



## Extreme Natural Hazards and Societal Implications (ENHANS)

### The ENHANS International Workshop

#### RECOMMENDATION

Pretoria, South Africa, 20 January 2011

*The following recommendation is made by attendees of the International Workshop “Extreme Natural Hazards and Disaster Risks in Africa”.*

Whereas, natural hazards are an integral component of life in the African continent, and floods, droughts, earthquakes, tsunamis, landslides, and other extreme natural events hit Africa on a regular basis resulting in tragic loss of life and property due to tremendous vulnerability of the African countries to extreme hazards;

#### **The ENHANS International Workshop “Extreme Natural Hazards and Disaster Risks in Africa”**

**Acknowledging** the long-standing and ongoing contributions of  
the American Geophysical Union (AGU);  
the Global Oceanic Observing System (GOOS) of the Intergovernmental Oceanographic Commission (IOC) of UNESCO;  
the International Council of Science (ICSU) including its Regional Office for Africa;  
the ICSU/ISDR/ISSC International Programme Integrated Research on Disaster Risks (IRDR);  
the International Geographical Union (IGU);  
the International Society for Photogrammetry and Remote Sensing (ISPRS);  
the International Union of Geodesy and Geophysics (IUGG);  
the International Union of Geological Sciences (IUGS);  
the International Union of Theoretical and Applied Mechanics (IUTAM);  
the Observing System Research and Predictability Experiment (THORPEX) of the World Meteorological Organization (WMO);  
the United Nations Environment Programme (UNEP)  
the United Nations International Strategy for Disaster Reduction (UNISDR);  
the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER); and  
other United Nations, intergovernmental, international and national organizations dealing with natural hazards and disaster risks;

**Recalling** the relevant recommendations of the World Conference on Disaster Reduction in Kobe, Hyogo, Japan, 2005, in particular the Hyogo Framework for Action (2005-2015): Building the Resilience of Nations and Communities to Disasters (HFA);

**Noting** the valuable contributions to and intensive discussion during the Workshop;

**Recognizing** that:

- (1) vulnerability of Africa is high and growing, and therefore, it is of crucial importance to reduce it for the safety and security of Africa;
- (2) an extreme natural event can trigger major socio-economic disorder or even conflicts in the countries of the African continent that may have an impact of global significances;
- (3) agricultural based African countries are highly dependent on climatic conditions, and there is a need to reduce the dependence (e.g. on rainfalls);
- (4) marine and coastal hazard vulnerability reduction requires observational infrastructure;
- (5) a lack of scientific data, their scattering and quality, access to data, and data exchange are major problems of research on natural hazards and disaster risks and in disaster risk reduction and management;
- (6) better education of students in Africa going through higher education on integrated research (like the PeriPeriU project) as well as of policy makers on disaster risk reduction is required;
- (7) better and more systematic use of the media would help promote risk reduction;
- (8) enhanced collaboration among natural, social, and health scientists and engineers in Africa could contribute to reduction of adverse effects of natural hazards;
- (9) closer and more active links among science, policy makers and end-users in operational disaster management bodies in Africa is essential for ensuring effective risk and vulnerability reduction;

**Emphasizing** that:

- (1) The social and economic impacts of disasters usually exceed, by several orders of magnitude, the cost of risk reduction (prevention, mitigation and preparedness);
- (2) Existing technology for satellite observations, real-time geophysical and environmental monitoring, and natural hazard forecasting models could prevent loss of life in Africa due to the disastrous events if their predictions are timely prepared and delivered and warnings were heeded by the disaster management and other relevant authorities;
- (3) For an improved management of disaster relief efforts, adequate scientific knowledge, existing technology and data could provide regional rescue agencies (national disaster management, civil defense or civil protection managers) immediate quantitative estimates of the occurrence, extent and severity of the disaster as well as data on impacts to be further utilized in recovery and risk reduction efforts;

**Recommends** to governments and funding institutions in cooperation with the relevant ICSU bodies, United Nations agencies and other international entities, that:

- (1) the African Centre for Natural Hazards, Disaster Risk Analysis and Management (ACHADEME), a network of already existing research and educational centers or new

institutions in the African countries, coordinated by one of the network's partners, be set up in order to:

- (i) improve understanding of natural phenomena and human, social, economic and ecological vulnerabilities associated with disasters and develop predictive modeling capability;
  - (ii) enhance the quality of the African PhD programmes to benefit students and earlier career specialists dealing with natural hazards and disaster risks through lecture and diploma courses;
  - (iii) exchange knowledge and experience via research workshops, advanced schools, and networking of African scientists and experts in disaster risk management;
  - (iv) integrate and provide free-access diverse data streams; and
  - (v) promote international collaboration on natural hazards and disaster risks in Africa and with other regions of the world ;
- (2) Education and capacity building at all levels on natural hazards, disaster risk reduction (prevention, mitigation and preparedness) and post-disaster recovery should become a priority topic of the national disaster risk reduction policies of African countries;
  - (3) Disaster risk management and climate adaptation centers be established in African countries in order to:
    - (i) catalogue, monitor and continuously update information on the population and infrastructure at risk and other hazard-relevant data;
    - (ii) monitor land, water, sea and atmospheric processes, and their interaction, in relation to all kinds of natural hazards that can occur,
    - (iii) assist emergency response agencies during disasters by providing timely information; and
    - (iv) facilitate regional and international cooperation and coordination;
  - (4) As an essential part of a strategy for risk reduction, more infrastructure for reservoir holding and irrigation during dry seasons needs to be developed in the African regions affected by repeated threats of droughts and floods;
  - (5) An efficient collaboration be encouraged between natural and social scientists and engineers, health professionals as well as with mass-media and policy-makers;
  - (6) Insurance industry be more actively developed and involved in disaster reduction efforts;
  - (7) A partnership be promoted between the corporate industries and the scientific community towards establishing observation systems to enhance the application of geosciences in disaster risk reduction;
  - (8) A joint statement of the African national academies related to science education on natural hazards and disaster risks in Africa be issued;
  - (9) the ICSU Regional Office for Africa, with input from ICSU Scientific Unions and UN agencies, to facilitate and coordinate action on the science policy interface related to disaster risk mitigation in Africa; and

**Resolves** to promote fundamental research of the Earth systems, natural hazards, and natural and human-induced environmental disaster risks in Africa in order to improve monitoring and prediction of extreme natural hazards for the benefit of the society. Namely,

- (1) To develop and to maintain an African seismic network combining local seismic networks, to monitor earthquake activity and deformation, and to intensify studies on quantitative predictions of large seismic events;

- (2) To concentrate on studies of volcanoes combining the monitoring of gas flux, crustal deformation, volcano seismicity, gravity, electromagnetic and radioactivity anomalies with theoretical and numerical modeling;
- (3) To improve research capabilities of African national meteorological services to forecast hydro-meteorological hazards;
- (4) To develop specific research methodologies dealing with incomplete and scattered data sets (specifically important for Africa);
- (5) To use vast GOOS dataset operating in Africa to monitor and forecast natural hazards associated interaction of land, ocean and atmosphere (e.g., earthquakes, tsunami, landslides);
- (6) In collaboration with the ICSU World Data System and ICSU Regional Office for Africa, to develop a network of African data centers and services to collect and index fundamental datasets, to document the datasets by creating metadata, to create data standards and data charters among many others.