



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

The IUGG Electronic Journal

Volume 12 No. 11 (1 November 2012)

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 Web site (<http://www.iugg.org/publications/ejournals/>). Please forward this message to those who will benefit from the information. Your comments are welcome.

Contents

1. Kingdom of Saudi Arabia becomes an IUGG Member
2. Report on the 2012 IUGG Bureau meeting
3. Seismologists and volcanologists concern about the L'Aquila sentence
4. News from the International Council for Science (ICSU)
5. Report on the training workshop in glaciology
6. Awards and honors
7. IUGG-related meetings occurring during November – December

1. Kingdom of Saudi Arabia becomes an IUGG Member

On 23 July 2012 an application for admission of the Kingdom of Saudi Arabia to IUGG as a regular member (Category 2) was received from the King Abdulaziz City for Science and Technology (KACST). 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 (32 affirmative). According to the IUGG Statutes and By-Laws, the membership of Saudi Arabia is provisional until the next meeting of the IUGG Council in Prague, Czech Republic, 2015, when a final vote will be taken.

Congratulations to the new officers of the Saudi National Committee! They are Tariq Alkhalifah (President) and Khalid Aldamegh (Secretary General). Correspondents to the Associations are Abdullah Arrajehi (IAG), Abdulaziz Al-Bassam (IAHS), Saad Mohalfi (IAMAS), Abdul Nasser Alkotab (IAPSO), Khalid Aldamegh (IASPEI), and Mohammed Rashad Hassan Moufti (IAVCEI).

2. Report on the 2012 IUGG Bureau meeting

The IUGG Bureau met in Lauterbad, Germany, from 29 September to 2 October. At the annual meeting the Bureau considered several important topics related to scientific development, science promotion, recognition, and education. The Bureau approved the guidelines on affiliated membership, fellowship and honorary membership, the Gold Medal of the Union, and the Early Career Scientist Award. The Bureau considered membership issues related to Albania, Armenia,

D.R. Congo, Ghana, Monaco, Morocco, and Saudi Arabia, and how to strengthen contacts with IUGG Members. The Bureau also considered possibilities related to involvement of early career scientists in IUGG/Associations activities as well as the interactions between industry and academia. The activities of the Union Commissions and Union Committees were reviewed, and the formation of the Union Working Group on History of Geodesy and Geophysics was endorsed. The Bureau reviewed the activities of the International Lithosphere Program, the Grants Programme, the Science Education Programme, and the Special Publication Programme. The celebration of the 100th anniversary of IUGG in 2019 was discussed. The Bureau considered the cooperation with the International Council for Science (ICSU), with ICSU's scientific unions (particularly with the GeoUnions) and ICSU's interdisciplinary bodies (particularly with new scientific programs IRDR and WDS), as well as with the intergovernmental bodies: UNESCO, WMO, ICAO, GEO/GEOSS and some others. The reports of the President, Secretary General, Treasurer and Chair of the Finance Committee were presented and approved. The Bureau welcomed the new Executive Secretary of IUGG at the last day of the meeting.



The IUGG Bureau (from left to right): A. Ismail-Zadeh (Secretary General), D. Collins (Chair, Finance Committee, guest), H. Gupta (President), I. Ansorge (Member), P. Hubert (Member), M. Sideris (Vice President), A. Hansen (Treasurer), S. Oswald (Assistant Secretary General), and K. Satake (Member).

3. Seismologists and volcanologists concern about the L'Aquila sentence

IUGG, as representative of the global geophysical and geodetic community, expresses its concern regarding the case of the geophysicists sentenced to six year prison terms because of their “negligence, carelessness, incompetence” (“negligenza, imprudenza, imperizia”) in providing scientific advice prior to the earthquake in L'Aquila, Italy, in 2009.

In 2010 IUGG issued a statement on Freedom to conduct science and responsibilities of scientists (http://www.iugg.org/resolutions/IUGG_for_freedom_to_conduct_science.pdf). Scientists have always collaborated with local authorities and provided them with valuable information regarding probable extreme natural events and their impact, with the understanding that such information will

be used for proper planning and for risk mitigation by the civil authorities. Holding scientists criminally responsible for their assessment of risk of natural events that are not fully understood and difficult to forecast, is not only unfounded but will also lead to the withdrawal of scientists from advisory positions with government/civic agencies simply for the fear of prosecution. IUGG condemns any policies or actions that limit the ability and willingness of scientists to express (without fear of prosecution) qualified opinions and make assessments to the best of their knowledge. IUGG promotes enhanced communication of scientific knowledge between scientists and policy makers to benefit the society.

IASPEI Statement on the L'Aquila sentence

Seven prominent Italian earthquake experts were convicted of manslaughter on 22 October 2012 and sentenced to six years in prison “for failing to give adequate warning to the residents of a seismically active area in the months preceding the earthquake” (New York Times, 23 October), which occurred on 9 April 2009 near L'Aquila, the capital of Abruzzo (Italy) and resulted in more than 300 people deaths. IASPEI released the following statement:

“The International Association of Seismology and Physics of the Earth Interior (IASPEI)¹, on behalf of the world community of seismologists, expresses its deepest concern for the L'Aquila verdict and prison sentence, that condemns for involuntary manslaughter seven prominent Italian scientists and members of the Great Risks Commission of the Italian Civil Defence, due to negligence and errors in the evaluation and communication of the seismic crisis preceding the L'Aquila earthquake of April 6, 2009, resulting in the regretful death of 309 people.

The mission of IASPEI is to advance global seismological knowledge to mitigate the effects and minimize the victims of earthquakes. The trial in L'Aquila condemns some of IASPEI's most brilliant scientists, who dedicated their lives to the reduction of seismic risk and to whom go our sympathy and support.

We do not express here opinions on the Italian judiciary system nor on the details of the sentence, but the trial in L'Aquila sets a disturbing and unprecedented case in linking the free expression of scientific opinions to casualties resulting from the collapse of poorly built or maintained buildings during earthquakes, with issues and ramifications relevant to the whole seismological community:

- IASPEI adheres to the statement on Freedom to Conduct Science and Responsibilities of Scientists² of the International Union of Geophysics and Geodesy and to the principles of the Universality of Science³ of the International Council for Science: the free thinking and conduct of scientific development is a principle of modern society and cannot be hindered or limited by threats of personal retaliation.
- IASPEI supports the development, testing and presentation of new evidence on earthquake forecasting and prediction; however, IASPEI is of the opinion that reliable short-term prediction of earthquakes is not possible at present; claims to the contrary may induce false expectations and incorrect behavior in the population and authorities, and are not supported by IASPEI.
- When serving on high-level advisory panels for governments and authorities, scientists have the duty to provide the state of knowledge in a comprehensive and unbiased fashion, to enable authorities to take the required mitigation actions. This cannot be achieved under the threat of

¹ <http://www.iaspei.org>

² http://www.iugg.org/resolutions/IUGG_for_freedom_to_conduct_science.pdf

³ <http://www.icsu.org/about-icsu/structure/committees/freedom-responsibility/statute-5>

public prosecution. A negative impact of this trial and sentence will be to make scientists reluctant to serve on risk advisory commissions or express expert opinions.

- Communication in a language understandable to public and authorities is of crucial importance, including the communication of uncertainties associated to all evaluations and projections.
- Scientists cannot be held responsible for effects that are not under their responsibility. Governments and authorities are responsible to ensure that appropriate strategies and measures for risk mitigation are in place and applied. Roles and responsibilities in the earthquake mitigation chain need to be clearly defined, understood and adhered to.

IASPEI is confident that the L'Aquila case will provide the opportunity to develop a proper link between science, policy makers and society in order to avoid any type of miscommunication of information and scientific knowledge in the future.”

Response from IAVCEI on conviction of scientists in Italy

Most of you are aware that six scientists and a former government administrator working for the Italian National Risks Commission were charged with criminal negligence over the major earthquake that struck and destroyed the town of L'Aquila in central Italy on 6th April 2009, and tragically killed over 300 people. The charged includes Professor Franco Barberi, internationally renowned volcanologist, who is the inaugural winner of the Wager Medal of the International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI) in 1974. The major earthquake had been preceded by numerous small earthquakes, and several days before it struck, the Commission had apparently provided advice based on the information available to them that although a major earthquake was possible, it was unlikely. They were charged with providing inaccurate information and miscommunication about the earthquake crisis, and this week, on 22nd October 2012 they were convicted of manslaughter. They have been sentenced to six years in jail, as well as being required to pay the huge costs of the court case and compensation.

The seven convicted are Franco Barberi, Head of Serious Risks Commission; Enzo Boschi, former President of the National Institute of Geophysics; Giulio Selvaggi, Director of National Earthquake Centre; Gian Michele Calvi, Director of European Centre for Earthquake Engineering; Claudio Eva, Physicist; Mauro Dolce, Director of the Civil Protection Agency's earthquake risk office; Bernardo De Bernardinis, former Vice-President of Civil Protection Agency's technical department. They are clearly all eminent scientists with many years of experience in their expert fields, not novices. The scientists did not cause the earthquakes, they could not prevent them, nor could they predict them. They didn't get it right, but potential hazard prediction and assessment is such that it is difficult to get it right. Assessments have to be weighed by the statistical likelihood based on the information available versus the disruption to population. If the extreme is predicted, and it doesn't happen, then no one believes future predictions. Unfortunately, no one knows all the facts in these matters except those involved, but because of the inexactness of assessing the nature of hazards, timing and impact, this appears to be a farce and the scientists have been made scapegoats. There is a very good parallel with the Christchurch, New Zealand earthquake disaster, where people were also killed. The two major destructive earthquakes there could not be predicted either, they occurred amidst a swarm of thousands of low magnitude earthquakes, and the city was not evacuated even when the earthquake crisis began. But no scientists there have been charged with criminal negligence because there is an understanding that providing exact earthquake predictions is impossible.

The prediction of timing, magnitude and impact of all natural hazards and assessment of the risks involved is extraordinarily difficult. They can only be assessed approximately, with a spectrum of scenarios, from worst case to lowest impact, being proposed. Scientists in positions of responsibility give advice based on their understanding of the current circumstances and their years of experience in relevant scientific fields. However, they cannot get it exactly right every time. This is not because the technology is deficient, nor because they are incompetent or negligent, but simply because nature is extremely unpredictable in the way and when it releases its energy and the magnitude and impact of any of these events. As scientists we do the best we can in the circumstances to assist and provide advice.

IAVCEI therefore condemns the judgment and convictions of these seven people in Italy, and appeals to the Italian justice system and the Italian government to review and overturn the convictions and the injustice done to these scientists. This conviction sets a terrible international precedent. It should cause all scientists employed in monitoring and advising government and civil authorities on potential natural hazards grave concern about the advice they give. It becomes imperative that scientists cover all possibilities in great detail, and present the range of possible scenarios with estimated statistical likelihoods. In numerical terms of numbers of detected earthquakes, it means that in the cases of L'Aquila and Christchurch the statistical likelihood of the major earthquakes happening was $< 0.001!$ But on this basis, the Italian scientists have been convicted. This is extraordinary. And while huge amounts of money are being spent on prosecuting the seven convicted individuals, there are still hundreds, perhaps even thousands of people made homeless by the 2009 earthquake, still living in inadequate temporary accommodation. The priorities are wrong, and a cynical person would be justified in considering if the prosecutions have in part been pursued to deflect attention from the inadequate recovery effort.

There is also a flip side to this. What would have happened if the convicted scientists had forecast the worst-case scenario before the L'Aquila disaster, resulting in the evacuation of a half a million people of more in the region, but then nothing happened? Would they then also have been charged with providing misleading information and causing unnecessary costs to government and community?

Natural disasters are bad news for everyone – affected communities, governments, civil authorities, industry and the scientific community. The real concern now for the scientific community is that civil authorities could try to deflect attention from themselves and the relief effort after a crisis by playing the “blame game” and taking legal action against scientists for “providing inaccurate information”. It is also extraordinary that six scientists and one government administrator have been charged, but no civil and government personnel, who must also have been involved in the whole monitoring and decision making process. Again, the word scapegoats springs to mind.

IAVCEI will make representations to the relevant authorities in Italy, including the President and Prime Minister, and the ministers for Science and Justice, if possible, on behalf of the volcanological and general scientific community to support the convicted scientists in their legal appeals against the convictions and sentences. We will make it clear that scientists who are providing the best advice based on the information available to them and their scientific experience, cannot be held responsible for the unpredictable outcomes of nature during major natural disasters. It will be pointed out that if the convictions are upheld this will have a huge impact in natural hazards and disaster management not only in Italy but also world wide because many, perhaps even most scientists will hence forth either decide to not take up positions of responsibility for fear of litigation, or will not give their best assessment of a situation, inclining always to over-conservative assessments.

The scientific community has learned other lessons from this, apart from the above. Scientists involved in natural hazard assessment must clarify with their employer or the organization they are accountable or report to, just exactly what is expected of them, what their level of responsibility is, and what the chain of command and reporting protocols are between them as scientists and the civil and government authorities they work with. Without establishing such an agreed to understanding, such scientists are vulnerable and quite frankly, in the modern world of litigation, they would be foolish.

Already the current President, two Vice-Presidents, including the Advisor on Volcanic Hazards (Mauro Rosi) in the current Italian Risks Commission have resigned in protest against the convictions. These highly respected scientists know more than anyone about what has happened in this case and have expressed their opinion on this matter with action that will immediately impact on Italy's capacity to deal with future natural disasters. Who in Italy will be prepared to step up to the plate when the next major earthquake crisis occurs, or when the next major period of unrest at the Campi Flegrei caldera, in which Naples is located, develops, as it appears to be doing now?

Received from Ray Cas, IAVCEI President

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

ICSU pledges support for scientists in the L'Aquila case

ICSU, as representative of the global scientific community, expresses its strong concern regarding the case of the six scientists who have been found guilty of manslaughter and sentenced to six year prison terms because of their role in providing scientific advice prior to the earthquake in L'Aquila, Italy, in 2009.

While ICSU is not privy to all the information that was available to the prosecutors, it appears that these scientists are being penalised essentially for using their experience and knowledge to provide evidence for decision-making. In the field of natural hazard risk, such scientific evidence has its limitations. The timing and strength of earthquakes cannot be accurately predicted. Nevertheless, science can, and does, make important contributions to hazard response strategies. In the case of L'Aquila, six scientists accepted their responsibility to society to try and support decision-making in a situation of inherent uncertainty. That these scientists should be condemned to prison for so doing is a gross injustice.

The L'Aquila earthquake was a tragic event in which more than 300 people died and ICSU endorses the need to determine whether these lives might have been saved if the public authorities had reacted differently before the event. The role of scientific advice in the decision-making processes prior to the earthquake is a legitimate area of enquiry. We all need to learn the lessons from the past to be better prepared for the future. In the meantime, blaming scientists and scientific advice for the deaths that occurred in L'Aquila is a grave error that will, unfortunately, make many scientists reluctant to accept public advisory roles.

We call on the responsible authorities to take urgent and decisive steps to correct this error and ensure due justice for Franco Barberi, Enzo Boschi, Giuli Selvaggi, Gian Michele Calvi, Mauro Dolce and Claudio Eva.

For further information: CFRS discussion of the L’Aquila case, September 2011
<http://www.icsu.org/publications/cfrs/11th-cfrs-meeting-sep-2011/download-meeting-report-item-9.3.2>

Future Earth research themes

Future Earth is a new 10-year international research programme that will develop the knowledge for responding effectively to the risks and opportunities of global environmental change and for supporting transformation towards global sustainability in the coming decades. The Transition Team, responsible for the initial design of Future Earth, met in Paris on 20-21 September to agree on the broad outlines of recommendations for the research framework, governance, stakeholder engagement and communications strategy. In the wake of Rio+20, the Team also agreed on the importance of strategically positioning Future Earth in the science-policy landscape, as a key science provider for the definition of Sustainable Development Goals. The Team agreed on a conceptual framework and a set of three broad themes for the development of integrated research for global sustainability:

- ***Dynamic Planet*** (*observing, explaining, projecting Earth and societal system trends, drivers and processes, and their interactions; anticipating global thresholds*);
- ***Global Development*** (*providing the knowledge for sustainable, secure and fair stewardship of food, water, health, energy, materials and other ecosystem services.*); and
- ***Transformation towards Sustainability*** (*understanding and evaluating strategies for governing and managing the global environment across scales and sectors, to move towards a sustainable Future Earth*).

The Transition Team will continue to test their thinking against further consultation responses. Consultations will resume at a series of upcoming events, including three regional workshops held in Africa, Asia and Latin America, and a meeting with project representatives to be held in Paris at the end of November. The Transition Team, which began its work in June 2011, will deliver an initial design report at the end of the year to guide the development of the initiative. It is expected that nominations for the Scientific Committee of Future Earth will open in November with a view to the body being appointed by April 2013. The Science and Technology Alliance for Global Sustainability, including the International Council for Science (ICSU), the International Social Science Council (ISSC), the Belmont Forum, the United Nations Environment Programme (UNEP), the United Nations Educational Scientific and Cultural Organization (UNESCO), the United Nations University (UNU), and the World Meteorological Organization (WMO) as observer, will provide interim governance until Future Earth is fully operational in 2014.

Source: the ICSU web page

5. Report on the training workshop in glaciology

A training workshop in glaciology was held in McCarthy, south central Alaska, from 10–20 June 2012. The workshop aimed to equip early stage PhD students with tools to address the expanding challenges in quantifying and modeling rapid changes in glaciers and ice sheets occurring in response to a warming climate. A major goal of the workshop was also to offer a valuable platform for international networking.

27 graduate students representing 26 universities from 11 countries spent 10 days in the small village of McCarthy, situated in the heart of the Wrangell Mountains and adjacent to a number of

easily accessible glaciers. Students came from a wide range of educational backgrounds such as geography, geology, mathematics, physics and engineering. Many of the students are enrolled at universities where glaciology courses are not offered at all. Hence, the workshop provided an opportunity for these students to obtain a holistic education in a wide range of glaciological topics that reaches beyond the scope of their graduate thesis work. The workshop provided a comprehensive overview of the physics of glaciers and current research frontiers in glaciology. Topics included glacier mass balance, meteorology, hydrology, glacier dynamics, ice-ocean interactions, glacier geology, geophysical methods, inverse modeling, and remote sensing of glaciers and ice sheets. A focus was on modeling and quantitative glaciology.



Walking on the Root Glacier (photo by Allen Pope)

The workshop's format followed the one of a similar event in 2010. It included morning presentations followed by computational exercises in the afternoon. In addition, each student worked on a glaciology computer project as a member of a small team guided by an instructor, and presented their results in a 'mini' student conference at the end of the course. At an early stage of the course students presented their own research in poster sessions. A one-day excursion to the Kennicott glacier and a short excursion to the pro-glacial field of the glacier provided hands-on experience of a glacial environment, and gave students an opportunity to learn techniques of field data collection. A number of evening activities rounded off the program, including two public lectures at the Kennicott National Historic Landmark by two of the external instructors that were attended by over 100 locals and tourists. Course material including lecture presentations, written summaries, and exercises are currently posted on a dedicated webpage (<http://glaciers.gi.alaska.edu/courses/summerschool2012>). Hence, the material will reach an audience beyond the participants of the summer school.

A major characteristic of the workshop was that almost all instructors stayed for the entire period, offering plenty of opportunity for interaction with the students during and outside of the formal instruction period. In addition to six faculty members from the University of Alaska, four invited lecturers participated. Students became acquainted with a number of established scientists in different fields in glaciology. Hence, the course offered a valuable platform for international networking between students and instructors and among the students themselves, thereby fostering future collaborations. This was generally perceived as a major asset of the workshop. The workshop location contributed to the networking through the very special atmosphere at McCarthy. Students camped close to the village, while meals were provided by the Wrangell Mountains Center, the location at which all course activities were conducted.

Most participants also participated in the symposium of the International Glaciological Society on “Glaciers and ice sheets in a warming climate” held in Fairbanks, Alaska, following immediately the McCarthy course. The timing of both events was deliberately chosen to facilitate course participants to attend both events. Overall, the course received highly positive evaluations. Participants left with a firmer background in glaciology and a great network of contacts. The Workshop was supported by IUGG via IACS.

Received from Regine Hock, Workshop’s organizer

6. Awards and honors

Kenji Satake, IUGG Bureau Member, assumed the office of the President of the Asia Oceania Geosciences Society (AOGS) for the next 2 years at the closing ceremony of the AOGS-AGU Joint Assembly held in Singapore in August 2012.

Alik Ismail-Zadeh, IUGG Secretary General, presented an Axford Distinguished Lecture entitled “Extreme geohazards, disaster risks and societal implications” at the Opening of the 2012 AOGS-AGU Joint Assembly.

Gordon Young, IAHS President, was appointed the Executive Director of the Canadian Geophysical Union.

7. IUGG-related meetings occurring during November– December

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

- 5-7, UN-OOSA, Beijing, China, 7th Meeting of the International Committee on Global Navigation Satellite Systems (ICG)
- 10-12, IACS, Sanya, China, International Conference on Cryosphere: Changes, Impacts and Adaptation
- 13-14, IACS, Sanya, China, Bureau Meeting
- 14-16, EGU, IAHS, Torino, Italy, EGU Leonardo Conference 2012: Hydrology and Society
- 14-18, IGU, Santiago, Chile, UGI 2011 Regional Geographic
- 18-23, IAVCEI, Colima, Mexico, Cities on Volcanoes 7

December

- 2-14, IAG, IUGG, PAIGH, Bogota, Colombia, Workshop on Vertical Datum Unification
- 3-7, AGU, San Francisco, USA, Fall Meeting
- 8-12, GRC/IUGG, AGU, IRDR, Orange, California, USA, First IUGG GRC Conference “Extreme Natural Hazards and Their Impacts”
- 13-15, ISPRS, IUGG, Enschede, The Netherlands, 8th International Conference on Geo-information for Disaster Management

End of IUGG Electronic Journal Volume 12 Number 11 (1 November 2012)

A.T. Ismail-Zadeh, Secretary General (<http://www.IUGG.org>)

E-mail: Alik.Ismail-Zadeh@kit.edu

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.