



KOBE REPORT draft
Report of Session 2.3, Thematic Cluster 2

Reducing Risks Through Effective Early Warnings of Severe Weather Hazards

1. Summary of the session's presentations and discussions

The first talk gave a general, conceptual background on the weather forecast process from observations through the assimilation of data, to numerical modelling using ensembles of forecasts. The focus of this talk was on sources of uncertainty in weather forecast process. Explained scientific need for using probabilistic forecast approach.

The second presentation focussed on probabilistic weather forecast products that are necessary to convey the forecast information to the users. Presented examples for early warning of severe weather, including heavy precipitation, strong winds, and extreme temperature. Explained why users need to utilize the probabilistic forecast format. This presentation motivated the use of probabilistic information from the users' point of view, using a simple economic cost-loss model.

The third presentation provided an illustration of the tropical cyclone forecast process, including the role of the human forecaster as a link between weather forecasting and the users including emergency managers, the media and finally the public. Examples of early warnings of a probabilistic nature were provided, offering a link to the fourth presentation.

The fourth talk through some examples, described level of threat and socio-economic background. Presented current tropical storm mitigation practices. Discussed achievements and good practices, and highlight where system could be improved. What were the lessons that can be carried over to other parts of the globe. The emphasis was on linking the weather forecast information with the emergency decision-makers and preparation processes on the ground, from the emergency management point of view.

The last presentation described the mechanism and procedures for integrating early weather forecasts and other early disaster information in emergency management at the central and field level in Japan, with special focus on giving advice/assistance to decision makers (e.g. City mayors). Provided suggestions of how losses could be reduced or avoided by combining probabilistic weather forecasts with other disaster-related information. Commented on possibilities for adapting similar procedures in other regions of the globe.

2. Primary Issue

- Inadequate resources for disaster mitigation caused by severe weather hazards;
- Meteorological and hydrological forecasts need improved accuracy, longer-ranges and quantification of uncertainty;
- Lack of qualified meteorological, hydrological and disaster prevention and preparedness personnel, especially in developing countries and SIDS;
- Insufficient attention to non-structural (public awareness, information sharing, etc.) mitigation measures to cope with severe weather events;

- Inadequate institutional and infrastructural practices for coordination and capacity-building at national, regional and international levels to cope with the negative impact of severe weather risks on economic growth and human progress;
- Absence or inadequacy of a National Disaster Management Policy that includes effective local dissemination of information to cope with the menace of meteorological and hydrological disasters in many developing countries;
- Failure to arouse community consciousness for all stakeholders involved in severe weather-related disaster mitigation process and measures in many developing countries.

3. a) Suggested targets and indicators to measure accomplishments

Early Warnings are Critical for Natural Disaster Prevention - One of the most effective measures for disaster preparedness is a well-functioning early warning system that delivers accurate and *user-friendly* information in a timely manner. Therefore, we must:

- (a) Develop an integrated network for sharing of enhanced observations (GEOSS), model forecasts and products at the regional and global levels within the framework of WMO, by 2018;
- (b) Increase accuracy of existing forecasts of severe weather events by 10 % by 2015;
- (c) Issue probabilistic forecasts of severe weather conditions up to 5 days in all regions, by 2015, to allow appropriate response;
- (d) Increase investment in awareness programmes related to the risks and consequences of natural hazards for decision-makers, emergency managers, media, NGOs, public and other stakeholders by 15 % by 2010, for prompt and effective response at the national to community levels;
- (e) Educate stakeholders *annually* on proper interpretation of forecasts, advisories, warnings and other meteorological and hydrological information; and
- (f) Ensure dependable and effective dissemination of nowcasts, forecasts, advisories, watches and warnings in real-time to decision-makers including emergency managers, media, general public and other stakeholders in most countries, no later than 2010.

3. b) Existing indicators with reference

WMO Sixth long-term Plan (2005 – 2012); Global Atmospheric Research Programme (THORPEX); Coordinated Observation and Prediction of the Earth System (COPES); GEOSS Draft International Plan (2008 – 2017); ISDR; Johannesburg Plan of Implementation (2002 – 2016)

4. Partnerships

NMHSs (National Meteorological and Hydrological Services); WMO Tropical Cyclone Regional Bodies; ISDR; UNESCAP; ADPC; ADRC; SPREP; CDERA; EC (European Commission); SOPAC; SPREP; IOC (Indian Ocean Commission), International Emergency Managers Association; THORPEX; COPES

5. a) Name, affiliation and contacts of presenters and titles of presentations

Dr Zoltan TOTH (National Weather Service, USA) (E-mail: zoltan.Toth@noaa.gov; Tel No. + 1 301 763 8000 ext. 7596; Fax No. + 1 301 763 8545): *The main components of weather forecast systems*

Mr Kenneth MYLNE (MetOffice, UK) (E-mail: Ken.Mylne@metoffice.gov.uk; Tel No. + 44 1392 886070; Fax No. + 44 1392 885681): *Probabilistic weather forecast products*

Dr Jose Maria RUBIERA TORRES (Cuba Meteorological Service) (E-mail: pron@met.inf.cu; Tel No. + 53 7 867 0708; Fax No. + 53 7 866 8010): *Early warnings for hurricanes*

Dr M Alimullah MIYAN (IUBAT, Bangladesh) (E-mail: miyan@iubat.edu; Tel No. + 880 2 891 8412): *Tropical cyclone disaster mitigation in Bangladesh*

Mr Kenzo HIROKI (UNESCO-PWFRI Centre, Japan) (E-mail: hiroki@waterforum.jp; Tel No. + 81 3 5212 1645): *Integrated use of weather forecasts and other disaster information for effective emergency response and preparedness in Japan*

5. b) Name, affiliation and contact of persons filling in the form

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