



Urgent action to reduce the effects of natural disasters in the Indian Ocean region and elsewhere

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The magnitude 9 great earthquake that occurred on December 26, 2004 off the west coast of northern Sumatra, South Asia, spawned huge oceanic waves (tsunami). The level of preparedness for these events in all the countries affected turned out to be extremely low, partly because it happened without timely warning. On January 7, 2005, the IUGG Commission on Geophysical Risk and Sustainability issued a statement on this great earthquake and tsunami (<http://www.iugg-georisk.org>), in which it recommends that the countries around the Indian Ocean 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). Multidisciplinary and multinational programs and research networks on geophysical hazards and risks should 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. We believe that information alone cannot save human lives if no management procedures, public preparedness, hazards maps, evacuation routes and shelters are prescribed prior to a natural disaster. It is necessary to update regularly maps of natural hazards and risk. Coordination of observation systems and data will reduce losses of life and property due to natural disasters. Integration of InSAR technology for topography into disaster warning and prediction systems is crucial for floods and coastal hazards. Real-time monitoring of submarine seismic and volcanic activity and tsunami propagation should be developed including re-use of submarine telephone cables. Extensive use of satellite data as well as airplane laser scanning data is an important component of the disaster management. In many developing countries, population and urbanization are increasing at an unprecedented pace, and therefore, it is necessary for loss estimation to include information on the present population as well as current quality of buildings and the soil properties. Scientists can and should help to save human lives by providing governmental institutions with accurate predictions on natural disasters with a good lead-time. Reduction of predictive uncertainty is the most important scientific challenge in natural hazards mitigation.