



WORLD METEOROLOGICAL  
ORGANIZATION  
*Weather Climate Water*



world summit  
on the information society  
Geneva 2003 - Tunis 2005

## WMO WSIS Thematic Meeting on ICT applications in natural disaster reduction 21 January 2005, Kobe (Japan)

### Chairman's Report

At the occasion of the World Conference on Disaster Reduction (18-22 January 2005, Kobe (Japan)), the World Meteorological Organisation (WMO) organised a WSIS Thematic Meeting on Information and Communication Technologies (ICT) Applications in Natural Disaster Reduction, (21 January 2005, Kobe (Japan)).

Most weather elements of unusual severity or abnormally long duration pose a threat to life, property, human activities and the environment. These include tornadoes, thunderstorms, winter storms, cyclones, high winds, intense cold outbreaks, flood-producing rain and drought. Natural disasters, which occur on timescales ranging from minutes to years, have led to an enormous toll of human suffering, loss of lives and property damage. The increasingly accurate and reliable information on and prediction of weather, climate and water allows for improved decision-making, which has the potential to offset the negative impacts of weather and climate. Early warnings of weather, climate and water extremes can protect life and property, provided they can reach their target audience in a timely and suitable manner. ICTs are critical to the generation of monitoring, forecast and warning products and to the delivery of these products to decision makers as well as the general public. It is an ongoing challenge that developing countries, which are among the most at risk from natural disasters, have limited access to ICTs.

The use of ICTs is required for:

- The collection and exchange of earth observations, especially related to weather, climate and water, required for the analysis, monitoring and forecasting of the state of the earth;
- The delivery of weather, climate and water information, forecasts and warnings as comprehensive and effective services in support of safety of life, protection of property, and the many weather-sensitive economic sectors which support the everyday quality of life as well as development.

The meeting considered the role of ICTs in responding to the need for universal and equitable access to weather, climate and water information, forecasts and warnings in order to reduce loss of life and property caused by disasters to a minimum. The meeting began with a high level look at the existing WMO approach to operational hydrometeorological systems that support natural disaster reduction. It then looked at the future direction of WMO operational ICT systems. This was then followed by a look at satellite based ICTs within a specific national application and then at specific examples of two ICT systems. The agenda follows.

**Operational meteorology for Natural Disaster Prevention and Mitigation**, Alexander Gusev  
ROSHYDROMET (Russian Federation) - Acting President of the WMO Technical Commission for  
Basic Systems (CBS)

**Presentation of the Framework for WMO Information System (FWIS)**, Hiroyuki Ichijo – Japan  
Meteorological Administration

**CMA satellite data-dissemination systems**, Shi Peiliang -China Meteorological Administration

**Emergency Managers Weather Information Network**, Fredrick Branski – USA NOAA National Weather Service

**Format:** Four 15 minutes presentations and 15 minutes of Q&A

***Contribution of WMO Programmes to the use of ICTs for the application of weather, climate and water information to the protection of life and property***

WMO strives to apply the most recent ICTs leading to the most cost-effective implementation of ICT systems at the National Meteorological and Hydrological Services. Some examples are given here.

Parts of the existing Global Telecommunication System (GTS)<sup>1</sup> of WMO are based on services offered by suppliers of dedicated circuits or by providers of managed data communication networks based on frame relay technology. WMO is working to introduce the use of new services based on Multi Protocol Label Switching (MPLS) technology with a reduction in cost for the same level of services.

The collection and distribution of data through satellite systems is very cost-effective, and the technologies such as Digital Data Broadcast (DDB) or Digital Video Broadcast (DVB) make it possible to significantly reduce the cost of the transmission and reception of data via satellite distribution systems while serving basically all countries world-wide, in particular the developing countries.

The operation of the GTS makes use of industry standards and Internet technology. The Internet itself is also used to collect and distribute data when more reliable, secure telecommunication services are unavailable or too costly.

In 2002, WMO launched the development of a coordinated global information infrastructure for the collection and sharing of weather, water and climate information for all WMO and related international programmes, the WMO Information System (WIS). WIS implementation builds upon the most successful components of the GTS, in an evolutionary process. It includes the development of a comprehensive global electronic (on-line) catalogue, comprising the necessary metadata information, of all related data, and is intended to serve the whole user community including operation and research. The WIS is based on the use of international ICT industry standards, as well as modern data communication services, including the Internet. The WIS is expected to be a major component of the Global Earth Observation System of Systems (GOESS).

***Benefits gained from the application of standards for the implementation of ICT systems***

The use of standards helps to ensure cost-effective implementation of information systems, and greatly facilitates a sustainable implementation in developing countries.

The Plan of Action of the Geneva Phase of the World Summit on Information Society includes the promotion of the principles and metadata standards to facilitate cooperation and effective use of collected scientific information and data as appropriate to conduct scientific research.

WMO is fostering initiatives for the interoperability of ICT systems, such as implementation of ISO 19100 standard series, including metadata standards. WMO is working on the development of profiles<sup>2</sup> of ISO series 19100 standards for the implementation of the WMO Information System. The use of profiles will facilitate interoperability and connectivity including the access and the use of

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<sup>1</sup> See <http://www.wmo.int/web/www/TEM/gts.html>

<sup>2</sup> Profiling consists of putting together “packages/subsets” of the total set of standards to fit individual application areas or users.

information between individual National Meteorological and Hydrological Services (NMHSs), and between each NMHS and its users.

The OECD contributed a paper for consideration by this meeting. This paper looked at a narrow aspect of the digital divide, the effects of regulatory reform on telecommunication networks. It determined that “while regulatory reform is only one part of the global digital divide problem, it can play a key role in helping telecommunication markets bridge some of the gaps on their own. It is therefore imperative that policy makers consider regulatory reform as a necessary but not sufficient step towards overcoming the digital divide.”

### ***Recommendations***

Member States and other stakeholders should promote the use of cost-effective ICTs adapted to their capacities and capabilities for:

- The collection and exchange of earth observations, especially related to weather, climate and water, required for the analysis, monitoring and forecasting of the state of the earth;
- The delivery of weather, climate and water information, forecasts and warnings as comprehensive and effective services in support of safety of life and property, and the many weather-sensitive economic sectors which support the everyday quality of life as well as development.

Member States and other stakeholders should facilitate the interoperability of scientific systems based on ICTs and by fostering the development and implementation of international standards for the access and use of scientific information.

The meeting endorsed the OECD conclusion that regulatory reform can play a key role in helping telecommunication markets bridge some of the gaps of the digital divide. Policy makers should consider regulatory reform step towards overcoming the digital divide.