



IUGG Commission on Geophysical Risk and Sustainability

URL: <http://www.iugg-georisk.org/>

Report

July 2003 – February 2007

This report serves to inform the IUGG Council of the activities of the Commission over the quadrennium since the last IUGG General Assembly. It reports on the membership, the public statement that the Commission issued, the meetings and symposia organised and endorsed, the publications produced, and the project-based activities undertaken.

The IUGG Commission on Geophysical Risk and Sustainability (IUGG GeoRisk Commission) established by the IUGG Bureau in August 2000 is dedicated (i) to promoting scientific studies applied to the reduction of risk from natural hazards in an increasingly urbanized world and sustainability and (ii) to reducing death and destruction from natural and technological hazards by providing hazards data and information to emergency managers, policy-makers, scientists and the general public in the most timely and effective manner as possible. This includes the integration of knowledge concerning environmental, social and economic processes. The fundamental scope of this Commission is to facilitate communications – between scientists via meetings, workshops and publications, as well as between scientists and decision makers, between scientists and the public, and between scientists and schools.

IUGG GEORISK COMMISSION MEMBERSHIP

Name	Duty	Association	Country
Tom Beer	President (2000-2004), Past-President (2004-)	IUGG	Australia
Alik Ismail-Zadeh	President (2004-), Vice-President (2000-2004)	IASPEI/CMG	Germany/Russia
Kuniyoshi Takeuchi	Vice-President (2000-)	IAHS	Japan
Ramesh Singh	Vice-President (2004-)	IASPEI/IAPSO	India
Grant Heiken	Secretary General (2000-2004)	IAVCEI	USA
Gerd Tetzlaff	Secretary General (2004-)	IAMAS	Germany
Paula Dunbar	Treasurer (2000-)	IASPEI	USA
Hermann Drewes	Commissioner (2000-)	IAG	Germany
Harsh Gupta	Commissioner (2000-)	IUGG	India
Slava Gusiakov	Commissioner (2000-)	IASPEI	Russia
Kosuke Heki	Commissioner (2003-)	IAG	Japan
Amithirigala Jayawardena	Commissioner (2003-)	IAHS	Hong Kong/China
Evgeny Kontar	Commissioner (2000-)	IAPSO	Russia/USA
Volodya Kossobokov	Commissioner (2000-)	IASPEI	Russia/France
Susan McLean	Commissioner (2000-)	IAGA	USA
Uri Shamir	Commissioner (2000-)	IUGG	Israel
Zhongliang Wu	Commissioner (2003-)	IASPEI	China

STATEMENT OF THE COMMISSION

On 7th January 2005 the GeoRisk Commission adopted the Statement on the *Greatest Earthquake and Tsunami of the Early XXI Century and the Need for Urgent Action to Reduce Natural Disasters in the Indian Ocean Region and Elsewhere*. Among major recommendations of the Commission were the following:

1. The countries around the Indian Ocean to set up a Disaster Management Center in order to monitor land, ocean and atmosphere in relation to all kinds of natural hazards, especially those related to coastal regions. Such Centers should be established in any disaster-prone coastal regions where they do not already exist (e.g., Mediterranean Sea and Atlantic Ocean).
2. A Tsunami Warning System to be set up in the region. Before such systems are in operation in the region, the Pacific Tsunami Warning Center in Hawaii should extend its warnings to cover all vulnerable areas in the Indian Ocean.
3. Multidisciplinary and multinational research programs and research networks on geophysical hazards and risks to be developed in the Indian Ocean countries in order to integrate diverse data streams, to improve

understanding of the natural phenomena associated with the disasters, to develop predictive modeling capability, and to generate and to disseminate timely and accurate information needed by decision makers and the public (URL: http://www.iugg-georisk.org/reports/IUGG_GeoRisk_st_full.pdf)

Based on the Statement of the GeoRisk Commission, on 10th January 2005 IUGG issued a Resolution on the Sumatra earthquake and tsunami (<http://www.iugg.org/tsunamiresolution05.pdf>). On 17th January 2005 International Council for Science (ICSU) produced a Position Statement based on the materials of the IUGG GeoRisk Commission's Statement (http://www.icsu.org/3_mediacentre/INSIGHT_SI_01_2005.html)

SCIENTIFIC MEETINGS ORGANIZED BY THE COMMISSION

1. 2nd IUGG GeoRisk Commission Advanced Research Workshop on Risk Science, Society and Sustainability, 26-27 August 2004, Stockholm, Sweden

The major scientific goals of this workshop were (i) to provide insight into the relationship between risk science, society and sustainable development; (ii) to search for new possibilities in risk science that focus on the major responsibility of the scientific community; and (iii) to address the problem of implementation of scientific initiatives as elements of public policy. The workshop focused on the question: can sustainable development be successful without taking into account the risk of hazards and their impacts? To this end, the workshop brought together experts from the fields of geophysics and mathematics with experts in social science and law specifically to deal with problems of risk and sustainability. Prof. G. Papadopoulos delivered the Rammal Award lecture. Other presentations were made by E. Kontar (Russia/USA), A. Makarenko (Ukraine), U. Shamir (Israel), T. Beer (Australia), P. Wiedemann (Germany), and J. Paterson (UK). The workshop was sponsored by EuroScience, IUGG, and NATO. A report of the meeting was published in EOS, Transactions of the American Geophysical Union, 85 (44) 453 (2 November 2004).

2. 3rd IUGG GeoRisk Commission Symposium on Geophysical Risk and Hazards, 2-4 December 2004, Hyderabad, India

Hazards 2004 was the name given to the combined meeting that constitutes the Third Workshop of the IUGG Commission on Geophysical Risk and Sustainability & the Tenth International Symposium on Natural and Human-Induced Hazards of the Natural Hazards Society. The meeting was held in Hyderabad, India 2-4 December 2004. There were 120 attendees comprising 40 foreign scientists and 80 Indian scientists. The conference itself was excellently organized. Dr R.K. Chadha and Dr. D. Srinagesh – the Chair and Secretary-General of the Local Organizing Committee – had the full support of Dr. V.P. Dimri, their employer and the Director of the National Geophysical Research Institute (NGRI) – one of the Indian CSIR research institutes and the location where the conference was held.

3. 4th IUGG GeoRisk Commission Workshop on Recent Geodynamics, Georisk and Sustainable Development of the Black Sea to Caspian Sea Region, 3-6 July 2005, Baku, Azerbaijan

The Workshop organized by the IUGG Commission on Geophysical Risk and Sustainability in association with the International Hydrological Program of UNESCO, American Geophysical Union, Azerbaijan National Academy of Sciences, Heidelberg Academy of Sciences and Humanities, and Earthquakes and Megacities Initiative, was held in Baku, Azerbaijan from 3 to 6 July 2005. About fifty scientists from 12 countries attended, and 19 invited speakers delivered talks at the workshop. The workshop was supported by IUGG, UNESCO, and ExxonMobil. The Workshop brought people of natural, social and political sciences together with the representatives of industry, governments, and mass media to prepare the social and political background for sustainable development in the Black Sea to Caspian Sea region. The invited and contributed presentations dealt with the recent geodynamics of the region, natural hazards (earthquakes, mud volcanoes, landslides, rapid sea level changes), associated risks, and mitigation of the impacts of geohazards on society.

4. Symposium "Marine Risk and Sustainability", IAG/IAPSO/IABO Joint Scientific Assembly, 22-25 August 2005, Cairns, Australia

This symposium was organized by the IUGG GeoRisk Commission (conveners: T. Beer and E. Kontar) at the 2005 IAG/IAPSO/IABO Scientific Assembly. K. Satake (AIST, Japan) opened the session with his talk on "Lessons learned from the 2004 Sumatra earthquake and the Asian tsunami". The tsunami theme was followed by a number of speakers: D. King (James Cook University); Y. Tyupkin and V Morozov (both Russian Academy of Sciences, Moscow); C. Pattiaratchi (University of Western Australia); R. Othman (Universiti Teknologi Malaysia). The second theme of the session was that related to coastal contamination from submarine groundwater. Detailed investigations in diverse geographic locations were presented by J. Zhang (Toyama University); C. Schrum (Schrum & Wehde Ecosystem Modeling); G. Kim (Seoul National University); M. Schlueter (Alfred Wegener Institut). The third theme of the session was sustainability issues. Speakers: D. McDonald, T. Beer, and E. Grist (all CSIRO Marine and Atmospheric Research), F. Rack (JOI Deep Sea Drilling Programme), E. Kontar (Russian Academy of Sciences, Moscow), E. Stanev (University of Sofia, Bulgaria), J. De (Indian National Institute of Oceanography), and F. Wang (Institute of Oceanology, Chinese Academy of Sciences).

5. Special Session on Mathematical Aspects of Geohazard Research, IUGG Conference on Mathematical Geophysics, 5th June 2006, Sea of Galilee, Israel

The scientific session was focused on several topics: (i) non-linear dynamics of the lithosphere, predictions of extreme natural events and limitations of the predictability (V. Keilis-Borok, UCLA); (ii) mathematical descriptions of physical phenomena associated with geohazards (B. Malamud, King's College London, UK, and M. Ghil, ENS Paris, France); (iii) mathematical and numerical modeling of extreme natural events (E. Aharonov, Weizmann Institute of Science, Rehovot, Israel; A. Ismail-Zadeh, Karlsruhe University, Germany; and J. Zvelebil, Geological Survey, Prague, Czech Republic), and (iv) quantitative analysis and compilations of geophysical data related to geohazards (V. Gusiakov Russian Academy of Sciences, Novosibirsk, Russia; and S. Sobolev, GFZ-Potsdam, Germany).

6. 5th IUGG GeoRisk Commission Symposium "Riding the storm: Can science keep us in the saddle?", 16th July 2006, Munich, Germany

The third joint symposium of the IUGG GeoRisk Commission and the European Association for Promotion of Science and Technology entitled "Riding the storm: Can science keep us in the saddle?" was held July 15-19 in Munich, Germany, during the EuroScience Open Forum. The meeting's topics were extreme natural events and humanitarian disasters (F. Wenzel, Karlsruhe University, Germany), the role of geoscience in preventive disaster management of catastrophic natural events (A. Ismail-Zadeh, IUGG GeoRisk Commission), integrated global observation strategy for disaster reduction (H. Moderassi, IGOS Geohazards and French Geological Survey, Orleans, France), prediction of extreme natural events (V. Kossobokov, Russian Academy of Sciences, Moscow), disaster risk management from an insurance perspective (A. Smolka, Munich Reinsurance), and relationship between disaster risk management and governance (J. Paterson, University of Aberdeen, UK). The symposium was followed by a press briefing.

SCIENTIFIC MEETINGS ENDORSED BY THE COMMISSION OR ATTENDED BY GEORISK COMMISSIONERS AS SESSION CONVENERS OR INVITED SPEAKERS

- Second Annual Meeting of the Asia-Oceania Geoscience Society, Singapore, 20-24 June 2005.
- 2nd International Geohazards Workshop, Orléans, France, 27-29 June 2005.
- 2nd International Conference of The Nigerian Union of Planetary and Radio Sciences, Port Arthur, Nigeria, 24-26 August 2005.
- 8th Workshop on Nonlinear Dynamics and Earthquake Prediction, Trieste, Italy, 3-15 October 2005.
- IOC/UNESCO International Workshop on Post-Disaster Assessment and Monitoring of Changes in Coastal, Ocean, and Human Systems in the Indian Ocean and Asian Waters, Phuket, Thailand, February 20-24, 2006.
- 3rd International Conference on Early Warning: From Concept to Action, Bonn, Germany, 27-29 March 2006.
- OECD Global Science Forum Workshop on Earthquake Science and its Contribution to Society, Potsdam, Germany, 1-2 June 2006.
- 11th International Symposium on Natural and Human Induced Hazards and 2nd Workshop on Earthquake Prediction, Patras, Greece, 22-25 June, 2006.
- 36th COSPAR Scientific Assembly, Beijing, China, 16-23 July 2006.
- General Assembly of the Asian Seismological Commission and Symposium "Earthquake and Tsunami Disaster Preparedness and Mitigation", Bangkok, Thailand, 7-10 November 2006.
- International Conference on Climate Change and Earthquakes, Islamabad, Pakistan, 13-17 November 2006.

BUSINESS MEETINGS

- On 2 December 2004 the business meeting of the GeoRisk Commission was held in Hyderabad, India. New Executives of the Commission took the office after the meeting.
- On 29 March 2005 A. Ismail-Zadeh met in Paris A. Szollosi-Nagy, Secretary General, International Hydrological Program, UNESCO and discussed topics related to Webcyclopedia and Baku international workshop.
- On 19 June T. Beer and A. Ismail-Zadeh met in Paris H. Modaresi, S. Hosford, and G. Le Cozannet of the IGOS GeoHazards Bureau to discuss cooperation between IUGG (GeoRisk Commission), IGOS Geohazards team and GeoUnion Hazards Initiative.
- On 21 June 2006 T. Beer and A. Ismail-Zadeh met in Paris P. Dube (Botswana), a member of the ICSU Planning Group on Natural and Human Induced Environmental Hazards and Disasters, to discuss possibilities of cooperation on the topic of natural hazards in Africa.
- On 10 July 2006, A. Ismail-Zadeh met in Paris A. Gvishiani, Vice President of ICSU CODATA, to discuss cooperation between IUGG GeoRisk Commission and ICSU CODATA on the development of Webcyclopedia.
- On 15 January 2007 A. Ismail-Zadeh met in Kyoto K. Sassa, President of the International Consortium on Landslides (ICL), Kyoto to discuss ways of cooperation between the GeoRisk Commission and ICL.

- At the invitation of International Consortium on Landslides, A. Ismail-Zadeh attended the First Session of the International Program on Landslides (IPL) held in United Nations University, Tokyo, Japan, January 22-25, 2007. The IUGG and GeoRisk Commission are invited to co-sponsor the First World Landslide Forum to be held 18-21 November 2008, Tokyo, Japan.
- On 30 January 2007 A. Ismail-Zadeh and T. Beer met in Tokyo Dr. Haruyama of the International Geographical Union (IGU) and discussed the topics related to cooperation between the IGU Commission on Hazards and Risks and IUGG GeoRisk Commission. Also they met Dr. M. Kono, IUGG Past-President, and discussed several aspects of the relationship between IUGG with Union Associations and Commissions.

COMMISSION PROJECTS

- “Near Earth Orbit Objects”, co-partner, funded by ICSU (2004)
- “Dark Nature”, co-partner, funded by ICSU (2004)
- Workshop in Stockholm (Sweden), funded by NATO and IUGG (2004)
- “Comprehensive historical earthquake and tsunami database for the South-West Pacific”, funded by IUGG (2004).
- Workshop in Baku (Azerbaijan), funded by IHP/UNESCO, IUGG, and ExxonMobil (2005).
- Symposium in Munich (Germany), funded by IUGG (2006).
- Workshop in Kampala (Uganda), funded by IUGG (2007).

The GeoRisk Commission submitted two ICSU project proposals, but the projects were not funded because of ICSU financial problems:

1. Geohazards: Extreme Natural Events and Societal Implications (led by IUGG / GeoRisk Commission). Sponsoring partners: ICSU GeoUnions.
2. The Role of Science and Data in Disaster Risk Management (led by ICSU CODATA). Supporting partner: IUGG / GeoRisk Commission

WEBCYCLOPEDIA OF NATURAL HAZARDS, RISKS AND SUSTAINABILITY

The web-page of the Commission is maintained at the new site: <http://www.iugg-georisk.org>

The Webcyclopedia at: <http://www.iugg-georisk.org/webcyclopedia/index.html> continues to collate information. The Webcyclopedia is a matrix, ordered in terms of cities, hazards and risks, and authors. The hazards is determined by the scientific skill base, as determined by the IUGG Associations - hydrological, meteorological, marine, tsunamis, volcanoes, seismic, geodetic (landslides), geomagnetic. The risks are determined by the sustainability issues such as infrastructure issues (building vulnerability, robustness of infrastructure), and health issues (air quality, water quality, contaminated land). The Webcyclopedia entities are varied, ranging from the traditional scientific paper through to interactive hazard maps, real time data, models of the phenomena, or merely hyperlinks to other sites providing information on the topic. The presentations, given at the meetings organized by the Commission or endorsed by the Commission, have been incorporated into the Webcyclopedia. The Commission continues to search for an editor for the project.

PUBLICATIONS

- Beer, T. and Ismail-Zadeh, A.T. (Eds.) Risk Science and Sustainability, Kluwer Academic Publishers, Dordrecht, 2003. 256 p. (peer-reviewed articles based on the Budapest workshop of the IUGG GeoRisk Commission).
- Ell, R., Riding the storm: can science keep us in the saddle? *ESOF Newsletter*, No. 10, Feature article, http://www.esof2006.org/blog_article.php4?ID=24&what=Feature, 24 May 2006.
- Gupta, H., Mega –Tsunami of 26th December 2004: Indian Initiative for Early Warning system and Mitigation of Oceanogenic Hazards, *Episodes*, Vol. 28, No.1, 2-5, 2005.
- Ismail-Zadeh, A.T., Science for mitigation of natural disasters, *EuroScience News*, 30, 1, 2005.
- Ismail-Zadeh, A. T. (Ed.) *Recent Geodynamics, Georisk and Sustainable Development in the Black Sea to Caspian Sea Region*, American Institute of Physics Conference Proceedings, vol. 825, Melville, New York, 2006. 162 p. (peer-reviewed articles based on the Baku workshop of the IUGG GeoRisk Commission)
- Ismail-Zadeh, A., and Beer, T., A focus on risk science and sustainable development, *EOS, Transactions of the American Geophysical Union*, vol. 85, No. 44, 453, 2004.
- Ismail-Zadeh, A. T., and T. Beer (Eds.) *Georisk: Interactions between Science and Society*, special issue of *Natural Hazards*, Springer, 2007 (peer-reviewed articles based on the Stockholm and Hyderabad workshops of the IUGG GeoRisk Commission).
- Singh, R. (Ed.), *Sumatra Tsunami and Earthquake*, special issue of the *International Journal of Remote Sensing* (Taylor and Francis), 2007.

- Singh, S.K., Ortiz, M., Gupta, H. K., and Ramadass, D.G.A. Slow slip below Port Blair, Andaman, during the great Sumatra-Andaman earthquake of 26 December 2004, *Geophys. Res. Lett.*, 33, L03313, doi:10.1029/2005GL025025, 2006

PLANNED ACTIVITY

IUGG GeoRisk Commission is involved in the organization of the following scientific meetings in 2007:

1. EGU Symposium “Earthquake Prediction: What can be done with the best science available?” The Union symposium will be held at the European Geophysical Union General Assembly, Vienna, Austria, 15-20 April 2007. The symposium is co-sponsored by UNESCO. Principal organizer: V. Kossobokov.
2. Union Symposia at the IUGG General Assembly, July 2-13, 2007, Perugia, Italy: US007 High-Performance Computations in Geosciences and US012 Early Warning of Natural Hazards. The symposia are co-sponsored by IASPEI. Principal organizers: A. Ismail-Zadeh, R. Singh, and Z. Wu.
3. Mini-Symposium “Strategy of Reducing Predictive Uncertainty of Geophysical Hazards”, 30 July – 4 August 2007, Bangkok, Thailand. The symposium is co-sponsored by the Asia Pacific Geophysical Society. Principal organizers: K. Takeuchi and H. Gupta.
4. Workshop “Natural and Human-induced Hazards and Disasters in Africa”, Kampala, Uganda, August 2007. The workshop is organized by ICSU Regional Office for Africa and co-sponsored by the GeoRisk Commission (principal contact A. Ismail-Zadeh).
5. Third International Geohazards Workshop, 6-9 November 2007, Frascati, Rome, Italy. The workshop is organized by the IGOS Geohazards team and co-sponsored by the GeoRisk Commission (principal contact A. Ismail-Zadeh).

IUGG GeoRisk Commission intends to strengthen its cooperation with the

- IGOS-Geohazards Team and ICSU CODATA on the development of the Commission’s project "Webcyclopedia of Natural Hazards, Risks and Sustainability";
- International Consortium for Landslides and International Program for Landslides and consider possibilities to take part in the organization of the First World Forum on Landslides, UNU Tokyo, January 2008;
- UNESCO International Hydrological Program and UNESCO section on Disaster Reduction;
- International Year of Planet Earth in organization of a conference on Geohazards, Georisks and Disasters, 2008-2009; and
- ICSU GeoUnions Hazard Initiative.

The next business meeting is to be held in Perugia, on *Friday 6 July, 12:00 a.m. to 2:00 p.m.* The President, Secretary General and Treasurer will report on the activity between December 2004 (the last business meeting) and June 2007.

The report is prepared by Alik Ismail-Zadeh.

February 15, 2007