



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 Web site (<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. Natural Hazards, Disasters and Society

Humans face natural hazards at different scales in time and space. The hazards affect life and health; they have a dramatic impact on the sustainability of society, especially in societies that are vulnerable because of their geographic location, poverty, or both. The first decade of the XXIst century has been marked by a significant number of natural disasters, such as earthquakes (e.g. Sumatra- Andaman in 2004, Kashmir in 2005, Sichuan in 2008) accompanied by landslides (China in 2008) or tsunami (Indian Ocean in 2004); floods (e.g. West and Central Europe in 2002; China in 2007; Taiwan and Philippines in 2009); cyclones (e.g. Katrina in 2005; Nargis in 2008); and several others.

On 12 January 2010 Haiti was struck by a violent earthquake; its epicenter was located nearby the capital city of Port-au-Prince. According to the Haitian government, more than 111,000 people died in the earthquake, 194,000 were injured, and 609,000 became homeless (CNN, 23 January 2010 (<http://www.cnn.com/2010/WORLD/americas/01/23/haiti.earthquake/index.html>)).

Our hearts go out to those in Haiti who have suffered losses of loved people and personal properties during the earthquake disaster.

Obviously, humans will never be able to prevent the occurrences of natural phenomena entirely. However, scientists are able to gain a better understanding of the complex mechanisms that cause

the disasters and to deliver their knowledge to disaster management agencies in order to be prepared to cope with such extreme events. Haiti was not prepared to cope with the large earthquake, although geophysicists warned about the next big event (e.g. *Geophysical Journal International*, 174, 889-903, 2008).

"The tendency to reduce the funding for preventive disaster management of natural catastrophes rarely follows the rules of responsible stewardship for future generations neither in developing countries nor in highly developed economies" (Ismail-Zadeh and Takeuchi, *Natural Hazards*, 42, 459-467, 2007). The investment to avoid losses tends not to be easily accepted in political decision making as compared with that to gain positive benefits. It is because the benefit of preventing losses, however long lasting it is, is not easily visible while the positive benefit is obvious and can easily be agreed by people. A large investment is made, when a big disaster due to an earthquake occurs, and the investment decreases till the next large earthquake. If about 5 to 10% of the funds, necessary for recovery and rehabilitation after a disaster, would be spent to mitigate an anticipated extreme event, it could in effect save lives, constructions, and other resources.

Scientists must act today and implement state-of-the-art measures to protect society from rare but recurrent extreme natural catastrophes. Otherwise we will witness again and again the tragic aftermaths of disaster, which could have been avoided.

On 26 January IUGG Commission on Geophysical Risk and Sustainability issued the Statement on natural hazards (www.iugg-georisk.org/Statement_NatHaz2010.pdf). Based on the Statement, IUGG Bureau revised its Resolution on natural hazards. The text of the Resolution can be found at the IUGG web page <http://www.iugg.org/resolutions/nathaz2010.pdf> and below.

2. IUGG Resolution “Science on Natural Hazards and Environmental Disasters”

*Adopted by the IUGG Bureau, 10 January 2005
Revised and adopted by the IUGG Bureau, 29 January 2010*

Whereas, The first decade of the XXIst century has been marked by a significant number of environmental disasters due to natural extreme events, such as earthquakes (e.g. 2004 Sumatra-Andaman in the Indian Ocean, 2005 Kashmir in Pakistan, 2008 Sichuan in China, and 2010 Haiti), which triggered landslides and/or tsunamis; floods (e.g. in western and central Europe in 2002, China in 2007; Taiwan and Philippines in 2009); cyclones and hurricanes (e.g. Katrina in 2005; Nargis in 2008); and some others, resulting in tragic loss of life and property;

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Considering, Global, regional, and local increases of vulnerability and all changes of environmental conditions including climate; and

2. The continuous increase of fatalities, the number of people affected, and property damage caused by natural events;

Realizing, That disaster reduction, management, and preparedness as well as warning systems need long term planning; and

2. That reducing the impact of disasters should be carried out mainly at the local level;

Noting, That existing technology observations for topography, real-time monitoring of land, ocean and atmosphere activity, satellite observations from space, and natural hazard prediction models could prevent loss of life if predictions were timely and warnings were heeded; and

2. That the economic impact of natural disasters exceeds the cost of mitigation; and

3. That in the aftermath of a natural disaster, existing scientific knowledge and technology could provide rescue agencies and civil defense managers immediate quantitative estimates of the extent and severity of the disaster; and

4. That the reduction of predictive uncertainty is the most important scientific agenda in natural hazards reduction;

Recommends, That multidisciplinary and multinational research programs and research networks on geophysical hazards and risks be developed to integrate diverse data streams, to improve understanding of the natural phenomena associated with the disasters, and to develop predictive modeling capability; and

2. That systems and procedures be prescribed for early warning, public awareness, regional evacuation routes and shelters based on charts of natural hazards, vulnerability, and risk assessments; and

3. That regional disaster management centers be established where they do not now exist to catalog information on the population and infrastructure at risk, and to monitor land, ocean and atmosphere in relation to all kinds of natural hazards; and

4. That regional natural hazard warning systems be set up in order to generate and disseminate timely and accurate information needed by decision makers and the public, and

Urges, The international science community to quantify natural hazards and extreme events at all scales;

2. To adopt integrative and comprehensive interdisciplinary approaches towards developing adaptation in order to decrease vulnerability; and

3. To produce planning tools for disaster risk reduction at all scales.

Resolves, To promote the development and application of scientific expertise and experience in modeling and visualization of physical, technological, biological and social processes and their implications to the mitigation of natural disasters; and

2. To share this critical information to the greatest extent possible with government officials, emergency planners, the insurance industry, policy makers, and the public.

3. IUGG 2015 Site Comparison Committee

The IUGG Executive Committee agreed that a committee should be appointed to evaluate all proposals to host the 2015 IUGG General Assembly. President Tom Beer has appointed the following members of this Committee:

Chair: Christian Tscherning (Denmark)

Members: Michel Béland (Canada) and Peter Suhadolc (Italy)

Invitations to host the 2015 IUGG General Assembly are now being accepted and must be received by 27 December 2010. Guidelines for a proposal are posted on the IUGG web site.

4. German Research Foundation continues sponsorship of the IUGG Secretariat

As a response to the second request of the German National Committee for Geodesy and Geophysics (NKGG), the German Research Foundation (DFG) awarded the IUGG Secretariat a grant to support the position of the Assistant Secretary General and to assist with business travels of the Secretary General for the years 2010-2011. IUGG is very grateful to the NKGG for the support and to the DFG for the sponsorship of the IUGG Secretariat. A letter of appreciation was sent to the DFG International Department by IUGG President Tom Beer.

5. Report on the International Seminar on Earthquake Prediction (Lisbon, April 2009)

The Second International Seminar on Earthquake Prediction was held in Lisbon, April 29-30, 2009, evocating the 100th anniversary of the Benavente (Lower Tagus) 1909 earthquake. The Seminar was organized in two days with 7 key-note lecturers and 30 oral presentations and a final Round Table discussion. The Seminar was opened by the President of the Academy of Engineering, Carlos Salema, and welcomed by the organizers L. A. Mendes-Victor and Carlos Sousa Oliveira. A letter from Badaoui Rouhban, the UNESCO Director of the Section for Disaster Reduction was presented to the participants of the seminar. This seminar was an excellent opportunity to bring together international research and development, to share the knowledge and the latest achievements and practices in Earthquake Prediction. The seminar provided a platform for meetings, discussions and exchange of views between specialists in earthquake forecasting; reviewed the state-of-the-art concerning the existing possibilities of predicting major seismic movements and their intensities; identified the most promising lines of research; and examined the improvement of international co-operation in the field of earthquake prediction. The program covered the following major topics: seismicity, electromagnetic studies, multi-parameter and geodetic case studies, and neotectonics and paleoseismology. The Seminar was supported by IUGG, Portuguese Academy of Engineering, European Centre on Urban Risks, Fundação para a Ciência e a Tecnologia, and Fundação Calouste Gulbenkian.

Received from Luís A. Mendes-Victor, Chair of the Seminar's Organizing Committee

6. Report on the Clouds and Turbulence Workshop (London, May 2009)

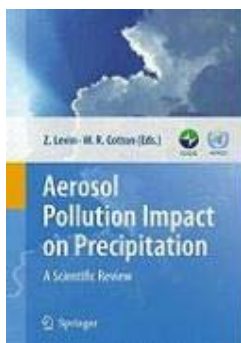
The role of small-scale turbulence in cloud formation and precipitation is a controversial issue, which has long divided the cloud physics community. The difficulty in measuring clouds at these scales and the lack of realistic cloud models that span all the relevant scales means that its precise effect is hard to quantify and makes an assessment of its importance difficult. However, increasing computer power, more sophisticated laboratory experiments and better observations have all brought a resurgence of interest in this issue in recent years particularly from the turbulence community. The phenomenon of preferential concentration, or clustering, of droplets has perhaps received most attention from the turbulence community yet this is just one of many processes at work in clouds: large-scale atmospheric stability, aerosols and entrainment all play vital roles in the formation of clouds. For this reason, it was felt that a workshop, which aimed to bring together those in the cloud physics and turbulence communities was especially timely.

The workshop was held in the Institute of Mathematical Sciences, Imperial College of London, 23-25 May 2009. It started with four overview talks: on cloud microphysics, inertial particles in

turbulence, cloud parameterisations and the interaction between clouds and radiation. The aim was to provide a sufficient background for those not conversant with that field. The rest of the three-day workshop was organised along four broad themes: the role of small-scale turbulence in the condensational growth of droplets, entrainment, turbulent enhancement of collision rates among larger droplets and how these phenomena affect (and are affected by) radiative heating. The abstracts and presentations can be viewed at the web-page of the workshop: <http://www3.imperial.ac.uk/mathsinstitute/programmes/research/turbulence/4thturbulenceworkshop/programme>. The workshop was supported by IUGG, EPSRC, NERC, NCAS, LMS, Grantham Institute for Climate Change (Imperial College), and the UK Met Office.

Received from J.D. Haigh, co-organiser of the workshop

7. Awards

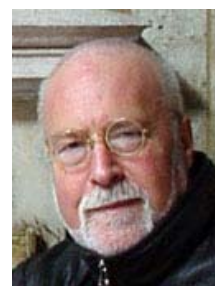


The Atmospheric Science Librarians International (ASLI) awarded the book ***Aerosol Pollution Impact on Precipitation : a Scientific review*** (editors Z. Levin and W. R. Cotton) "2009 ASLI Choice" Honourable mention for an authoritative, well-organized, forum-based approach to the evaluation of a problem. ASLI's Choice is an award for the best book of 2009 in the fields of meteorology / climatology / atmospheric sciences. This book was written under the sponsorship of IUGG and WMO (World Meteorological Organization). The Editors of the book received a certificate in Atlanta (Georgia, USA) during the American Meteorological Society Meeting on 20 January 2010.

8. Obituary: Albert Tarantola (1949-2009)

A distinguished French geophysicist **Albert Tarantola** passed away on 6 December 2009 at the age of 60. Professor Tarantola was a Chair of the IUGG Commission on Mathematical Geophysics (1987–1992).

Born in Barcelona (Spain) he lived most of his life in Paris (France). Albert Tarantola obtained his PhD (*Docteur de Spécialité*) in 1976 from the University of Paris VI and the Doctor of Science (*Docteur d'État*) degree in 1981 from the same university.



Tarantola was an author of about 100 scientific papers and the author of the well-known book on inverse problems in geophysics (*Inverse Problem Theory: Methods for Data Fitting and Model Parameter Estimation*, Elsevier, 1987). Tarantola was a leader of the Geophysical Tomography group of the Institut de Physique du Globe de Paris that developed modern methods for the interpretation of waveform data. He taught at the University of Paris as well as at Beijing University, California Institute of Technology, Princeton University, and Stanford University.

Tarantola received the Prize Antoine d'Abbadie of the French Academy of Sciences, Award Conrad Schlumberger of the European Association of Exploration Geophysics, and the Silver Medal (Médaille d'Argent) of the Centre National de la Recherche Scientifique (CNRS). He was elected fellow of the American Geophysical Union and Doctor Honoris Causa of the University of Copenhagen.

“It is my feeling that seismology will one day provide detailed images of the Earth's crust, incommensurable to the gross pictures we obtain today. This will require new technology for data recording and new methods of data interpretation that will, possibly, take a dozen of years to develop” (A. Tarantola).

Albert Tarantola will be greatly missed by his family, friends and colleagues.

9. IUGG-related meetings occurring during February – April 2010

A calendar of meetings of interest to IUGG disciplines (especially those organized by IUGG Associations) is posted on the IUGG web site [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.

- February 1-3, IACS, Valdivia, Chile, International Glaciological Conference Ice and Climate Change: A View from the South (VICC 2010).
 - February 4-7, IUGS, Varanasi, India, Sixth International Dyke Conference.
 - February 15-19, AGU, Hyderabad, India, Chapman Conference on Complexity and Extreme Events in Geosciences.
 - February 22-26, AGU, Portland, USA, 2010 Ocean Sciences Meeting.
 - February 25-28, IUGG, Manila, Philippines, EMSEV-PHIVOLCS International Workshop on Monitoring Active Volcanoes by Electromagnetic and other Geophysical Methods: Application to Asian volcanoes.
 - March 2-5, IAG, IUGG, Havana, Cuba V Congreso Agrimensura.
 - March 14-18, AGU, Baltimore, USA, Chapman Conference on the Exploration and Study of Antarctic Subglacial Aquatic Environments.
 - March 24-26, IAHS, Agadir, Maroc, Integrated Water Resources Management and Challenges of the Sustainable Development (GIRE3D)
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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.