



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

## The IUGG Electronic Journal

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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.

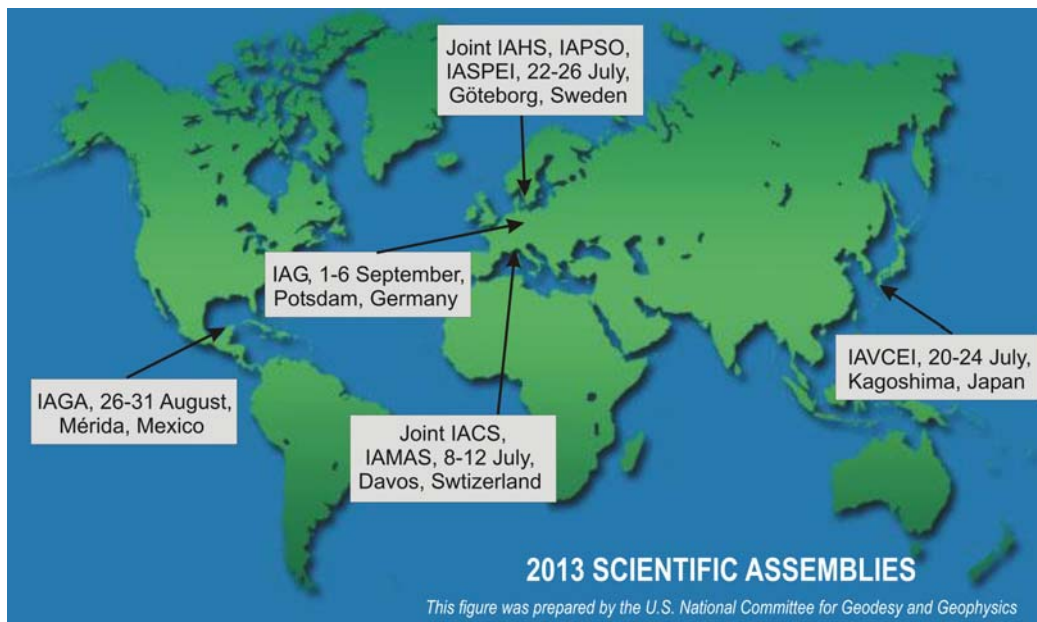
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### 1. IUGG Association Scientific Assemblies

Five Scientific Assemblies of IUGG Associations are organized this summer around the world:



1. DACA-13, a joint assembly of IACS and IAMAS, was held in Davos, Switzerland, from 8 to 12 July ([http://www.daca-13.org/index\\_EN](http://www.daca-13.org/index_EN)).

2. The IAVCEI Scientific Assembly was held in Kagoshima, Japan, from 20 to 24 July (<http://www.iavcei2013.com/>).
3. The joint scientific assembly of IAHS-IAPSO-IASPEI “Knowledge for the Future” was held in Gothenburg, Sweden, from 22 to 26 July (<http://iahs-iapso-iaspei2013.com/index.asp>).
4. The IAGA Scientific Assembly will be held in Merida, Yucatan, Mexico, 26-31 August (<http://www.geociencias.unam.mx/iaga2013/>); and
5. The IAG Scientific Assembly will be held in Potsdam, Germany, 1-6 September ([http://www.iag2013.org/IAG\\_2013/Potsdam.html](http://www.iag2013.org/IAG_2013/Potsdam.html)).

The reports about the assemblies will be published in the next issues of the IUGG E-Journal.

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## **2. News from the International Council for Science (ICSU)**

### ***Interim Director of Future Earth***

ICSU, on behalf of the Science and Technology Alliance for Global Sustainability (<http://www.icsu.org/future-earth/who#alliance>), appointed Frans Berkhout as the Interim Director of Future Earth to lead for the next 18 months the implementation of Future Earth (<http://www.icsu.org/future-earth>) bringing existing and new research communities and stakeholders together to deliver solutions-oriented knowledge for global sustainability. “Making transitions to sustainability is one of the biggest challenges humanity faces today,” said Berkhout. “Delivering the scientific knowledge to make that transition is a complex and challenging task. Future Earth offers unprecedented opportunities to rally scientists and other stakeholders around this common goal. I look forward to working closely with the scientific community to make that a reality and am honored by the trust the Alliance has placed in me,” he added. Berkhout is an outstanding social scientist based at the Department of Geography, King’s College London, with a broad portfolio of research interests and expertise, ranging from science and technology policy to global environmental change.

Source: ICSU Press release on 1 July 2013

### ***Science Academies Statement “Driving Sustainable Development: the role of Science, Technology and Innovation”***

The framework of Millennium Development Goals has led to several in-depth discussions and debates focused on review of the progress made so far and preparation of strategies for post-2015 era to ensure sustainable development all over the world. At the Rio+20 United Nations Conference on Sustainable Development (June 2012), the world’s governments agreed to develop a set of sustainable development goals (SDGs). Discussions at UN level have covered Science, Technology and Innovation and Intellectual Property Rights. Recently, the International Council for Science (ICSU) and the United Nations Department of Social and Economic Affairs (UN-DESA) held a joint meeting of an Expert Group at the UN Headquarters. The Global Network of Academies (IAP) had issued a statement on Population and Consumption in June 2012. Several Academies and other learned bodies have brought out reports on development issues. Academies of Sciences around the world provide evidence and advice to inform their countries’ development decisions. For the past eight years, a group of academies have addressed brief statements to governments meeting at summits on global issues. These have included several of the issues related to sustainable development, such as energy, climate change, water, health and infectious disease, and resilience to

disasters. This year, the Indian National Science Academy has convened a continuation of this process. During these eight years, there has been immense progress in science and technology, including in information and communications technology and natural resource extraction. However, major global challenges remain, and in important ways have grown, especially as related to continued population growth, climate change, and impact on essential natural systems. So meeting human needs, now and in the future, remains a major challenge. Work is underway in the world community to set Sustainable Development Goals for the coming years.

Progress in science, technology and innovation is necessary, although not sufficient to solve the many underlying challenges for sustainable development. These include poor governance at all levels from local to global, inadequate education systems, and lack of rural development (access to roads, financing, education, and empowerment of women). Progress also needs trade reform and a transition of the economic system to one from GDP to GDP+, where economic growth is measured in terms of built, natural, human, social and financial capital. Without good governance and a more sustainable economic system the potential gains from advances in science and technology cannot be realized. The Academies believe that their own promotion of the values of science, including emphasis on evidence, openness, ethical standards, and social responsibility can contribute to good governance. The Academies pledge to support policy making for sustainable development by:

- i. Providing a source of independent, objective expertise, bringing scientific rigor to gathering evidence, including what is known and not known, which ultimately underpins progress towards sustainable development;
- ii. Collaborating across academies to raise visibility and capacity to proactively engage with the sustainable development policy community at national, regional and international levels;
- iii. Supporting processes to define, measure and monitor at national, regional and international levels, progress towards sustainable goals;
- iv. Taking actions to help predict and inform policies to prevent adverse effects of development practices and processes;
- v. Training and supporting the development of human resources in science, technology and innovation – starting at primary and secondary level education, including investments in higher education to help build scientific and absorptive capacity to respond to local challenges;
- vi. Promoting multidisciplinary research for a holistic approach to sustainable development, including engagement with the private sector;
- vii. Improving public awareness of the role of science, technology and innovation can play in promoting sustainable development; and
- viii. Promoting south-south and north-south mobility of researchers.

Source: <http://www.interacademies.net>

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### **3. Report on the workshops of the Abdus Salam International Centre for Theoretical Physics held during 2012 and co-sponsored by IUGG**

*The Workshop on Science Applications of GNSS in Developing Countries* (11 April - 1 May 2012) was attended by 106 lecturers and participants from 36 countries of Europe, Africa, Asia and the Americas. The topics covered by the lectures were grouped in the following areas: Fundamentals of GNSS, GNSS and Scientific Exploration, GNSS Scientific Applications, Space Weather and Ionospheric Exploration with GNSS. An important part of the Workshop was

dedicated to computer laboratory work. The topics covered ranged from Kalman filtering applied to satellite navigation exercises to GNSS derived ionospheric data processing and total electron content calibration. A number of the 31 presentations were given by those presenting their own work or that undertaken in their institutions regarding the general topic of the Workshop. During open discussion sessions the workshop received very positive feedback and it was requested to continue carrying out this type of activity.

***The Workshop on Atmospheric Deposition: Processes and Environmental Impacts*** (21-25 May 2012) was attended by 55 participants and 11 speakers. The general theme of the workshop was wet deposition of atmospheric compounds and environmental impacts. Particularly the workshop addressed the following topics: modeling of the complex processes leading to dry and wet deposition of atmospheric compounds (ozone, nitrogen, sulfur); basic physical and chemical mechanisms determining deposition flux; observational networks including Africa, Europe, and USA; observed regional trends in atmospheric deposition for different continents; cloud processes and impacts on wet deposition and the ways to constrain better models; dust aerosol deposition and its impacts; and some others. Laboratory sessions presented and discussed (i) the use of regional climate models to perform simulations of atmospheric chemistry and atmospheric depositions, and (ii) the use of some materials (e.g. rain collectors and passive samplers). The workshop was successful in promoting exchange and discussions between participants and lecturers.

***The targeted training activity (TTA) “El Nino Southern Oscillation Monsoon in the Current and Future Climate”*** (30 July – 10 August 2012) was attended by 47 participants from the following countries: India, Pakistan, Bangladesh, Philippines, Maldives, Saudi Arabia, Vietnam, China, Egypt, Cameroon, Senegal, Ethiopia, Nigeria, Kenya, Sudan, Ghana, Brazil, Argentina. The TTA was structured in the following way. Each morning, there were lectures on the theory of ENSO, the regional monsoons and their modeling. Each afternoon, laboratory sessions were organized, where observational and CMIP5 data as well as analysis tools were provided to the participants and the task was to evaluate the model performance in reproducing ENSO and the ENSO-monsoon relationships. On the first day, participants built groups and selected (or were assigned) projects to work on during the whole period of the activity (afternoons). In these projects the participants collaborated between them and sought the advice of the experts present during the activity. Members of the groups presented the results of the projects on the last day of the activity. All participants were very enthusiastic and greatly profited from the possibility to perform their own small research project and to present it to everybody, including the experts in the field. Also, some common misconception about the use of climate model data could be identified and clarified during the activity. Overall, the meeting was a big success and many participants explained that they were inspired and would return to their host institutions and continue to work on the projects that they started during the activities and use the new methods/tools introduced by the expert lecturers and in the computer labs.

***The Workshop on Geophysical Data Analysis and Assimilation*** (29 October – 3 November 2012) attracted 31 participants from 24 countries including 26 participants from economically less developed countries, and 14 lecturers from France, Germany, Italy, Netherlands, Russia, Switzerland, and USA. The goal of this workshop was to assess the current state of geophysics and data science efforts and to indicate successful progress made to date and the challenges that presently exist. The workshop highlighted the progress and perspectives in data analysis and assimilation studies in various fields of geophysics (particularly, in seismology and geodynamics). One of the main aims of the workshop was to facilitate the link between theoretical and experimental researchers, adequately explaining new achievements in geophysics to a wide audience of scientists and engineers, giving a unified treatment of those methods that are currently used in interpreting actual data. Results of analysis and interpretation of seismological observations,

such as tomographic maps, seismic anisotropy measurements, characteristics of seismic events, provide constraints and input data for development of geodynamical Earth models. Three-dimensional maps of present-day seismic velocities combined with physical models to translate these seismic velocity anomalies into density and temperature anomalies and with models of mantle viscosity structure can allow for efficient assimilations of mantle flow and temperatures to the geological past. The basic element of the data analysis and assimilation is methodology (theoretical and computational). Analysis and assimilation of seismological observations and geodynamical data were the main topics of the workshop. The workshop provided training in advanced methodologies of R&D in fundamental studies of the Earth's structure, evolution and dynamics. Numerous applied problems, such as prospecting for mineral resources, study of recent earthquakes, were treated as well. The theoretical grounds include (i) the theory of seismic wave propagation in realistic Earth models, (ii) the theory of mantle dynamics and plate motion, and (iii) computational techniques and methods for inversion of seismic wave fields, and seismological and geodynamical data assimilation. Lectures focused on the research methodologies and on recent results of data interpretation and assimilation. A great benefit from the workshop was the close personal contact between lecturers and the participants, and the good connections established between the young scientists from all over the world. Nine participants presented results of their recent studies related to the workshop program in an oral and poster sessions. Several hours were dedicated every day to computer exercises, with the active engagement of students. Students were provided with specialized software, user manuals and tutorials facilitating their enthusiastic work.

***The School on Quantification of Seismic Hazards in the Indo-Asian Collision Zone*** (15 – 21 November 2012) was held in Kathmandu, Nepal and attended by 39 participants spanning the following countries: Australia, Bangladesh, China, India, Italy, Nepal, Pakistan, UK, and USA. The school provided the attendees with some of the tools needed to estimate seismic hazard and to turn these into estimates of seismic risk. The school focused on issues, which could lead to erroneous estimates of seismic hazard, and on applications of seismic hazard assessment in the Himalayan region. The morning sessions of the school were devoted to geological, geophysical and geodetic observations of hazard followed by methodologies for assimilating these hazards and turning them in quantitative estimates of risk. Afternoon sessions were designed to provide attendees with the tools needed to process GPS data.

The Abdus Salam International Centre for Theoretical Physics (ICTP) acknowledges the IUGG co-sponsorship of the workshops and targeted training activities in 2012.

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#### **4. Awards and Honors**

***Robin Adams***, past IASPEI Secretary General (1979-1991), received the inaugural 2013 IASPEI Medal for sustaining IASPEI goals and activities and for scientific merits in the field of seismology and physics of the earth's interior.

***Günter Blöschl***, President of the IAHS International Commission on Water Resources Systems, received the 2013 International Hydrological Prize of the IAHS, World Meteorological Organization (WMO), and the International Hydrological Program of UNESCO for his outstanding contribution to hydrology.

***Yun-tai Chen***, IUGG Bureau Member (2003-2011), was elected President (2014-2016) of the Asia and Oceania Geosciences Society (AOGS).



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## 5. IUGG-related meetings occurring during August – October

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.

### *August*

- 29 July - August 1, IAMAS, Leeds, UK, 11<sup>th</sup> International workshop on Layered Phenomenon of the Mesopause Region (LPMR). Web: <http://www.lpmr.leeds.ac.uk>.
- 29 July - August 2, IMU, IUGG, IUTAM, Guanajuato, Mexico, Workshop on Mathematics of climate change, related hazards and risks. Web: <http://www.mca2013.org/en/workshop-on-mathematics-of-climate-change.html>.
- 12-14, IAHS, Lanzhou, China, International Conference on Water Sustainability in Arid Regions. Web: <http://210.26.50.154:8083>.
- 20-21, IAHS, Dushanbe, Tajikistan, High-Level International Conference on Water Cooperation. Web: [http://www.unwater.org/events\\_dushanbe2013.html](http://www.unwater.org/events_dushanbe2013.html).
- 26-31, IAGA, Merida, Yucatan, Mexico, 12<sup>th</sup> Scientific Assembly (IAGA 2013). Web: <http://www.geociencias.unam.mx/iaga2013/>.

### *September*

- 01-06, IAG, Potsdam, Germany, IAG Scientific Assembly. Web: <http://www.iag2013.org>.
- 01-07, IASPEI, St. Petersburg, Russia, 8<sup>th</sup> International Symposium on Rockbursts and Seismicity in Mines. Web: <http://pts.mi-perm.ru/rasim/>.
- 02-07, IACS, Zermatt, Switzerland, Summer School on Mass Balance Measurements and Analysis 2013. Web: [http://www.geo.uzh.ch/microsite/wgms/mb\\_summerschool.html](http://www.geo.uzh.ch/microsite/wgms/mb_summerschool.html).
- 09-11, IAG, Nottingham, UK, 2nd Joint International symposium on Deformation Monitoring (JISDM). Web: <http://www.nottingham.ac.uk/engineering/conference/jisdms/index.aspx>.
- 16-18, IAG/IAU, Paris, France, Journées 2013 Systèmes de Référence Spatio-Temporels. Web: <http://synte.obsppm.fr/jsr/journees2013/>.
- 16-20, IAHS, Perth, Australia, IAH International 40<sup>th</sup> Congress – Solving the Groundwater Challenges of the 21<sup>st</sup> Century. Web: <http://iahcongress2013.org/>.
- 17-20, IAG, St. Petersburg, Russia, Terrestrial Gravimetry: Static and Mobile Measurements (TGSMM-2013). Web: <http://www.elektropribor.spb.ru/tgsmm2013/eginf>.
- 19-20, ITU/BIPM, Geneva, Switzerland, Workshop on the Future of the International Time Scale. Web: <http://www.itu.int/ITU-R/index.asp?category=conferences&mlink=itu-bipm-workshop-13&lang=en>
- 20-24, IUGG, Prague, Czech Rep., Bureau, Executive Committee, Finance Committee and Science Program Committee meetings.
- 23-28, IACS, Yuzhno-Sakhalinsk, Russia, International Symposium “Physics, chemistry and mechanics of snow”. Web: <http://snowphysics.fegi.ru/en/main.html>.
- 25-28, IUGG, Göcek, Turkey & Rhodes, Greece, 26th International Tsunami Symposium. Web: <http://tsunami2013.org>.
- 30 September - 2 October, IAGA, IUGG, Kaluga, Russia, International Conference “Geophysical Observatories, Multifunctional GIS and Data Mining”. Web: [http://www.kaluga2013.gcras.ru/index\\_eng.html](http://www.kaluga2013.gcras.ru/index_eng.html).

### **October**

- 7-11, IAG, Loja, Ecuador, 11th International School of the Geoid Service: Heights and Height Datum. Web: <http://www.11iges.utpl.edu.ec/>
- 17-19, IAHS, EGU, Kos, Greece, Facets of Uncertainty - 5th EGU Leonardo Conference, Hydrofractals'13, Statistical Hydrology — Stahy'13. Web: <http://kos2013.org/>
- 21-23, IAG/IAGA/IASPEI, Panama City, Panama, School on Reference Systems, Crustal Deformation and Ionosphere Modelling. Web: <http://www.sirgas.org/index.php?id=233>
- 24-26, IAG, Panama City, Panama, SIRGAS Meeting 2013. Web: <http://www.sirgas.org/index.php?id=193&L=2>

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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.**