



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

**RESOLUTION**

***Science on Natural Hazards and Environmental Disasters<sup>1</sup>***

*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;

The International Union of Geodesy and Geophysics (IUGG)

*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

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<sup>1</sup> This Resolution is based on the Statement of the IUGG Commission on Geophysical Risk and Sustainability ([www.iugg-georisk.org/Statement\\_NatHaz2010.pdf](http://www.iugg-georisk.org/Statement_NatHaz2010.pdf)) and IUGG Resolution 8 “Reduction of Risk from Natural Hazards” (<http://www.iugg.org/resolutions/perugia07.pdf>). IUGG is a non-governmental, scientific organization grouped within the International Council for Science (ICSU) and is dedicated to the promotion and coordination of scientific studies of Earth (physical, chemical, and mathematical) and its environment in space. IUGG is comprised of eight International Associations: cryospheric sciences (IACS), geodesy (IAG), geomagnetism and aeronomy (IAGA), hydrological sciences (IAHS), meteorology and atmospheric sciences (IAMAS), physical sciences of the oceans (IAPSO), seismology and physics of the Earth (IASPEI), volcanology and geochemistry (IAVCEI). IUGG encourages the application of this knowledge to societal needs, such as mineral resources, mitigation of natural hazards and environmental preservation.

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.