

## **DISASTER RISK REDUCTION**

This paper provides information on current international developments regarding disaster risk reduction, as well as the International Charter on Space and Major Disasters, and on related specific satellite-based observation requirements for disaster risk reduction (i.e. risk identification, early warning systems, impact assessment, emergency preparedness, early recovery, risk transfer and sectoral planning).

## DISASTER RISK REDUCTION

### 1 BACKGROUND

1.1 Over the last decades, significant developments with monitoring, detecting, analyzing, forecasting and warning of weather-, water- and climate-related hazards have led to a significant reduction of their threat to life. For example, over the last 50 years, while a number of disasters and economic losses from weather-, climate- and water-related disasters have increased (respectively nearly 10-fold and 50-fold), the reported loss of life have decreased 10-fold. This is due to several factors, a critical one being the continuous development of natural hazard monitoring and detection and of development of specific end-to-end early warning systems, such as those for tropical cyclones.

1.2 The Hyogo Framework for Action 2005-2015 (HFA), outcome of the World Conference for Disaster Reduction (WCDR, Kobe, Japan, January 2005), has been adopted by 168 countries. This framework aims to shift disaster risk reduction (DRR) from post emergency response and recovery to a more balanced approach that includes risk identification, early warning systems, impact assessment, emergency preparedness, early recovery, risk transfer and sectoral planning. Priority areas involve:

- Governance: organizational, legal and policy frameworks;
- Risk identification, assessment, monitoring and early warning;
- Knowledge management and education;
- Reducing underlying risk factors; and
- Preparedness for effective response and recovery.

This framework is already being reflected in strategic directions and plans of many international and regional humanitarian, development and donor agencies, working with different ministries at the national level. The HFA is available from <http://www.unisdr.org/eng/hfa/docs/Hyogo-framework-for-action-english.pdf>.

1.3 HFA provides a great opportunity for mainstreaming WMO activities in disaster risk management planning nationally, regionally and internationally. A fundamental factor in success is establishment of strategic partnerships with agencies involved in different aspects of DRR.

1.4 The International Strategy for Disaster Reduction (ISDR) System has been restructured over the past two years to engage a broad range of international, regional, national agencies and governments towards implementation of HFA. The ISDR system is supported by (i) a Management Oversight Board (MOB), providing strategic advice, (ii) a Global Platform for Disaster Risk Reduction (GPDRR), sharing good practices, promoting implementation of HFA in the countries and regions and supporting integrated planning among operational agencies. The ISDR Secretariat provides administrative support to the strengthened ISDR system. The World Meteorological Organization is an active member of the MOB, through its Secretary-

General, and is a strong participant in the development of the integrated planning framework. For more information about the strengthened ISDR System, please see <http://www.unisdr.org/eng/isdr-system/In-a-nutshell.htm>.

## **2 WMO DISASTER RISK REDUCTION PROGRAMME**

2.1 WMO, through its Fifteenth Congress (Cg-XV, May 2007), adopted the vision and the strategic goals of the Disaster Risk Reduction (DRR) Programme, underpinned by HFA pertaining to those activities under the mandate of WMO and NMHSs. The Congress also endorsed the DRR action plan, built upon the following major thrusts: (i) modernization of NMHSs and observing networks; (ii) implementation of national operational multi-hazard early warning systems; (iii) strengthening of hazard analysis and hydrometeorological risk assessment tools; (iv) strengthening NMHSs cooperation with civil protection and disaster risk management agencies; and (v) coordinated training and public outreach programmes. These activities are leveraging capacities and resources of WMO Programmes, Technical Commissions, Regional Associations, and strategic partners, with a clear definition of roles, responsibilities and deliverables.

2.2 The cross-cutting framework of the DRR Programme is supported by an Executive Council Working Group on DRR (EC WG DRR), high-level focal points in technical commissions, Working Groups of the Regional Associations, national focal points designated by Permanent Representatives, the Secretariat Steering Committee on Disaster Reduction, the DRR Programme Department and other WMO Departments.

2.3 A fundamental goal of the DRR Programme is the facilitation of strategic partnerships of WMO and NMHSs, with agencies at international, regional and national levels, to enhance roles and contributions of WMO and NMHSs in disaster risk reduction. To this end, the DRR Programme is working to strengthen existing and establish new collaborations, as appropriate, with agencies such as the World Bank, the United Nations Development Programme (UNDP), the International Federation of Red Cross and Red Crescent (IFRC), UNESCO, the United Nations Environment Programme, the UN Office for Coordination of Humanitarian Affairs (OCHA), and UNOSAT, through concrete projects.

## **3 IDENTIFICATION OF SPECIFIC OBSERVATION REQUIREMENTS FOR DISASTER RISK REDUCTION**

3.1 Decision processes in DRR fall under three categories: (i) risk identification, which involves development of risk knowledge needed for development of strategies and measures for reducing the risks; (ii) risk reduction, involving: medium to long term sectoral planning, emergency preparedness and early warning systems, disaster response, relief and recovery; (iii) risk transfer, involving catastrophe insurance and other financial risk transfer mechanisms that would enable spreading of remaining risks to minimize impacts across sectors. These areas of decision making are served by different ministries and agencies at the national level, and by different UN and international agencies at the international level. In situ and satellite

data as well as forecast products are critical for supporting various policy and operational processes in DRR. Specifically there is potential for widening the use of currently available satellite data for all stakeholders involved in different stages of DRR decision-making. In the future, requirements for satellite-based information for DRR decision-making could be identified for the most significant segments of these stakeholders.

3.2 The WMO DRR Programme is currently involved in two projects related to identification of observation requirements of the two user categories:

- (i) Requirements of international and regional humanitarian agencies for data and forecast information, such as value-added products developed from integration of meteorological and hydrological products with satellite information, are being investigated jointly by the WWW and DRR Programmes;
- (ii) Requirements of stakeholders involved in financial risk transfer markets, including catastrophe insurance and bonds and weather risk management markets, will be identified during an expert meeting in December 2007, involving DRR, WCP, WCRP, AgM, HWR, APP and WWW Programmes as well as external partners including the World Bank, Weather Risk Management Association (private sector), the World Food Programme and Munich-Re.

3.3 Following the multi-agency Symposium on Multi-Hazard Early Warning Systems for Integrated Disaster Risk Management convened by WMO in Geneva on 23-24 May 2006, several demonstration projects have been initiated to demonstrate and document good practices where early warning systems are supported by governance and legislation, as well as organizational coordination mechanisms and operational frameworks. The Second Symposium on Multi-hazard Early Warning Systems is planned for the first quarter of 2009. Ways to improve contributions from satellite networks along the four components of early warning (i.e. (i) risk identification, (ii) hazard observation, monitoring and forecasting, (iii) emergency response and preparedness, (iv) communication and dissemination) will be addressed with international, regional and national stakeholders.

3.4 A programme of action should be developed together by the WMO DRR and Space Programmes to systematically identify requirements of DRR decision-making stakeholders for satellite information for different stages of disaster risk management, as described in paragraph 3.1, and realize opportunities for the benefits of the Members in this area.

#### **4 OPPORTUNITIES THROUGH THE INTERNATIONAL CHARTER ON SPACE AND MAJOR DISASTERS TO SUPPORT RESPONSE AND RELIEF OPERATIONS**

4.1 The seventh session of the WMO Consultative Meeting on High-level Policy on Satellite Matters (CM-7) recognized the effectiveness of the International Charter

on Space and Major Disasters (cf. <http://www.disasterscharter.org>) for emergency response in the context of disasters related to hydro-meteorological extremes.

4.2 The analysis of activations of the Charter has highlighted that the utility of Charter products could be further enhanced if NMHSs work with the civil protection agencies to provide value-added products based on combining the high-resolution satellite images provided by the Charter with various hydro-meteorological forecast outputs.

4.3 Efforts can be coordinated between the DRR, WWW and Space Programmes to link these initiatives described in paragraphs 3.2, 3.4 and 4.2.

4.4 A critical element of WMO partnership is close collaboration with the space agencies, to ensure better coordination for enhanced utilization of satellite capacities (communication and observation), for improving disaster risk management. The WMO DRR Programme, in close collaboration with the WMO Space Programme, aims to review the satellite requirements in support of risk identification; risk reduction and risk transfer applications for hydro-meteorological disaster risk management. WMO has initiated discussions with GEO to realize joint initiatives and insure that similar actions are also undertaken through GEO for geological hazards.