



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. CGMW becomes an IUGG Affiliate Member

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.

2. IUGG Fellowship (Honorary Membership): Call for nominations

The Fellowship (Honorary Membership) 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. Submission of nominations for IUGG Fellowship opens on **22 March 2014** and closes on **22 September 2014**. Honorary Members are bestowed an IUGG Fellow Medal, lapel pin, and certificate, which will be presented at the Opening Ceremony of the XXVI IUGG General Assembly in Prague, Czech Republic, June 2015, following the announcement of the awards on 10 January 2015. The IUGG Fellow Selection Committee was appointed by the Union President Harsh Gupta. The Committee consists of the chair and six members:

<i>Chair:</i>	Joyce E. Penner (IAMAS)	USA
<i>Members:</i>	Isabelle Ansorge (IAPSO)	SOUTH AFRICA
	Hugo Delgado Granados (IAVCEI)	MEXICO
	Jan Laštovicka (IAGA)	CZECH REPUBLIC
	Harald Schuh (IAG)	GERMANY
	Konrad Steffen (IACS)	SWITZERLAND
	Kuniyoshi Takeuchi (IAHS)	JAPAN

Details on the IUGG Fellowship, including the procedure for nomination, eligibility criteria, and technical requirements, can be found at the web: <http://www.iugg.org/honors/Fellowship.pdf>

3. IUGG Early Career Scientist Award: Call for nominations

The Early Career Scientist Award (ECSA) of the International Union of Geodesy and Geophysics honors early career scientists for their outstanding research in Earth and space sciences and international research cooperation. Submission of nominations for ECSA opens on **22 March 2014** and closes on **22 June 2014**. The awardees are bestowed an IUGG plaque and certificate, which will be presented at the Opening Ceremony of the XXVI IUGG General Assembly in Prague, Czech Republic, June 2015, following the announcement of the awards on 5 November 2014. IUGG covers travel expenses of the awardees to attend the General Assembly. The awardees will be invited to give a talk at the General Assembly. The IUGG ECSA Committee was appointed by the Union President. The Committee consists of the chair and five members:

<i>Chair</i>	Jenny Baeseman (IACS)	NORWAY
<i>Members:</i>	Salvatore Grimaldi (IAHS)	ITALY
	Thorne Lay (IASPEI)	USA
	Satheesh Shenoi (IAPSO)	INDIA
	Laszlo Szarka (IAGA, ex-officio)	HUNGARY
	John Turner (IAMAS)	UK

Details on the ECSA, including the procedure for nomination, eligibility criteria, and technical requirements, can be found at the web: <http://www.iugg.org/honors/ECSAAward.pdf>

4. Report on the 2nd IUGG-WMO Workshop on Ash Dispersal Forecast and Civil Aviation



The 2nd IUGG-WMO workshop on Ash Dispersal Forecast and Civil Aviation was held under the sponsorship of the World Meteorological Organization (WMO), the International Union of Geodesy and Geophysics (IUGG), the International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI), the University of Geneva, the British Geological Survey, and the U.K. Met Office. Ninety-five participants from eighteen countries representing various academic institutions, operational agencies (including all nine Volcanic Ash Advisory Centers - VAACs) and stakeholders gathered at the Geneva Headquarters of the WMO (Geneva, Switzerland) from 18 to 20 November 2013, resulting in a total of 47 invited talks and 32 posters. The report below summarizes the objectives of the workshop and its main conclusions.



As a consequence of the severe disruption to air traffic generated by the April-May 2010 Eyjafjallajökull eruption in Iceland the tephra-dispersal community had to revise monitoring and forecasting methodologies in order to provide a more robust and reliable response to the social needs. A new multidisciplinary scientific community joined for the 1st IUGG-WMO workshop on Ash dispersal Forecast and Civil Aviation (Geneva, 18-20 October 2010) to promote stronger interactions between the volcanological and the operational forecasting communities, and the resulting outcomes served as a road-map for research. During the last three years (2010-2013) a great deal of scientific progress has been made in the characterization of volcanic eruptions and in ash dispersal modelling and forecasting as a result of increased multidisciplinary collaboration. A large number of projects and consortia have been funded worldwide that cover multiple aspects of ash dispersal, ranging from the expansion of remote sensing networks and capabilities for the characterization of the distal field to the real-time characterization of the source. However, recent volcanic crisis (i.e. Grímsvötn 2011, Iceland; Cordón-Caulle 2011, Chile) demonstrated how some specific needs remained (e.g. accurate description of the source term) and proposed new challenges (e.g. re-suspension of deposited volcanic ash) that motivated the organization of the 2nd IUGG-WMO workshop on Ash Dispersal Forecast and Civil Aviation. The main objectives of the 2nd workshop were to discuss: 1) progress since 2010 and on-going projects; 2) operational response to recent eruptions: practice and challenges; 3) characterization of Eruption Source Parameters (ESPs) and; 4) ash and gas dispersal modelling. Specific objectives included: i) to review and

institutionalize the interaction between meteorological, atmospheric, volcanological, modeling and remote sensing communities, ii) to develop strategies for a closer working relationship and further collaboration between the aviation industry and the scientific community, iii) to document progress from the 1st IUGG-WMO workshop, iv) to identify best practice modelling strategies to support operational implementation and, v) to identify and develop concepts to address current challenges. These objectives were covered during three days of dedicated talks, posters, break-out sessions, and extensive plenary discussions (focusing on operational challenges, characterization of the source term and ash and gas dispersal modelling) in combination with a document compiled before the workshop gathering the opinions of the participants on the most pressing challenges in our communities and the efforts made across disciplines to overcome them.

Current knowledge and capabilities. The research carried out by the communities represented at the 2013 workshop has been considerable and has provided some new methods and techniques to improve eruption onset detection, better constrain initial plume height, mass eruption rate and grain size distribution as well as provide improved observations of the downwind plume and clouds for comparison with the Volcanic Ash Transport and Dispersal Models. Improvements since 2010 have been made in:

- *Characterization of ESPs and cloud*, including source plume modelling, proximal observations of ESPs, distal observations of ash clouds by satellites and in-situ using aircrafts, inverse modelling of source terms, re-suspension of ash and volcano observatory monitoring.
- *Ash dispersal modelling*, including model physics and model validation.
- *Operational forecasting*, including communication and collaboration (e.g. programs of ‘Best Practice’ workshops aimed at sharing of experience and enhancement of services/activities), training, use of and access to observational data, modelling enhancements, understanding uncertainty and new services and operational pull-through.
- *Hazard communication and aviation sector*, including harmonization of procedures, VAAC output and graphics and vulnerability of engine and airframe components.

Challenges and recommendations. The breakout groups and plenary discussions held during the workshop defined some of the continuing and new research challenges that need to be approached. These include:

- *Characterization of the observations and source term*, including pre-eruptive ESP for scenario planning, measuring source terms at the vent (mass eruption rate, event occurrence at remote volcanoes, aggregation, ash and SO₂ separation and re-suspension) and distal cloud measurements.
- *Ash dispersal modelling*, including the improvement of quantification of ESP, model uncertainty, data assimilation, ensemble forecast, aggregation, and plume-atmosphere interaction.
- *Operational forecasting*, including use of and access to observational data, modelling enhancements, understanding of uncertainty, training, communication and collaboration and new services for operational pull-through.
- *Hazard communication and aviation sector*, including harmonization of procedures and responses (different civil aviation authorities do not apply the same restrictions to their sovereign airspace for a variety of reasons), VAAC outputs and graphics (need to move beyond the ash-no ash graphics that VAACs have routinely produced with a new-generation forecast graphic that depicts ash clouds three dimensionally) and vulnerability of engines and airframe components including the development of damage curves for dilute ash of various composition, grain size, concentration.

More information is available at: <http://www.unige.ch/sciences/terre/mineral/CERG/Workshop2.html>.

Received from Arnau Folch, IUGG Liaison Officer to WMO

5. Report on Joint Conference “Facets of Uncertainty”



Three different series of events, the EGU Leonardo Conference, taking place annually in Europe, the IAHS Statistical Hydrology (STAHY) Workshop, taking place annually in different places of the world, and the Hydrofractals Conference, taking place every ten years, coincided in space and time at Kos Island, Greece, 17–19 October 2013, during the “FACETS OF UNCERTAINTY” meeting. More than 110 scientists from 30 countries attended the joint conference.

Uncertainty has often been regarded as an opponent of science, whose task is to eliminate it or to reduce it as much as possible. However, it has also been argued that uncertainty is intrinsic in nature, impossible to eliminate, and also a quality with positive aspects. Understanding and quantifying uncertainty could make the understanding of Nature more feasible and its modeling more realistic. Therefore, the focus of the Kos convention was not only to contribute to uncertainty elimination, but to show how modeling can be combined with uncertainty estimation to improve the quality of models and predictions.

One of the important highlights of the scientific program was the Round Table entitled “*The legacy of Harold Edwin Hurst in hydrological stochastics*”. The British hydrologist H. E. Hurst spent 60 years in studying the Nile for the Egyptian government, during which he laid the foundation of a monumental set of hydrological records and investigations. His studies of the size of reservoir needed to maintain a given supply from natural Nile flow series showed that this was significantly greater than that based on random series. This finding, known as the Hurst phenomenon, was confirmed in other natural series, and in connection with advances in theoretical and practical mathematics and statistics (illustrated by the work of Kolmogorov and Mandelbrot) has been fruitful in many scientific disciplines including economics, electronics and recently climatology. The Round Table, chaired by John Sutcliffe, aimed to celebrate Hurst’s legacy; the participants focused on (a) his life and career, (b) his scientific contribution and (c) the links of his work to the advances to which it gave rise.



Of significant importance was also the *Poster Session*, held at the archaeological site of Asclepion (see the figure above), a sacred and important monument recognized as a world cultural heritage. About 50 posters were presented and many of the authors gave short oral overviews of their poster,

which were recorded and made available online at the IAHS/STAHY web site (<http://www.stahy.org/Events/ReportKOS2013/tabcid/115/Default.aspx>). Our team at the National Technical University of Athens tried to combine an interesting scientific program along with pleasant social activities. A high attendance in all sessions continued during the breaks and social events with socializing and networking of the delegates. It was unanimously agreed that it was a successful conference.

Received from Demetris Koutsoyiannis, Conference Chairman

6. Report on SCOSTEP Activities: from CAWSES to VarSITI



SCOSTEP (Scientific Committee for Solar-Terrestrial Physics) is an interdisciplinary body of the International Council for Science (ICSU) with the following principal tasks: (1) to promote, organize and coordinate international interdisciplinary programs in solar-terrestrial physics, (2) to conduct and sponsor international meetings in the scientific area of solar-terrestrial physics, (3) to define the data relating to these programs that should be exchanged through the World Data Centres, and (4) to conduct capacity building activities such as advanced schools on solar terrestrial physics. The SCOSTEP Bureau consists of a President, Vice President, Scientific Secretary, and one representative from each of the ICSU Participating Bodies. The current officers are: N. Gopalswamy (President), F.-J. Lübken (Vice-president), M. G. Shepherd (Scientific Secretary), A. Seppälä (SCAR), V. D. Kuznetsov (IAGA & IUGG), M. Lester (IUPAP), L.-A. McKinnell (URSI), T. Nakamura (COSPAR), D. Siskind (IAMAS), M. Zhang (IAU). The SCOSTEP website is <http://www.yorku.ca/scostep/>. In 2009-2013, SCOSTEP promoted and coordinated the research on the CAWSES Program (Climate and Weather of the Sun-Earth System) (CAWSES-I and CAWSES-II). The International CAWSES-II Symposium organized by SCOSTEP (November 18-22, 2013, Nagoya, Japan) discussed the results obtained within the framework of CAWSES-II and outlined a new research program - VarSITI (Variability of the Sun and Its Terrestrial Impact) to start in early 2014 and last for five years (2014-2018).

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The **VarSITI** program will strive for international collaboration in data analysis, modeling, and theory to understand how the solar variability affects the Earth. The VarSITI Co Chairs are K. Georgieva and K. Shiokawa. The VarSITI program will have four scientific elements that address solar terrestrial problems keeping the current low solar activity as the common thread.

- **SEE (Solar Evolution and Extrema)**, Co-Chairs P. C. Martens, D. Nandi, and V. N. Obridko;
- **ISEST/MiniMax24 (International Study of Earth-affecting Solar Transients)**, Co-Chairs J. Zhang, M. Temmer, and N. Gopalswamy;
- **SPeCIMEN (Specification and Prediction of the Coupled Inner-Magnetospheric Environment)**. Co-Chairs: J. Bortnik and C. J. Rodger;
- **ROSMIC (Role Of the Sun and the Middle atmosphere/thermosphere/ionosphere In Climate)**, Co-Chairs F.-J. Lübken, A. Seppälä, and W. E. Ward).

The main subjects of the VarSITI Program are closely related to those addressed by IUGG and its Associations, which is the basis for a broad cooperation in the related fields of research. More information can be found at the VarSITI website: <http://newserver.stil.bas.bg/varsiti/>.

Received from V. D. Kuznetsov, IUGG Liaison to SCOSTEP

7. News from the International Council for Science (ICSU)

SDGs: Oceans and Biodiversity are vital goals

The eighth session of the UN General Assembly's Open Working Group (OWG) on Sustainable Development Goals (SDGs) is underway in New York this week. Among the themes of this session were oceans, seas, forests and biodiversity. ICSU, in its role as co-organizer of the Major Group on Science and Technology at the UN, convened a delegation of high-level scientists who gave presentations and submitted position statements on these thematic areas. Jane Lubchenco, a former president of ICSU (2002-2005) and an eminent marine biologist of Oregon State University, was a keynote speaker at the opening plenary session. She highlighted the need to address oceans issues, suggested ways to incorporate necessary action into goals and targets, and also suggested that goals should focus on cross-cutting issues, and said oceans would be one such issue. "The international community needs to take ownership of oceans, and realize that just because it is 'out of sight' for many, it cannot be out of mind." Lubchenco was the administrator of the U.S. National Oceanic and Atmospheric Administration (NOAA) from 2009-2013. She argued the case for a stand-alone oceans goal among the SDGs, stating that oceans support social and economic progress in a multitude of ways, and that loss of oceans services impacts indifferentially on the poor and vulnerable, women, children and indigenous peoples. For example, according to the 2012 World Risk Report on environmental degradation and disasters, 14 of the top 15 countries at risk are developing coastal or island nations such as Vanuatu, Tonga, Philippines, Bangladesh and the Solomon Islands.

Martin Visbeck, of the GEOMAR Helmholtz Centre for Ocean Research at Kiel University, Germany, and a former member of the team responsible for Future Earth design, made a statement on behalf of the Science and Technology Major Group reiterating Lubchenco's call for a focused SDG on the oceans and coasts in order to ensure a balance between development and protection of

our largest global common for the benefit of mankind. Martin Visbeck also outlined the official position of Major Group for Science and Technology on oceans, forests and biodiversity to the plenary, addressing issue of biodiversity and the benefits of biodiversity for present and future generations. In his statement, he called for two goals: one on oceans and coasts, and another on healthy and productive ecosystems, and also insisted on the need for a set of biodiversity related targets. Anne Helene Prieur-Richard, Acting Executive Director of DIVERSITAS, provided the position on biodiversity, arguing for targets on determinants of human well-being such as health, secure supplies of food and freshwater; natural resource governance systems and institutions to ensure equitable and sustainable management of biodiversity and its benefits for people; and the conservation of intrinsic value of biodiversity.

As from 2014, the OWG will focus its work on finding agreement among the government representatives on a set of proposed SDGs and is finalizing its report to be submitted to the September 2014 session of the UN General Assembly.

Report on Review of CODATA

The report of a review carried out by ICSU on the Committee on Data for Science and Technology (CODATA) and its activities has been published in electronic form: <http://www.icsu.org/publications/reports-and-reviews/codata-review-2013/codata-review-2013>. The CODATA review exercise was conducted during the course of 2012-2013 by an expert panel set up for the purpose by CSPR and in accordance with the ICSU Strategic Plan II. The report's recommendations have a direct bearing on the working relationship between CODATA and the World Data System (WDS) and a better integration of the data- and information-related activities and concerns of the ICSU family as a whole. The report has been endorsed by both CSPR and the Executive Board and is set to be presented to the upcoming ICSU General Assembly in Auckland.

Concerns about visas for scientists to attend international scientific meetings

ICSU is concerned that measures taken by some national authorities are making the visa application process unpleasant, drawn out, obscure, expensive and unpredictable. In some countries, this has become a significant obstacle to the holding of international scientific meetings. ICSU promotes the free movement and association of scientists, including their participation at international scientific meetings. Both conference organizers and participants have the responsibility to be familiar with and follow the visa application and issuing processes of the conference host country, including the timing requirements for submission of visa applications. Two recent examples illustrating the problem are the science congresses of the International Union of Physiological Sciences (IUPS) and the International Union of Anthropological and Ethnological Sciences (IUAES) in the United Kingdom during 2013. The two scientific unions, both ICSU Members, reported that many bona fide scientists encountered difficulties when applying for their visas and that many of them were not issued visas at all. Based on the substantial documentation available, the Council condemns the degrading procedures applied to the scientists, who had personal invitations and return tickets to attend these meetings. The International Council for Science calls on the relevant authorities in all countries to facilitate the visa process for bona fide scientists to enable them to attend scientific meetings in their countries. Additionally, the Council alerts its Membership that in planning international scientific meetings, including the choice of venue, visa regulations should be an important consideration in the decision-making process. Related links: UK visa problems worry scientists, *Nature*, 4 February 2014; Visa Labyrinth, *Science*, 31 January 2014.

Source: ICSU webpage

8. 30th IUGG Conference on Mathematical Geophysics: Call for Abstracts

The Conference on Mathematical Geophysics (CMG2014) will be held in Merida, Yucatan, Mexico, 2-6 June 2014. Conferences on mathematical geophysics are premier biennial scientific meetings of the IUGG Union Commission on Mathematical Geophysics. CMG2014 is organized by the National Autonomous University of Mexico (UNAM). 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 solving of contemporary earth science problems. We hope that as well as presenting new results, the meeting will also demonstrate methodological approaches that can be transferred between disciplines. The abstract deadline is **15 March**. An early-bird registration will end on 2 April. Funding to support students and early career scientists may be available. The meeting will include a field trip to the famous archaeological site of Chichen-Itza; several other field trip options are also be available. Please forward the information to relevant colleagues, postdocs, and students. More information on the Conference including the scientific program can be found at the Conference webpage: <http://eventos.iingen.unam.mx/IUGG2014/>

Received from the CMG2014 Organizing Committee

9. IUGG-related meetings occurring during March – May

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.

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://seacie.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/>
- 25-29, EMSEV, Toulouse, France, Workshop on Fundamental Problems on the Earthquake Generation Processes and the way to Monitor them for Hazard Mitigation. Web: <http://www.emsev-iugg.org/emsev/page027.html>

April

- 7-12, SCAR, Helsinki, Finland, Arctic Science Summit Week (ASSW), Web: <http://www.assw2014.fi/>

- 8-10, IUGG, IAMAS, Laurel, MD, USA, 3rd "Titan through time" ICRAE-workshop. Web: <https://dnnpro.outer.jhuapl.edu/titanthroughtime3/Home.aspx>
- 11-12, IUGG, CCEC, Beijing, China, CCEC workshop on Adapting to Earth System Change
- 22-25, UNESCO-IOC, Nha Trang, Vietnam, WESTPAC 9th International Scientific Symposium. Web: <http://www.vnio.org.vn/Default.aspx?alias=www.vnio.org.vn/9thwestpacssymp>
- 24-25 April, IAHS, Dublin, Ireland, 2014 Dooge-Nash International Symposium. Web: <http://www.dooge-nash.ie/>
- 27 - May 2, EGU, Vienna, Austria, European Geosciences Union General Assembly. Web: <http://www.egu2014.eu/>

May

- 5-9, IUGG, IAGA, IAMAS, WCRP, Baden-Baden, Germany, 5th International High Energy Particle Precipitation in the Atmosphere (HEPPA) Workshop. Web: <http://www.imk-asf.kit.edu/english/1486.php>
- 12-21, SCAR, Brasilia, Brazil, ATCM XXXVII - CEP XVII. Web: http://www.ats.aq/index_e.htm
- 12-23, ICTP, IUGG, Trieste, Italy, Seventh ICTP Workshop on the Theory and Use of Regional Climate Models. Web: http://cdsagenda5.ictp.trieste.it/full_display.php?smr=0&ida=a13197
- 22-24, IUGG, IACS, SCAR, Grenoble, France, Joint model-data workshop for the Late Pleistocene evolution of the Greenland and Antarctic ice sheets. Web: <http://www.cryosphericosciences.org/eventsIACS.html>
- 26-30, SCAR, Chamonix, France, International Symposium on Contribution of Glaciers and Ice Sheets to Sea Level Change. Web: <http://www.igsoc.org/symposia/2014/chamonix>

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Editor: Alik Ismail-Zadeh, Secretary General (Alik.Ismail-Zadeh@kit.edu)

Associate Editor: Franz Kuglitsch, Executive Secretary / Assistant Secretary General (fgkugl@gfz-potsdam.de)

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.