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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. Scientific meetings selected for IUGG support in 2017

IUGG co-sponsors symposia and workshops appropriate to Union disciplines of study. IUGG allocated US\$15,000 to assist meetings in 2017 supporting the participation of young and female scientists and scientists from developing countries. In 2017, IUGG will support 9 scientific meetings listed below (the IUGG Association that endorsed the meeting is indicated in brackets):

1. MagIC Workshop: Earth’s Magnetic Field from the Beginning, La Jolla, CA, USA, 24-27 January (IAGA)
2. IndOOS Review Workshop, Perth, Australia, 30 January-1 February (IAPSO)
3. The Atmospheric Global Electric Circuit (GEC), Mitzpe Ramon, Israel, 17-19 February (IAMAS)
4. Training Workshop on Processing of Cloud Particle Measurements, Toulouse, France, 7-9 July (IAMAS)
5. Past Antarctic Ice Sheet (PAIS) conference, Trieste, Italy, 10-16 September (IAPSO)
6. International School of Space Science. Advanced Course on Complexity and Turbulence in Space Plasmas, L'Aquila, Italy, 18-23 September (IAGA)
7. 8th Nordic Workshop - Paleogeography, Paleoclimate and the Geomagnetic Field, Hekla, Iceland, 30 September-7 October (IAGA)
8. Aerosol Training School as part of the Caribbean Aerosol-Health Network (CAHN), Camaguey, Cuba, 23-29 October (IAMAS)

2. Geoscience education events selected for IUGG support in 2017

IUGG awarded six grants (US\$15,000 in total) to support workshops and training schools organized by the Abdus Salam International Centre for Theoretical Physics (ICTP) in 2017 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 2015. The list of the events co-sponsored by IUGG is as follows:

1. Conference on the Science of Climate Change: a Focus on Central America and the Caribbean Islands, Antigua, Guatemala, 15 - 17 March
 2. Extended Workshop on Space Weather Effects on GNSS Operations, Trieste, Italy, 22 May - 2 June
 3. Fourth Workshop on Water Resources in Developing Countries: Hydroclimate Modeling and Analysis Tools, Trieste, Italy, 12 - 23 June
 4. School on Subseasonal to Seasonal Weather and Climate Prediction, Kigali, Rwanda, 4 - 8 September
 5. Workshop-Conference on Near-Fault Observations and Models for Earthquake Hazard Assessment, Trieste, Italy, 10 - 13 October
 6. Workshop on Earthquake and Tsunami Hazards in Vietnam and Surroundings from Theory to Applications, Hanoi, Vietnam, December.
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3. Updates to the IUGG Yearbook

Corrections and updates to the information contained in the IUGG Yearbook (<http://www.iugg.org/publications/yearbooks/yearbook2016.pdf>) are now being finalized in preparation for the Yearbook 2017. Please contact the IUGG Secretariat (secretariat@iugg.org) urgently in the case of any additions and corrections.

4. IUGG at the GEO Plenary XIII

The Plenary XIII of the Group on Earth Observations (GEO) was held in St. Petersburg, Russia, from 7 to 10 November. Established in 2005, GEO is a voluntary partnership of governments and organizations that envisions “a future wherein decisions and actions for the benefit of humankind are informed by coordinated, comprehensive and sustained Earth observations and information.” GEO Member governments include 102 nations, the European Commission, and 106 Participating Organizations comprised of international bodies with a mandate in Earth observations (including IUGG, IAG, GGOS, the International Ozone Commission of IAMAS, and the International Federation of Digital Seismograph Networks as an IAPSEI commission). Together, the GEO community is creating a Global Earth Observation System of Systems (GEOSS) that will link Earth observation resources world-wide across multiple Societal Benefit Areas - Biodiversity and Ecosystem Sustainability, Disaster Resilience, Energy and Mineral Resources Management, Food Security and Sustainable Agriculture, Infrastructure & Transportation Management, Public Health

Surveillance, Sustainable Urban Development, Water Resources Management - and make those resources available for better informed decision-making.

Being Participating Organizations, IUGG, GGOS of IAG and the International Ozone Commission (IO3C) of IAMAS participated in the event organizing a panel session as a side event and participating in the GEO exhibition.



GGOS booth at the GEO Plenary XIII (photo: A. Ismail-Zadeh)

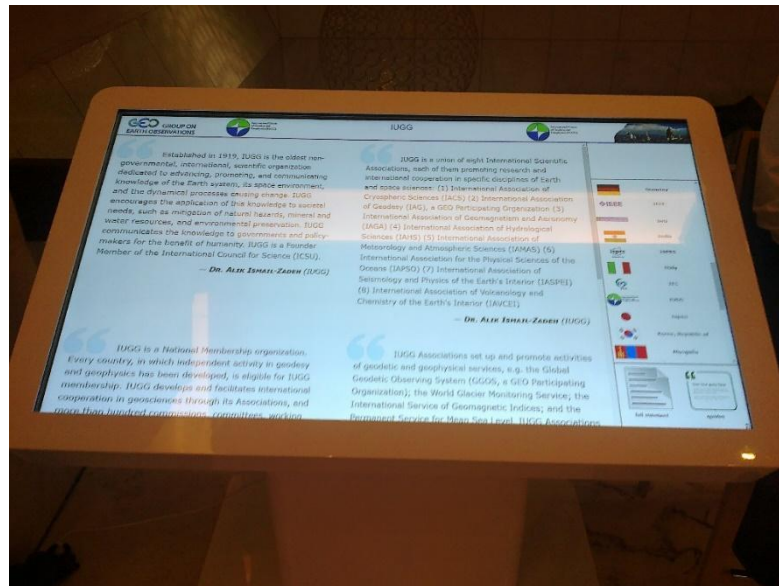
Panel on Earth & Space Observations for Disaster Risk Assessment

Together with the Russian Agency on Hydro-Meteorology (RosHydroMet), IUGG organized a GEO Side Event on Earth and Space Observation for Disaster Risk Assessment on 8 November. The major motivation of the session was to alert the community to the importance of data observations for disaster risk reduction rather than only for disaster management after events have occurred. Despite major advances in knowledge of disaster risks and of disasters caused by natural hazards, the number and severity of disasters are increasing. Global Earth and space observations can significantly assist in reducing disasters by monitoring the Earth's surface and its space environment. Early warning systems augmented by real-time monitoring and observing hurricanes, severe storms, tornados, flooding, landslides, volcanoes, earthquakes, and tsunamis as well as monitoring the mobility of people and development of infrastructure would help in scientific analysis and the assessment of disaster risks.

The panel was moderated by Alik Ismail-Zadeh (IUGG Secretary General) and Vladimir Kattsov (RosHydroMet and the Vice Chair of the Joint Scientific Committee of the World Climate Research Programme). The following panelists gave short talks:

- Shirish Ravan (India), Senior Program Officer, United Nations Office for Outer Space Affairs (UN-SPIDER)
- Lars-Peter Riishojgaard (USA), Project Manager, Observing and Information Systems Department, World Meteorological Organization (WMO)
- Michael Sideris (Canada), IUGG President, and GEO Programme Board Member
- Günter Stangl (Austria), Senior Expert, GGOS/IAG
- Christos Zerefos (Greece), Academy of Athens, and the IO3C Immediate Past President.

Major questions, which the panelists addressed in their talks were (i) how observations from space and ground can assist in disaster risk assessment, and (ii) how cooperation between countries and international/intergovernmental organizations should be strengthened to assist in disaster risk assessment and reduction? After the talks, panelists answered questions and comments from the participants. About 50 international experts attended the Panel, among them David Grimes, WMO President; Vladimir Frolov, RosHydroMet President; and Olga Gershenzon, President of the RBS Signal Company (dealing with disaster early warning). This side event highlighted the importance of Earth observations and risk assessments in disaster risk reduction.



IUGG E-Poster at the GEO Plenary XIII (photo: A. Ismail-Zadeh)

GEO Plenary

The GEO Plenary was held on 9 and 10 November and was one of the best attended plenaries of GEO. After the Opening ceremony and welcome addresses from the Russian organizers and GEO officers, two panel sessions were held, both dedicated to advancing the GEO vision. These sessions focused on progress towards GEO Strategic objectives and Ministerial commitments. They concerned the challenges and opportunities in ongoing and emerging GEO efforts in support of the GEO objectives and commitments – from user- and policy-driven initiatives to foundational efforts to build GEOSS. The first panel included representatives from GEO Initiatives and Flagships covering the full spectrum of actors from policy and decision makers to those involved in advisory and implementation roles. The second panel included representatives of the Teams currently involved in the foundational components of GEOSS, including coordination of Earth observations; data sharing; and development of tools to improve delivery and use of Earth observation data and information. Each panelist addressed challenges and opportunities in the development and implementation of the activities. The final session of the day was dedicated to relationships with industry. This session included representatives from the commercial sector: data providers, providers of value-added services, and downstream-user sectors. The Panel discussed challenges and opportunities related to commercial sector engagement in GEO, from contributing or benefiting from existing GEO efforts to exploring opportunities for new collaborations.

On 10 November, the Plenary discussed ways of strengthening stakeholder engagement. IUGG intervened in the discussion proposing that ways should not only be limited to multidisciplinary cooperation, but also involve inter- and transdisciplinary co-produced approaches. The Chair of the Programme Board presented a report and discussed how UN Sustainable Development Goals have

been analyzed with respect to the activities of GEO and GEOSS. The Plenary then continued with routine work and in accordance with the agenda. The next plenaries will be held in Washington, D.C., USA in 2017, and in Tokyo, Japan in 2018.

Alik Ismail-Zadeh, GEO Principal (IUGG)

5. IUGG at the ICL-IPL-UNESCO conference on landslides

The International Consortium on Landslides (ICL) and the International Programme on Landslides (IPL) co-sponsored by ICL and UNESCO held their joint meeting at UNESCO in Paris, France, from 16 to 18 November. As an ICL Supporting Organization and one of the signatories of the Sendai Partnerships on Landslides Disaster Risk Reduction 2015-2025, IUGG was invited to participate in the conference. At the Opening Ceremony, Qunli Han (Director of Ecological and Earth Sciences of UNESCO), Irasema Alcantara-Ayala (Vice Chair of the ICSU-ISSC-UNISDR Integrated Research on Disaster Risk), Roland Oberhänsli (Immediate Past President of the International Union of Geological Sciences - IUGS); and Alik Ismail-Zadeh (IUGG Secretary General) welcomed the conference participants.

An open panel discussion on the Sendai Partnerships was organized during the Conference. The Panel was chaired by Qunli Han and moderated by Kaoru Takara (Director, Disaster Prevention Research Institute, Kyoto University). The following experts in disaster risks were invited as panelists: Irasema Alcantara-Ayala, ICSU and IRDR; Paolo Canuti / Nicola Casagli, Italy; Alik Ismail-Zadeh, IUGG; Dwikorita Karnawati, Indonesia; Snjezana Mihalic-Arbanas, Croatia; Matjaz Mikos, Slovenia; Badaoui Rouhban, Adviser to the UNESCO Assistant Director General on Natural Sciences; Dinh van Tien, Vietnam; Soichiro Yasukawa, Coordinator for the UNESCO Disaster Risk Reduction and Resilience Program.

In his talk and in answering several questions, Alik Ismail-Zadeh highlighted important areas and relevant IUGG bodies contributing to landslide disaster risk reduction. Namely, the IUGG GeoRisk and Tsunami Commissions as well as several scientific groupings of Union Associations can contribute to the Sendai Partnerships by promoting (i) scientific research related to understanding of landslide initiation and hazard; (ii) reliable forecasting of landslides and an early warning system of increased precision; (iii) multi-hazard risk identification; (iv) improved technologies for monitoring, testing, and analysis of landslides and their analogue and computer simulations; and by organizing teaching courses and tools on natural hazards including landslides.

The conference combined scientific talks with business meetings related to new proposals for World Centers of Excellence in Landslide Risk Reduction and new research proposals. The next ICL major event is the Fourth World Landslide Forum to be held Ljubljana, Slovenia, in 2017.

6. Report on the 10th International Workshop “Physics and Forecasting of Rock Destruction”

The 10th International Workshop “Physics and Forecasting of Rock Destruction”¹ was held in Apatity, Murmansk region, Russia, 13-17 June 2016. This workshop was combined with the 6th Russia-China scientific seminar “*Challenges of non-Linear Geomechanics at Large Depths*”, as both were thematically close to each other. Both events were organized by the Mining Institute of

¹ <http://www.xmsc.ru/home-general>

the Kola Scientific Center of the Russian Academy of Sciences (RAS). The meeting aimed at improving information exchange on achievements in geomechanics and engineering seismology, and it reflected the main goals of the IASPEI Commission on Earthquake Generation Process: Physics, Modeling and Monitoring for Forecast². 103 scientists and engineers participated in the meeting, and 15 plenary lectures were delivered. The submitted abstracts were published in the Abstract Volume and distributed to participants.



At a workshop session (photo: A. Zalyalov)

The workshop was conducted in sessions related to three scientific themes. The first theme was focused on the problems of the theory of rock destruction, mathematical and physical modeling of processes in the sources, the spatial-temporal patterns of earthquake source development, rock bursts, and the influence of trigger mechanisms on the processes of instability of rocks. The second theme was dedicated to the discussion of problems of catastrophe theory and phase transitions in energetically open systems under conditions of self-organized criticality, and collective behavior of cracks. The third theme was related to precursors of earthquakes and the methods of their separation from the background seismic noise, as well as new approaches to earthquake forecasting, prognostic methods and algorithms, as well as methods and software to identify precursory anomalies using a combination of seismological, geophysical, hydro-dynamical and geochemical parameters. It was noted that there is increased interest in studying processes of rock destruction in the upper part of the Earth's crust based on treating it as a non-linear dissipative system. Relating this to conditions in the Earth's crust requires a theory of dynamics of dissipative systems that should be developed based on the hierarchy-blocked structure of the lithosphere, the heterogeneity and discontinuity in its strength and stress state as well as the different scale of flow processes and multiple fluctuations of external and internal origin. The meeting led to a greater understanding of trigger effects resulting in instability of rocks. Laboratory and in-situ experiments are of great importance. For the first time, experts examined the interaction between geomechanical and physical-chemical gas and mass exchange processes in a coal field. The social program included an excursion to the Apatity Museum (in Kirovsk City) containing a rich collection of minerals and rocks of the Kola Peninsula as well as a visit to the world's first nuclear-powered icebreaker. The workshop was supported by IUGG/IASPEI and co-sponsored by the Russian Foundation for Basic Research and several Russian Joint Stock Mining Companies.

Alexey Zavyalov, Vice Chair of the workshop

² <http://www.iaspei.org/commissions/commission-on-earthquake-generation-process-physics-modelling-and-monitoring-for-forecast>

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

ICSU at Habitat III: Science, cities and visualization

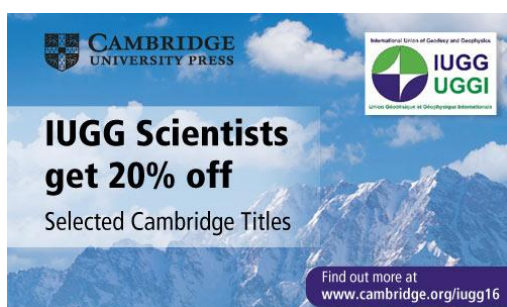
At Habitat III, the UN Conference on Housing and Sustainable Urban Development, ICSU was one of three organizations running Habitat X Change, a space dedicated to promoting science and data visualization as partners for the urban future. The space quickly became the focal point for a vibrant community of conference participants interested in the science-policy interface. Habitat III took place in Quito, Ecuador from 17 to 20 October. The New Urban Agenda (NUA), which is intended to guide urbanization policies at the national level through 2030, was adopted by UN member states at the end of the conference. Habitat X Change was co-organized by the International Council for Science (ICSU), along with Future Earth and the Potsdam University of Applied Sciences. Over the course of six days, a total of 17 events took place in Habitat X Change – with each organization taking the lead to coordinate and deliver their own series of events. The thematic tracks were Cities and Science (ICSU); the Anthropocene: an Urban Planet (Future Earth) and Data and Visualization (Potsdam). In the ICSU track Cities and Science, the Urban Health and Wellbeing programme coordinated a successful event on healthy cities. The two other events were on the science-policy-practice nexus, including one developed in partnership with the C40 Cities Climate Leadership Group. More information on the event can be found at: <http://www.icsu.org/news-centre/news/top-news/icsu-at-habitat-iii-science-cities-and-visualization>.

ICSU co-organizes side event at COP22 on urgent questions in climate research

On the opening day of COP22, ICSU in partnership with the Scientific Committee on Antarctic Research (SCAR), the Inter-American Institute for Global Change Research (IAI), the World Climate Research Programme (WCRP), and the Intergovernmental Panel on Climate Change (IPCC) Working Group I convened a side event on key pressing issues in fundamental climate research following the Paris Agreement. The event brought together a group of high level scientists, representatives of research agencies and research funding agencies. The event was moderated by Valérie Masson-Delmotte, co-chair of IPCC Working Group I and the Head of the IACS Division on Cryosphere, Atmosphere and Climate; and David Carlson, WCRP Director. More information on the event can be found at: <http://www.icsu.org/news-centre/news/top-news/icsu-co-organizes-side-event-at-COP22-on-urgent-questions-in-climate-research>.

Source: ICSU website

8. Cambridge University Press offers discount on books for IUGG scientists



IUGG scientists can purchase selected books published by the Cambridge University Press at a 20% discount. For this, please link to www.cambridge.org/iugg16.

To order and buy, add the chosen book(s) to the basket, then enter the code **IUGG16** at the checkout to get the discount.

9. Awards and Honors

Mioara Manda, IAGA Secretary General, is awarded the National Order of Merit by the decree of the French President for her outstanding scientific career and public service. She will be raised to the rank of Chevalier (Knight) at a special ceremony. Congratulations to Mioara!

10. 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 also list more meetings on their websites according to their disciplines.

December

- 12-16, AGU, San Francisco, CA, USA, Fall Meeting of the American Geophysical Union. Web: <https://fallmeeting.agu.org/2016/>

January 2017

- 22-26, AMS, Seattle, WA, USA, The Annual Meeting 2017 of the American Meteorological Society. Web: <https://annual.ametsoc.org/2017>
- 24-27, IUGG, IAGA, La Jolla, CA, USA, MagIC Workshop: Earth's Magnetic Field from the Beginning. Web: <https://earthref.org/events/MAGIC/2017/>
- 30 January-1 February, IUGG, IAPSO, Perth, Australia, IndOOS Review Workshop.

February 2017

- 12-17, IACS, Wellington, New Zealand, IACS Scientific Assembly 2017. Web: <http://www.climate-cryosphere.org/meetings/upcoming-clic/2017-cryosphere-in-a-changing-climate-conference>
- 17-19, IUGG, IAMAS, Mitzpe Ramon, Israel, The Atmospheric Global Electric Circuit (GEC).
- 20-24, IASPEI, Wellington, New Zealand, 10th International Workshop on Statistical Seismology (StatSei10). Web: <http://www.gns.cri.nz/Home/News-and-Events/Events/StatSei10/Welcome>

End of IUGG Electronic Journal Volume 16 Number 12 (1 December 2016)

Editors: Tom Beer, Alik Ismail-Zadeh (Editor-in-Chief), Franz Kuglitsch (Associate Editor), and Kathryn Whaler.

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