



**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 and ICTP agreed to promote education in geophysics and geodesy**

The International Union of Geodesy and Geophysics and the Abdus Salam International Centre for Theoretical Physics (ICTP) have taken steps to enhance geophysical and geodetic education and science collaboration.



*ICTP Director F. Quevedo (right) and IUGG Secretary General A. Ismail-Zadeh*

On 6 October 2011, ICTP Director Fernando Quevedo and IUGG Secretary General Alik Ismail-Zadeh 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.

Founded in 1964 by the late Nobel Laureate Abdus Salam, ICTP seeks to accomplish its mandate by providing scientists from developing countries with 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.

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## 2. Grand Challenges in Earth System Science with a focus on climate

In the 21st century, living conditions on Earth are changing as profoundly as never before. With more than 500 employees of KIT at about 30 institutes, the Climate and Environment Center of the Karlsruhe Institute of Technology (KIT) develops strategies and technologies to secure the natural bases of life. The Center has recently established a new series of KIT Climate Lectures. In cooperation with the IUGG Secretariat located at KIT, Professor Deliang Chen was invited to deliver the first Climate Lecture. The lecture was held on 18 October 2011 in the Gartensaal of the Karlsruhe Palace. The grand challenges in Earth system science were presented and discussed at the climate lecture by D. Chen. In his welcoming address, Professor Johannes Orphal (Scientific Leader of the Center) thanked IUGG for nominating D. Chen as a KIT Climate Lecturer. Professor D. Chen, Executive Director of the International Council for Science (ICSU), is an internationally renowned climate researcher. He has made important contributions to the understanding of regional climate changes in Sweden and China. Chen holds the prestigious August Röhss Chair in Physical Geography directed towards Geoinformatics and is Professor of Physical Meteorology at the University of Gothenburg, Sweden. Formerly Deliang Chen was Director of the Gothenburg Atmospheric Sciences Centre and Science Director of the Beijing Climate Center. Professor Paul Crutzen (1995 Nobel Prize in Chemistry) attended the lecture of D. Chen, his former PhD student.



*Left: Deliang Chen and Paul Crutzen. Right: during the lecture*

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### 3. Indian National Geophysical Research Institute celebrates its Golden Jubilee

The National Geophysical Research Institute (NGRI) in Hyderabad, a constituent laboratory of the Council of Scientific and Industrial Research (Ministry of Science and Technology, Govt. of India) was established in October 1961. The CSIR-NGRI completed fifty glorious years of its existence on 11 October 2011. During the last 50 years, addressing themes of societal and strategic relevance apart from basic research in a wide range of Earth science disciplines, CSIR-NGRI has contributed significantly in aspects of ground water exploration and management strategies, exploration for hydrocarbons and mineral resources, earthquake hazard assessment and fundamental studies on the evolution of Earth's crust and lithosphere.

Since October 2010, NGRI organized a series of National and International Conferences and lectures by Distinguished Scientists on many aspects of contemporary Earth Science research as a part of the year-long Golden Jubilee celebrations. The finale was marked by a day-long grand interaction meet between scientists, teachers, students, community and media representatives under the theme '*Contribution of Earth Science to Society*' on October 11, 2011 at NGRI with the prime objective of promoting awareness among the younger generation about the current challenges confronting human society on account of resource depletion, energy sustainability, natural hazards, environmental degradation compounded by the rising population and living standards. About 700 students from schools and science colleges in Hyderabad and hundreds of Geo-scientists representing various Earth Science organizations and Universities were audience to the following lectures by Distinguished Scientists, who spoke on a wide range of topics of great scientific and social relevance appropriate to the theme of the interaction meet:

- David Chapman, USA – *Climate change Past, Present and Future*
- Vincent Courtillot, France – *Mass extinctions and massive volcanism*
- V. K. Gaur, India – *Water and Planet Earth*
- Harsh K. Gupta, India – *Earth Science, NGRI and me*
- Walter D. Mooney, USA – *Mega Earthquakes and Tsunamis in the 21<sup>st</sup> Century: An Earth Science Challenge*
- Mike Sandiford, Australia – *Man as Geological Agent*
- Mrinal K. Sen, USA – *Challenges of computational seismology: the fourth paradigm of subsurface imaging*

The lectures were followed by a lively question-answer interaction session, where the enthusiasm of students was overwhelming as they sought responses on a wide range of questions covering earthquake prediction, tsunamis, scenarios and implications of diminishing geomagnetic field, the Dooms Day predictions for December, 2012, alternate energy prospects, longevity of Earth, existence of life on other planets, the manifold impacts of climate change and many more.

On October 12, 2011, a panel discussion focussed on Vision for Earth Sciences-2022, where emphasis was laid on exploration for non-conventional energy resources, mitigation of natural hazards, understanding basic earth processes, limitations in the climate change projections and on the need for sustaining water resources. It was emphasized that an immediate task of Earth Scientists shall involve promotion of awareness among the masses on such issues.

Received from Y.J. Bhaskar Rao  
CSIR-National Geophysical Research Institute

#### **4. Report on the 2010 International Workshop on Antarctic Clouds**

IUGG co-sponsored the International Workshop on Antarctic Clouds, which was held at the Byrd Polar Research Center of The Ohio State University, USA, 15-16 July 2010. The 31 attendees came from Australia, United Kingdom, and Belgium in addition to the United States. Nine were early career scientists. The workshop goals were to evaluate what is known about Antarctic clouds and to suggest what future efforts are needed to dramatically improve their understanding. This limited understanding arises in part from the challenging deployment of instrumentation in this remote and harsh environment, and from the limitations of traditional satellite passive remote sensing over the polar regions. Yet, clouds have a critical influence on the ice sheet's radiation budget and its surface mass balance. The extremely low air temperatures, absolute humidity levels, and aerosol concentrations found in Antarctica create unique conditions for cloud formation that greatly differ from those encountered in other regions, including the Arctic. During the first decade of the 21st century, new results from field studies, the advent of cloud observations from spaceborne active sensors, and improvements in cloud parameterizations in numerical models have contributed to significant advances in our understanding of Antarctic clouds. The workshop covered four main topics: (1) observational methods and instruments; (2) the microphysical properties of clouds and aerosols; (3) the seasonal and interannual variability of cloud amounts; and (4) cloud representation in global and regional numerical models. Aside from a synthesis of the existing literature, novel insights were also presented. A new climatology of clouds over Antarctica and the Southern Ocean was derived from combined measurements of the CloudSat and Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observation (CALIPSO) satellites. This climatology was used to assess the forecast cloud amounts in 20th century global climate model simulations. While cloud monitoring over Antarctica from space has proved essential to the recent advances, the workshop concluded by emphasizing the need for additional in-situ measurements. The workshop presentations are currently available at <http://polarmet.osu.edu/workshops/iwac/program.php> under Program. A review manuscript based on workshop deliberations was recently accepted for publications in *Reviews of Geophysics*.

Received from David H. Bromwich, The Workshop's Organizer

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#### **5. Report on the 2010 BALWOIS Conference**

IUGG co-sponsored the fourth BALWOIS scientific conference on Water Observation and Information System for Decision Support, which was held in Ohrid, Republic of Macedonia, 25-29 May 2010. BALWOIS 2010 was organized by the Balkan Institute for Water and Environment (French NGO), by the Meteorological Association of Republic of Macedonia and by the Faculty of Civil Engineering (University Sts Cyril and Methodius, Skopje). The International Association of Hydrological Sciences (IAHS) led the BALWOIS Scientific Committee.

The main objectives of 2010 BALWOIS Conference were (i) to further the progress of the knowledge in the fields of scientific research, education, policy and development activities in the water-related issues (e.g., climate changes, hazards mitigation and water resources assessment, management and protection); (ii) to enhance the links between the providers and the end-users of water-related knowledge; (iii) to engage students and young researchers into the BALWOIS activities. The topics of the conference were climate and hydrology, environment and human activities, water-related risks, integrated water resources management, ecohydrology, and computing and technologies.





365 participants from 42 countries attended the conference, 70% of participants coming from the Balkan countries: Albania (55), Turkey (50), Bulgaria (40), Romania (31), Serbia (25), Macedonia (21), Croatia (13), Kosovo (10), Montenegro (8), Bosnia and Herzegovina (5). For more information: [www.balwois.com](http://www.balwois.com), [www.balwois.com/2010](http://www.balwois.com/2010).

Received from Marc Morell, BALWOIS Coordinator

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## **6. IUGG Conference on Mathematical Geophysics to be held in Edinburgh in 2012**

The IUGG Conference on Mathematical Geophysics will take place on 18-22 June 2012 in the National Museum of Scotland, Edinburgh, United Kingdom. The overall theme of the conference is “Confronting models with data”. The scientific program will have the following sessions: 1. Earth observation, 2. Earth system dynamics, 3. Crustal dynamics, 4. Geophysical fluid dynamics, 5. Atmospheric-ocean dynamics, 6. Rationalising models with observations, 7. Solving geophysical problems. Several field trips are also planned in association with the meeting. For additional details and updates, please look at <http://www.cmgedinburgh2012.org.uk/>.

Received from Yehuda Ben Zion, CMG President

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## **7. IUGG-related meetings occurring during November 2011 – January 2012**

A calendar of meetings of interest to IUGG disciplines (especially those organized by IUGG Associations) is posted on the IUGG web site (<http://www.IUGG.org/calendar>). Specific information about these meetings can be found there. Individual Associations also list more meetings on their web sites according to their disciplines.

### ***November 2011***

- 13-17, IAGA, Luxor, Egypt, IAGA-3: Heliospheric physics during a deep solar minimum.
- 14-18, IGU, Santiago, Chile, UGI2011 – Regional Geographic Conference
- 21-24, IAHS, Panama, HELP International Symposium 2011
- 23-26, IAGA, Tandil, Argentina, Second Latin-American Association of Paleomag /Geomag
- 30 November - 3 December, IAHS, Irvine, CA, USA, Groundwater Resources Management: Adaptations to Water Scarcity. Science and Policy Responses

***December 2011***

- 5-9, AGU, San Francisco, CA, USA, Fall Meeting
- 6-9, IAHS, Penang, Malaysia, 3rd International Conference on Managing Rivers in the 21st Century

***January 2012***

- 22-26, American Meteorological Society, New Orleans, USA, 92<sup>nd</sup> Annual Meeting
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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 by the Editor.**