



INTERNATIONAL UNION OF GEODESY AND GEOPHYSICS
UNION GEODESIQUE ET GEOPHYSIQUE INTERNATIONALE

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This informal newsletter is intended to keep IUGG Member National Committees informed about the activities of the IUGG Associations, and actions of the IUGG Secretariat. Past issues are posted on the IUGG website (<http://www.iugg.org/publications/ejournals/>). Please forward this message to those who will benefit from the information. Your comments are welcome.

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1. Editorial: Highlights of 2013 & Happy New Year!

The year 2013 was another successful and remarkable year in the history of the International Union of Geodesy and Geophysics (IUGG). The Union was involved in various activities and showed its strength in international cooperation and science promotion. Major activities and events in 2013 are highlighted below.

- Five Scientific Assemblies of IUGG Associations have been organized this summer around the world: (i) DACA-13, a joint assembly of IACS and IAMAS, *Davos, Switzerland*, 8-12 July; (ii) the IAVCEI Scientific Assembly, *Kagoshima, Japan*, 20-24 July; (iii) the joint scientific assembly of IAHS-IAPSO-IASPEI “Knowledge for the Future”, *Gothenburg, Sweden*, 22-26 July; (iv) the IAGA Scientific Assembly, *Merida, Mexico*, 26-31 August; and (v) the IAG Scientific Assembly, *Potsdam, Germany*, 1-6 September. More than 4,000 scientists participated in the assemblies from more than 100 countries.
- New Union awards have been established by the Executive Committee: the *Gold Medal*, *IUGG Fellowship*, and the *Early Career Scientist Award* (see this issue of the E-Journal).
- IUGG co-sponsored (US\$50,000 in total) thirteen scientific meetings worldwide (<http://www.iugg.org/meetings/sponsored.php>) and six science education events (<http://www.iugg.org/publications/reports/education.php>).

- IUGG continued to strengthen the cooperation with International Scientific Unions and interdisciplinary bodies of the International Council for Science (ICSU). IUGG took part in the meeting of ICSU Scientific Unions in Paris, France, in April, and participated in the ICSU *GeoUnions* Steering Committee meetings (www.icsu-geounions.org; April, Paris, France, and November, Antalya, Turkey). IUGG participated in the meeting of the ICSU-ISSC-UNISDR Scientific Committee on Integrated Research on Disaster Risk (IRDR) and co-sponsored activities of the ICSU Scientific Committees on Space Research (COSPAR) and on Solar-Terrestrial Physics (SCOSTEP).
- Together with the *International Mathematical Union* (IMU) and *International Union of Theoretical and Applied Mechanics* (IUTAM), IUGG organized a summer school in Merida, Mexico, in August, and together with the *American Geophysical Union* and IMU a Union session on Mathematics of Planet Earth in San Francisco, USA, in December.
- IUGG cooperated with inter-governmental organizations in promoting scientific knowledge for the benefit of society. Particularly, IUGG participated in the Third Science and Technology Conference of the Comprehensive Nuclear Test-Ban Treaty Organization (CTBTO) in Vienna in June; IUGG together with the World Meteorological Organization (WMO) organized the Second Workshop on Ash Dispersal Forecast and Civil Aviation, Geneva, Switzerland, in November.
- The IUGG Bureau, Executive Committee (EC), Finance Committee (FC), and Science Program Committee (SPC) met in Prague, Czech Republic, from 19 to 24 September to discuss the past activities and determine new directions in development of the Union. Special attention was paid to the preparations for the 2015 IUGG General Assembly
- The inauguration of the IUGG Secretariat took place on 7 June at the GFZ German Research Centre for Geosciences in Potsdam, Germany. IUGG is grateful to GFZ and the German Research Foundation (DFG) for generous support of the IUGG Secretariat.

The IUGG Bureau thanks the Adhering Bodies and National Committees, Union Associations and Commissions as well as all individuals who helped making the year 2013 exciting and productive in strengthening international Earth and space sciences for the benefit of society.

Best wishes to everyone for a happy, healthy, and prosperous year 2014!

2. Yearbook for 2014

The 2014 Yearbook is now electronically available in PDF format at the IUGG web site (<http://www.iugg.org/publications/yearbooks/yearbook2014.pdf>). The IUGG web site maintains the directory of Union and Association officials and the archive of IUGG memberships and General Assemblies. Thanks to all of the National Committees and the Associations for helping to update the information in the IUGG Yearbook! During 2014, updates on addresses and other information in the Yearbook should be sent to the IUGG Secretariat (secretariat@iugg.org) as soon as they are known. Our aim is to update the Yearbook as needed throughout the year. The 2014 Yearbook will be published together with the 2013 Annual Report and sent to the National Members in May 2014.

3. Union membership and financial situation

As of 1 January 2014, IUGG has 70 National Members including 63 countries in paying status. The paying members are placed in categories from 1 to 14 depending on the financial contribution to the Union (the membership dues raises with increasing category number). At present the highest

category used is category 11. The members pay dues according to a number of units assigned to their category (in category 1 the number of units is 1, and in category 11 the number is 35).

According to a decision of the XXII IUGG General Assembly (Boulder, USA, 1995) the price of 1 unit is determined every year using an inflator index obtained from the Bureau of Labor Statistics, US Department of Labor. In 2014, the price of 1 unit will be US\$ 1,875. The 63 paying members represent a total of 283 units, which is equivalent to a total income of US\$ 530,625.

The funds received as dues are the basis for IUGG's operation as a scientific union. They are spent to support (i) international scientific programs, projects and services, (ii) general and scientific assemblies, symposia, workshops, and schools; (iii) travel of students, early career scientists, and scientists from developing countries to attend scientific meetings; (iv) scientific activities of Union Associations and Commissions, (v) the International Lithosphere Program, (vi) the International Council for Science, and (vii) administration and management.

Received from Aksel Hansen, IUGG Treasurer

4. Call for invitations to host the XXVII IUGG General Assembly in 2019

Invitations to host the XXVII IUGG General Assembly in 2019 are now being accepted and must be received by 20 December 2014 (six month before the next General Assembly, consistent with IUGG By-Law 6): http://www.iugg.org/assemblies/invitation_host_GA.pdf. The Guidelines for proposals are posted at http://www.iugg.org/assemblies/Guidelines_IUGG_GAs.pdf or can be received directly from the IUGG Secretariat. All invitations will be evaluated by an impartial committee appointed for that purpose, and a report will be given to the IUGG Council before their final vote. The IUGG Council, at their 2015 meeting in Prague, Czech Republic, will make the final selection from the invitations that are received.

5. Nominations for the IUGG Bureau and Finance Committee for 2015-2019 are open

The IUGG Council, at its final meeting in Prague, Czech Republic, in 2015, will elect the IUGG Bureau Members for the coming quadrennium (2015-2019). These include the President, Vice-President, Secretary-General, Treasurer, and 3 Members of the Bureau. Also the Council elects at the General Assembly four members of the Finance Committee. On 30 November 2013 IUGG President H. Gupta has announced the appointment of the members of the Nominating Committee for IUGG Bureau and Finance Committee Members for 2015-2019 as follows:

Chair: *Uri Shamir* (Israel)

Members: *Alexei Gvishiani* (Russia), *Paola Rizolli* (USA), *Guoxiong Wu* (China)

The Nominating Committee has the task of collecting the nominations and preparing the ballot, following the rules regarding nominations and elections for these positions (IUGG Statute 11 and By-Law 10). Instructions regarding the procedures to be used to submit nominations will be posted on the IUGG web-site and will be mailed to Adhering Organizations and IUGG / Association officers soon. The first deadline for nominations is 15 September 2014. For further information, contact U. Shamir (shamir@technion.ac.il) or the IUGG Secretariat.

6. Union Honor and Recognition Program

In 2013, based on the proposal of the IUGG Honor and Recognition Committee, the IUGG Executive Committee established the following Union awards: the *Gold Medal*, the *Fellowship*, and the *Early Career Scientist Award* to honor distinguished senior scientists as well as outstanding early-career scientists for their scientific contribution to the field of Earth and space sciences and international research cooperation in geodesy and geophysics.

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 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. Honorary Members are bestowed a certificate of IUGG Fellowship.

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.

All Union awards will be presented at the IUGG General Assembly following the awards announcement. Details of the Union Honor and Recognition program and the Call for Nominations will be announced soon.

7. IUGG grants to support geoscience education meetings in 2014

IUGG awarded six grants (US\$20,000 in total) to support workshops and training schools organized by the Abdus Salam International Centre for Theoretical Physics (ICTP, Trieste, Italy) in 2014 as recommended by the IUGG Committee on Capacity Building and Education and in accordance with the Memorandum of Understanding between IUGG and ICTP signed in 2011. The list of the events co-sponsored by IUGG is as follows:

1. Seventh ICTP Workshop on the Theory and Use of Regional Climate Models, 12 May - 23 May, ICTP
2. Summer School on Attribution and Prediction of Extreme Events, 21 July - 1 August, ICTP
3. School on Solar Variability and Its Impact on Climate, 13 October - 17 October, ICTP
4. Advanced Workshop and School on Megathrust Earthquakes and Tsunamis, 13 October - 25 October, ICTP
5. Workshop on Geophysical Monitoring and Modeling for Sustainable Energy and Geohazard Solutions (Arusha, United Republic of Tanzania), 22 June - 5 July
6. African School on the Impact of the Sun on Ionosphere: Physics and Applications (Kigali, Rwanda), 1 July - 12 July.

Founded in 1964 by the late Nobel Laureate Abdus Salam and co-sponsored by UNESCO, IAEA, and the Italian government, the Abdus Salam International Centre for Theoretical Physics - ICTP (www.ictp.it) seeks to accomplish its mandate by providing scientists from developing countries with the continuing education and skills that they need to enjoy long and productive careers. ICTP has been a major force in stemming the scientific brain drain from the developing world. The impact of ICTP extends well beyond the Centre's facilities to virtually every corner of the Earth.

The Earth System Physics (ESP) Section of ICTP studies a wide spectrum of the Earth system, from its fluid components (oceans and the atmosphere) to the planet's interior. IUGG and ICTP decided to enhance geophysical and geodetic education and science collaboration and signed a Memorandum of Understanding to promote educational programs related to geodesy and geophysics for the next quadrennium (2012-2015). Among other points, the agreement encourages collaboration in the organization of advanced schools/workshops in geodesy and geophysics in ICTP or in economically less developed countries; in the development of diploma courses related to Earth and space sciences; and in the dissemination of information on educational and scientific meetings.

8. Report on the School on Reference system, Crustal Deformation and Ionosphere Monitoring

In the frame of the IUGG Grants Program, the project *Monitoring crustal deformation and the ionosphere by GPS in the Caribbean* was granted for the term 2012-2014. This project is further sponsored by IASPEI, IAG, and IAGA. The main objective of this initiative is to invite the Caribbean countries to participate actively in geodetic and geophysical projects going on in the Central and South American region, in order to enable the use the acquired data for practice and science in their countries, and to promote geosciences. This includes capacity building activities providing the basis for profound education and sustainable development as well as the establishment of international and interdisciplinary contacts to participate in research projects at regional and global scales. According to this, a capacity building event called *School on Reference Systems, Crustal Deformation and Ionosphere Monitoring* was carried out in Panama City from 21 to 23 October 2013. The main topics of the school were:

- Types of coordinates, their definitions, relations and transformations;
- Geodetic reference systems and frames (celestial and terrestrial reference systems and frames, regional reference frames, SIRGAS, vertical reference frames);
- Installation and maintenance of observation instruments (in particular of GNSS), real-time data dissemination (via Internet), and data archiving and management;
- Coordinates determination from GNSS (observation equations, uncertainties in GNSS positioning, controlling errors in GNSS positioning, adjustment of GNSS networks); and
- Crustal deformation observation and modelling (geodynamic processes, plate tectonics, seismic deformation, aseismic crustal deformation, monitoring deformations by GPS).
- Ionosphere modelling and analysis (structure of the atmosphere, models of the ionosphere, observation techniques, analysis of the ionosphere).

The school was attended by 145 participants from 28 countries: Germany, Argentina, Barbados, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Honduras, Jamaica, Mexico, Monserrat (UK), Nicaragua, Panama, Peru, Puerto Rico, Spain, St. Lucía, Suriname, Trinidad and Tobago, Turks and Caicos Islands, Uruguay, USA, and Venezuela. The main results of the school regarding this project are

- The purpose of Dominican Republic, Puerto Rico, Suriname, Trinidad and Tobago, Jamaica, St. Lucia and Turks and Caicos Islands to join the IAG activities developed in the region through SIRGAS (the Geocentric Reference Frame for the Americas, the 1.3b Sub-commission of the IAG). Representatives of these countries started the necessary contacts to be integrated in different working and research groups.
- Trinidad and Tobago and Dominican Republic are interested on hosting a similar school in order to disseminate these topics to those people that were not able to come to Panama.

- Costa Rica, Dominican Republic, Guyana, Nicaragua and Puerto Rico are now integrating their geodetic reference stations into the continental reference frame.
- The objective of Dominican Republic to install a GNSS processing center of high-level.



School on Reference Systems, Crustal Deformation and Ionosphere Monitoring

Instituto Geográfico Nacional Tommy Guardia
Panama City, Panama
October 21 - 23, 2013



Participants of the School (photo: C. Brunini)

This school provided a significant outreach in all related fields of geosciences and practice; especially in those IUGG disciplines covered by IASPEI, IAG, and IAGA. The new knowledge transferred contributes to the sustainable development of geosciences in the region and it is expected that the participants become more engaged in geodetic and geophysical activities. The Caribbean area is underrepresented in IUGG and its Associations, as well as in active participation in Earth science projects. This project enhanced the visibility of IUGG and encouraged the colleagues to raise funds from their governments and private companies to extend the existing observational infrastructure and to support data processing at a high-level. As an immediate task, SIRGAS will support, as far as possible, all requirements of the Caribbean countries related to their integration in international geodetic and geophysical initiatives. These follow-on actions will provide a better coverage of the region in terms of observatories, data delivery, analysis and interpretation. This will have an effect not only on the scientific knowledge but also on the sustainable development in practical applications (navigation, surveying, engineering, etc.).

The resources granted by IUGG were invested to support the travel of some Caribbean colleagues to Panama. However, applicants of travel support were requested to find additional resources to cover a complementary part of the costs (flight ticket, daily expenses or accommodation). In this way, it was guaranteed that attendees were really interested in the school and the so-called *scientific tourism* was avoided. In addition to the IUGG resources, it was possible to get economical support from the IAG and from the *Pan-American Institute of Geography and History* (PAIGH), also for travel grants. The school was hosted by the *Instituto Geográfico Nacional Tommy Guardia* of Panama under the coordination of the *SIRGAS Executive Committee*. All this support is highly appreciated.

Received from Claudio Brunini, SIRGAS President; Laura Sánchez, SIRGAS Vice-president

9. International Council for Science (ICSU): Highlights from 2013

Future Earth moved quickly in 2013 through a series of phases, starting with the Transition Team completing the initial design report, the appointment of the Science Committee and interim director Frans Berkhout, followed later in the year by the interim Engagement Committee. A core team of four staff are currently working in the interim secretariat hosted at the ICSU headquarters in Paris. Future Earth events and workshops proliferated worldwide throughout the year. 2013 was also a busy year for the Global Environmental Change programmes which will be merging into Future Earth.

The ICSU Regional Office for Asia and the Pacific has been active throughout the year in promoting the systems approach that is being advocated by the ICSU Urban Health and Wellbeing programme and facilitating the development of pilot projects, the first of which has successfully secured funding. In September, ICSU co-convened an inaugural international Conference on Intra-Urban Dynamics and health in Paris, which led to a number of new partnerships. Most notably, the Inter-Academy Medical Panel subsequently agreed to be a formal co-sponsor of the programme. In November, it was confirmed that the International Programme Office for the new research programme on Urban Health and Well Being will be hosted at the Institute of Urban Environment (IUE) in Xiamen, China. Recruitment is now underway for an Executive Director.

IRDR continued to develop activities to contribute to its four core projects. The IRDR International Centres of Excellence (ICoE) are being designed to collectively embody an integrated approach to disaster risk reduction. The first International Centre of Excellence was set up in Taipei, and a second one on Vulnerability and Resilience Metrics was established in 2013 at the University of South Carolina, USA. A third, on Community Resilience, is in the advanced stages of planning at Massey University, New Zealand.

Many new members joined the World Data System during 2013. By year end, regular membership stood at 53, with an additional eight network members, two partners and 13 associate members. Particular efforts are being made to broaden the disciplinary make-up of the System. WDS co-hosted an International Forum on 'Polar Data Activities in Global Data Systems' at the National Museum of Nature and Science (NMNS) in Tokyo, Japan on 15-16 October 2013, in collaboration with SCAR and the International Arctic Science Committee.

ICSU hosted a meeting of the Unions in 2013, with a particular focus on how Unions can contribute to global interdisciplinary programmes, and how regionally based networks can best contribute to global activities in the ICSU network. A number of suggestions were made at the meeting and have informed subsequent discussions at CSPR and the Executive Board as to how ICSU might better build on the strengths of the Unions and vice versa. An action plan is now being developed. The ICSU GeoUnions had a busy year, launching their own website and a major publication in conjunction with other partners looking at the benefits of applying Geo-information to disaster management.

Throughout 2013, ICSU contributed to the work of the UN Open Working Group (OWG) in charge of developing a set of Sustainable Development Goals (SDGs) for submission to (2014) and approval by the UN General Assembly (2015). This contribution included 1) the organization of an expert group meeting in NY on Science and the SDGs (March 2013); and 2) written and oral contributions to the sessions of the OWG dedicated to sustained and inclusive economic growth, energy, means of implementation and global partnerships (via Future Earth). Incoming

contributions include cities, disasters and biodiversity. The ICSU Regional Offices also took part in regional consultative meetings on the Sustainable Development Goals led by regional UN organizations.

The Third World Conference on Research Integrity, co-sponsored by ICSU, was held in Montreal in May and attracted over 450 participants from around the world. The Committee on Freedom and Responsibility in the conduct of Science (CFRS) co-organized a session on societal responsibilities and research integrity. The overall conference outcome was a Montreal statement on Research Integrity in Cross-Boundary Research Collaborations.

The Committee on Scientific Planning and Review considered the final report from the expert panel that it had established to review the ICSU Committee on Data for Science and Technology (CODATA). It endorsed the key recommendation that CODATA should work more closely with the ICSU World Data System to provide the international leadership that is required as we move into the era of 'open science'. The CODATA review was the first in a series of reviews that CSPR agreed on for the next few years. This includes review of the regional offices, the first of which – for the African office – was launched in November. In the light of suggestions at the Unions' meeting, CSPR also agreed on a consultation process with Unions to more specifically define shared priorities and mechanisms to address these. One potential such mechanism is the grants programme and a CSPR working group was set up to make a proposal on how this might be revised to stimulate activities at the frontiers between different disciplines. (Source: ICSU webpage)

10. IUGG Conference on Mathematical Geophysics – call for abstracts

The 30th IUGG Conference on Mathematical Geophysics will be held in Merida, Yucatan, Mexico, 2-6 June 2014. The conference aims to draw together key contemporary issues in mathematical geophysics, including solid Earth, ocean, atmosphere, cryosphere, climate observations and data assimilation, modeling of the Earth system and its components, model validation and the quantitative solving of earth science problems. The demonstration of methodological approaches that can be transferred between disciplines are encouraged. Abstract submission will start in the middle of January and will close on 1 March 2014. Funding to support students and early career scientists is expected, and the procedure to apply for travel grants will be announced later on. The Conference website: <http://eventos.iigen.unam.mx/IUGG2014/>, and the scientific program can be found at <http://eventos.iigen.unam.mx/IUGG2014/Scientific.html>.

Received from Yehuda Ben Zion, Chair of the IUGG Committee on Mathematical Geophysics

11. IUGG-related meetings occurring during January – March

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>). Specific information about these meetings can be found there. Individual Associations also list more meetings on their websites according to their disciplines.

January

- 5-15, UNESCO-IOC, Kuwait City, Kuwait, Marine Phytoplankton Course. Web: http://ioc-unesco.org/index.php?option=com_oe&task=viewEventRecord&eventID=1404

- 12-17, WCRP, Queenstown, New Zealand, SPARC 2014 General Assembly. Web: <http://www.sparc2014.org/>
- 23-24, IAG, Bad Kötzing, Germany, EVN Technical and Operations Group (EVN TOG) Meeting. Web: <http://www.fs.wetzell.de/veranstaltungen/vlbi/tog2014/index.html>
- 27-30, UNESCO-IOC, La Jolla, USA, TPOS 2020: A future Sustained Tropical Pacific Ocean Observing System for Research and Forecasting. Web: http://ioc-unesco.org/index.php?option=com_oe&task=viewEventRecord&eventID=1383

February

- 10-13, WCRP, WMO, College Park, MD, USA, International Conference on Subseasonal to Seasonal Prediction. Web: <http://www.emc.ncep.noaa.gov/gmb/ens/s2s/>
- 11-13, CliC, Frascati, Italy, Permafrost 2014. Web: <http://www.climate-cryosphere.org/meetings/ue-permafrost-2014>
- 24-27, CODATA, San Francisco, USA, 9th International Digital Curation Conference. Web: <http://www.dcc.ac.uk/events/idcc14>
- 24-28, UNESCO-IOC, Tianjin, China, ODINWESTPAC Regional Workshop. Web: http://ioc-unesco.org/index.php?option=com_oe&task=viewEventRecord&eventID=1381
- 24-28, IAHS, UNESCO-IHP, Hanoi, Vietnam, 7th Global FRIEND-Water Conference| Web: <http://www.unesco.org/new/en/natural-sciences/environment/water/ihp/ihp-programmes/friend/>

March

- 2-7, IAG, IVS, IAU, ICSU, Shanghai, China, 8th IVS General Meeting. Web: <http://ivs2014.csp.escience.cn/dct/page/1>
- 9-14, IACS, Davos, Switzerland, Intercomparison of Snow Grain Size Measurements Workshop. Web: http://www.wsl.ch/dienstleistungen/veranstaltungen/veranstaltungskalender/Snow_Grain/index_EN
- 10-14, Intl Glaciological Society, Hobart, Australia, International Symposium on Sea Ice in a Changing Environment. Web: <http://seaice.acecrc.org.au/igs2014/>
- 17-21, WCRP, Montevideo, Uruguay, WCRP Conference for Latin America and the Caribbean. Web: <http://www.cima.fcen.uba.ar/WCRP/>
- 19-21, ICSU, Berlin, Germany, 2nd Global Land Project Open Science Meeting. Web: <http://www.glp-osm2014.org/>

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Note: Contributions to IUGG E-Journal are welcome from members of the IUGG family. Please send your contributions to Alik Ismail-Zadeh by e-mail (insert in Subject line: *contribution to E-Journal*). The contributions will be reviewed and may be shortened.