world a battlefield where only victory can be recorded

because even the overthrow of a theory is a victory for truth. Words are not sufficient to express our gratitude towards our hosts. I beg them to believe that we will carry away from here and forever the memory of a very happy period in our life, despite the war clouds that have gathered around us” (Fleming, 1940). At the close of the GA, the US President Franklin D. Roosevelt received the Union’s officers and the Association presidents (Chapman, 1939; Fleming, 1940).



Participants at the Seventh General Assembly (Ismail-Zadeh and Joselyn, 2019)

During WWII, normal communication between IUGG Member countries became difficult or impossible. Although major activities of the union and subscriptions were suspended, the IUGG continued to allocate grants to support work that could be done by the Union Associations and other organizations to which it had access, and published some works during the early years of the war (IUGG, 1946). One of the problems that affected IUGG was to safeguard the Union archives. For example, at the outbreak of war, the University of Strasbourg, France, where the IASPEI Secretariat was located, was evacuated to Clermont-Ferrand, France, taking the IASPEI’s library and records along with other documents. Some of this material was deposited in a chateau in the Jura mountains, but was discovered by Germans troops and taken to Jena, Germany. Another loss was that many scientists active in IUGG before WWII found that they no longer had time for it because of their efforts to help the post-war recovery of their national economies and sciences (Greenaway, 1996). (This note has been reproduced from Ismail-Zadeh and Joselyn (2019) with some modification.)

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2. Annual Report 2018

The IUGG Annual Report provides a summary of the activities of the Union including its Associations, Union Commissions and Programs. IUGG thanks everyone who contributed to the report available now at <http://www.iugg.org/publications/reports/report2018.pdf>. We invite you to download this impressive summary of last year's activities.

3. Honorary Members (Fellows) conferred by the IUGG Bureau

Honorary Membership (Fellowship) of the International Union of Geodesy and Geophysics 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. The IUGG Bureau confers IUGG Fellowship on Executive Committee and Finance Committee members and Association Secretaries General upon retirement from their office.

The IUGG Bureau decided to confer Honorary Membership on the following individuals in 2019:

Nasser Abou-Assour (IUGG Finance Committee, 2016-2019, Egypt)
Isabelle Ansoorge (IUGG Bureau Member, 2011-2019, South Africa)
Tom Beer (IUGG President, 2007-2011, Australia)
Ray Cas (IAVCEI President, 2011-2015, Australia)
Athena Coustenis (IAMAS President, 2011-2015, France)
Donald Dingwell (IAVCEI President, 2015-2019, Germany/Canada)
Hermann Drewes (IAG Secretary General, 2007-2019, Germany)
Charles Fierz (IACS President, 2013-2017, Switzerland)
Domenico Giardini (IASPEI President, 2011-2015, Switzerland)
Harsh Gupta (IUGG President, 2011-2015, India)
Zoltan Hajnal (IUGG Finance Committee, 2011-2015, Canada)
Pierre Hubert (IUGG Bureau Member, 2011-2019, France)
Alik Ismail-Zadeh (IUGG Secretary General, 2007-2019, Germany/Russia)
Jan Krynsky (IUGG Finance Committee, 2007-2019, Poland)
Thorne Lay (IASPEI President, 2015-2019, United States of America)
Andrew Mackintosh (IACS SG Secretary General, 2011-2019, Australia)
Joan Marti (IAVCEI Secretary General, 2007-2015, Spain)
Eugene Morozov (IAPSO President, 2011-2015, Russia)
Teruyuki Nakajima (IAMAS Secretary General, 2015-2019, Japan)
David Rhoades (IUGG Finance Committee, 2011-2015, New Zealand)
Johan Rodhe (IAPSO Secretary General, 2007-2015, Sweden)
Kenji Satake (IUGG Bureau Member, 2011-2015, Japan)
Hubert Savenije (IAHS President, 2013-2017, The Netherlands)
Denise Smythe-Wright (IAPSO President, 2015-2019, United Kingdom)
Peter Suhadolc (IASPEI Secretary General, 2007-2015, Italy)
John Turner (IAMAS President, 2015-2019, United Kingdom)
Hans Volkert (IAMAS Secretary General, 2007-2015, Germany)

The IUGG Bureau congratulates new Fellows!

4. News from the International Science Council

Science and Policy Forum at the United Nations Global Platform for Disaster Risk Reduction

The Science and Policy Forum was held at the United Nations Office in Geneva, Switzerland, 13-14 May 2019 and attracted 400 participants to discuss advances in science that support the implementation of the Sendai Framework and to identify critical knowledge needs on an integrated approach to disaster risk reduction (DRR). The Forum was organized by the International Science Council (ISC), the United Nations Office on Disaster Risk Reduction (UNDRR), and the Integrated Research on Disaster Risk (IRDR) programme as a side event of the United Nations Global Platform for DRR (GP2019).

The Forum launched a UNDRR-ISC facilitated technical working group on hazards terminology to develop a common definition and language across the full scope of hazards covered by the Sendai framework. The panel on hazards terminology highlighted the need to put more emphasis on the study of how different types of hazards are interlinked, and may cascade across sectors, time and geographical scales. The Sendai framework focuses on understanding risks which require engagement with local communities that face risks and need to cope with them.



Panel discussion. From left: chair Alik Ismail-Zadeh (Karlsruhe Institute of Technology, Germany); Ravi Sinha (Indian Institute of Technology Bombay, India), Markus Reichstein (Max-Planck Institute for Biogeochemistry Jena, Germany); Noboru Takamura (Fukushima University, Japan); Wenjian Zhang (World Meteorological Organization); Virginia Murray (Public Health England, UK); John Handmer (University of Melbourne, Australia); and Jonathan Abrahams (World Health Organization) (photo: Irasema Alcántara-Ayala)

Addressing the challenges around the lack of data, big data, data quality, use and interoperability are critical to enhance capacities for the use of data meaningfully and for better understanding and managing risks. Major advances in the use of technology for disaster management and major potentials for future deployments were discussed at the Forum; particularly, the use of drones in disaster situations helps to assess damage, guide first responders, deliver equipment, medicine, etc. It was mentioned that there is a need for international cooperation and regulations for disruptive technologies, and systems-wide resilience to address technological hazards. Strengthening resilience and achieving DRR requires collaboration among and between science, policy-makers, and society to meet short term information needs to anticipate and mitigate long-term impacts.

Scientific contribution to DRR was recognized in the Summary Report of co-Chairs of the GP2019: “An interconnected approach is required to address systemic risks supported by multi-hazard and multidisciplinary risk assessment. The Global Risk Assessment Framework will facilitate this approach. Experts from science, the United Nations, and the private sector launched a new technical working group to develop a definitions’ list for the Sendai Framework hazards. These, among others, will contribute to enhancing understanding of the new dimensions of disaster risk. Such efforts will increase our understanding of risk, inform decision-making, and transform behaviour.”

The High-Level Dialogue at GP2019

Progress made in implementing the Sendai Framework was a topic of the High-level dialogue at GP2019. Moderator *Beatrice Marshall*, Kenyan news anchor, opened the dialogue introducing the purpose of the session. In a keynote speech, *Malini Mehra*, Chief Executive of GLOBE International, outlined statistics on the increasing number of disasters, which have caused the displacement of some 265 million people since 2008, more than three times as many as those caused by conflicts. She called for society to address not only natural hazards but also the man-made risks of technologies such as artificial intelligence and geoen지니어ing. *Kirsi Madi*, Director of UNDRR, further commented on the impacts of disasters in displacing people and costing USD 500 billion to economies worldwide.

Ulziisaikhan Enkhuvshin, Deputy Prime Minister, Mongolia, summarized his regional platform’s emphasis on resilient infrastructure and risk-informed development. *Feliks Tsolakyan*, Minister of Emergency Situations, Armenia, highlighted the relevance of reducing risk to promote further infrastructure development. *Edoardo Rixi*, Minister of Transport and Infrastructure, Italy, announced the establishment of a regional coalition to discuss safety of infrastructure and emerging risks such as threats to cybersecurity. Ambassador *Walid Doudech*, Tunisia, highlighted two regional ministerial declarations and the focus on dedicated funding to advance implementation of the Sendai Framework. *Eduardo José González Angulo*, Director-General, National Unit for Disaster Risk Management, Colombia, highlighted work in his country and region on financial protection and the reduction of financial vulnerability in the face of disaster. *Alik Ismail-Zadeh*, Secretary of the International Science Council, talked about the need for collaboration across science, policymakers and society for success in DRR.



Alik Ismail-Zadeh speaks at the High-Level Dialogue of the GP2019 (photos: Irasema Alcántara-Ayala)

Source: ISC and UNDRR website

5. Report on the School of Atmospheric Measurements in Latin America and the Caribbean (SAMLAC-2018)

The atmosphere is the integrator of the Earth system. Human emissions of pollutants and long-lived greenhouse gases into the atmosphere have caused dramatic transformations of the planet, altering air quality, climate and nutrient flows in every ecosystem. Understanding the global atmosphere requires an international network of scientists providing intellectual leadership in areas of atmospheric chemistry that need to be addressed and promoted, and would benefit from research across disciplines and geographical boundaries. Acknowledgement of this need led to the formation of the International Global Atmospheric Chemistry (IGAC) project in 1990, which is co-sponsored by Future Earth (<http://www.futureearth.org>) and the International Commission on Atmospheric Chemistry and Global Pollution (<http://www.icacgp.org>), a commission of the International Association of Meteorology and Atmospheric Sciences of IUGG.

The SAMLAC-2018 school was held in San Juan, Puerto Rico, 12-17 November 2018 and was the third in a series of IGAC Americas Working Group (AWG) training courses. Sixty seven participants represented 21 countries. The goals of this school were to (i) improve regional capacity and stimulate the development of aerosol and reactive gases monitoring programs (regional and national) that can contribute with their data to regional and international projects and networks; (ii) foster the building of a community of atmospheric scientists in the Latin America and the Caribbean (LAC) region in order to provide expertise on topics related to atmospheric composition and its relation to anthropogenic emissions and natural variability to government agencies and international research; (iii) educate early career scientists from the LAC region on global and regional aspects of atmospheric composition change and atmospheric composition monitoring; and (iv) promote best practices of open data sharing and open access publication within the LAC region.



SAMLAC-2018 participants at the venue (photo: Nellian Reyes)

The six-day training school included: 17 classes on topics related to atmospheric particles, and reactive gases, 11 short talks on studies and opportunities related to atmospheric particles and reactive gases in the LAC region, a poster session, a session on collaborative proposals, three side meetings, and a field trip to the Cape San Juan Atmospheric Observatory. SAMLAC brought together internationally recognized lecturers and speakers in the field of atmospheric measurements to give the lectures and/or present studies and opportunities in the LAC region. The lecturers and speakers included representatives from many diverse organizations. The plenary lecture “Quantifying the

Health Effects of Air Pollution Globally” was given by Dr. Jason West (University of North Carolina - Chapel Hill, USA). The lectures covered topics such as measurements of reactive gases, quality control of trace gases observations, aerosols mechanical properties and filters, aerosol artifact-free sampling and online mass monitors, and others.

The poster session included 34 presentations from students and participants whose research activities are related to atmospheric measurements in the LAC region. The students’ posters were evaluated and the best three were announced. As part of the collaborative proposals session, there was a discussion on potential funding opportunities in the LAC region. Also, students had the opportunity to discuss their project ideas and interests in the collaborative proposals session. They formed teams and outlined the objectives, methodologies, expected results and broader impacts of collaborative projects, based on the lectures and experiences shared during the previous sessions of the SAMLAC. On the field trip, the participants visited the reconstructed Cape San Juan Atmospheric Observatory (CSJAO) where the Atmospheric Chemistry and Aerosols Research group (ACAR) at the University of Puerto Rico – Rio Piedras performs their research studies. This station was devastated by Hurricane Maria on September 20, 2017, but has already been reconstructed with the help of many sponsors. During this visit, the participants were able to witness the installation of NASA’s PANDORA instrument in the station. They also enjoyed the view of the Cape San Juan nature reserve and heard a short talk about the importance mangroves have on coastal ecosystems. SAMLAC 2018 was a success, and IGAC-AWG intends to continue offering training courses to early career scientists in the LAC regions. The school was co-sponsored by IUGG-IAMAS. More information on the SAMLAC-2018 can be found at: <http://samlac.uprrp.edu>.

Olga L. Mayol-Bracero of the University of Puerto Rico, an organizer of SAMLAC-2018

6. Report on the TROP ICSU Workshop for Teachers in Bhutan



The TROP ICSU (“Trans-disciplinary Research Oriented Pedagogy for Improving Climate Studies and Understanding”) project is funded by the International Science Council (former ICSU), led by the International Union of Biological Sciences (IUBS) and the International Union for Quaternary Research (INQUA), and supported by several other scientific unions and organizations including IUGG and its Associations. More information on the project can be found at: <https://tropicsu.org>.

In the framework of this project, the TROP ICSU Workshop “Climate across the curriculum: Educational resources for teachers” was organized in Thimphu, Bhutan, on 14-15 February 2019. A 2-day workshop for university lecturers and school teachers was conducted in collaboration with the Commission on Education and Outreach, International Association of Seismology and Physics of the Earth’s Interior (IASPEI) of IUGG, and the Center for Disaster Risk Reduction and Community Development Studies (CDRR &CDS), Royal University of Bhutan.

The workshop was attended by 66 school teachers and university lecturers from Bhutan. The participants included a representative from the Young Earth System Scientists (YESS) community, the principal of a school, and the vice-principal of a school. The objective of the workshop was to introduce the participants to digital teaching resources for teaching topics in the Sciences, Mathematics, Social Sciences, Geosciences and Humanities using climate-related examples, case studies, and activities. In addition, participants were invited to review the educational resources of

the TROP ICSU project and to provide their feedback on the appropriateness and ease-of-use of the teaching tools and lesson plans.



Workshop's participants (photos here and below: Raju Sarkar)



Plenary Session



Group Activity

Raju Sarkar, the Workshop's organizer

7. Awards and honors

The International Association of Geodesy (IAG) awards the Levallois Medal in recognition of distinguished service to the IAG and to the science of geodesy in general. The 2019 IAG Levallois Medal is awarded to **Christoph Reigber** (GFZ-Potsdam, Germany). IAG awards also the Guy Bomford Prize to a young scientist, under 40 years of age, for outstanding theoretical and applied contributions to geodetic studies in the recent four-year period. The 2019 IAG Guy Bomford Prize goes to **Michal Šprlák** (University of Newcastle, Callaghan, Australia). The IAG Young Authors Award is to draw attention to important contributions by young scientists in the Journal of Geodesy and to foster excellence in scientific writing. The IAG Young Authors Award 2017 is awarded to **Minghui Xu** (China) and the IAG Young Authors Award 2018 is awarded to **Athina Peidou** (Canada). The IAG awards will be presented at the IAG Opening Session in Montreal, Canada, on Thursday, 11 July, 18:00-20:00.

The IAHS Tison award aims to promote excellence in research by young hydrologists (under age 41). The 2019 IAHS Tison award goes to **Sandra Pool** and **Marc Vis** (both University of Zurich, Switzerland) for their outstanding paper published in *Hydrological Sciences Journal* (doi: 10.1080/02626667.2018.1552002).

The IAVCEI Wager Medal honors a scientist (up to 15 years after PhD acquisition) who has made outstanding contributions to volcanology, particularly in the eight-year period prior to the Award. The 2019 IAVCEI Wager Medal is awarded to **Madeleine Humphreys** (Durham University, UK). The IAVCEI George Walker Award honors early career scientists (up to 7 years after PhD acquisition) (i) in the fields of research encompassed by IAVCEI or (ii) whose achievements in volcanology involved operating in difficult circumstances. The 2019 IAVCEI Walker Prize is awarded to **Fabian Wadsworth** (Durham University, UK) and **Damien Gaudin** (Ludwig-Maximilians University of Munich, Germany).

Congratulations to all awardees!

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.

June

- 1-5, IAHS, Vienna, Austria, Summer School on Runoff Predictions in Ungauged Basins (PUB). Web: http://www.waterresources.at/fileadmin/user_upload/Flyer_Summer_School_PUB_2019_Electronic.pdf
- 10-14, ISPRS, Enschede, Netherlands, ISPRS Geospatial Week 2019. Web: <https://www.gsw2019.org/>
- 24-28, CTBTO, Vienna, Austria, SnT 2019. Science and Technology Conference. Web: <https://www.ctbto.org/SnT2019/>
- 26-28, IAMAS, WCRP, Bangi, Malaysia, 4th ACAM (Atmospheric Composition and Asian Monsoon) Workshop and 3rd ACAM Training School. Web: <http://www.ukm.my/acam/>

July

- 8-18, IUGG, Montreal, Canada, 27th IUGG General Assembly. Web: <http://iugg2019montreal.com/>
- 7-9, UN-GGIM, New York City NY, USA, Ninth Session of the United Nations Committee of Experts on Global Geospatial Information Management. Web: <http://ggim.un.org/meetings/GGIM-committee/9th-Session>
- 19-23, IUGG, ICTP, WCRP, Sao Paulo, Brazil, Advanced School on American Monsoons - Progress and Future Plans. Web: <http://indico.ictp.it/event/8713>
- 15-20, ICA, Tokyo, Japan, 29th International Cartographic Conference and 18th General Assembly. Web: <http://www.icc2019.org/>
- 25-31, INQUA, Dublin, Ireland, 20th Congress of the International Union for Quaternary Research. Web: <http://www.inqua2019.org/>
- 28 - August 2, AOGS, Singapore, 16th Annual Meeting of the Asia Oceania Geosciences Society. Web: <http://www.asiaoceania.org/aogs2019/public.asp?page=home.htm>

- 29, IUGG, UNESCO, Paris, France , Centennial International Cooperation in Earth and Space Sciences/ Web: http://100.iugg.org/events/unesco_program_draft.pdf

August

- 2-6, IPCC, Geneva, Switzerland, 50th Session of IPCC. Web: <https://www.ipcc.ch/calendar/>
- 26-29, AGU, San Diego CA, USA, Chapman Conference on Understanding Carbon Climate Feedbacks. Web: <https://connect.agu.org/aguchapmanconference/upcoming-chapmans/carbon-climate>
- 28-30, IAMAS, Rovereto, Italy, First TEAMx (Multi-scale transport and exchange processes in the atmosphere over mountains – programme and experiment) Workshop. Web: <http://www.teamx-programme.org/first-workshop>

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