



**WMO initiatives
in
Disaster Risk Management
(An Overview)**

Maryam Golnaraghi PhD

Presented by

**Dr. P. J. Prih Harjadi
Meteorological Climatological and Geophysical
Agency BMKG) of Indonesia**

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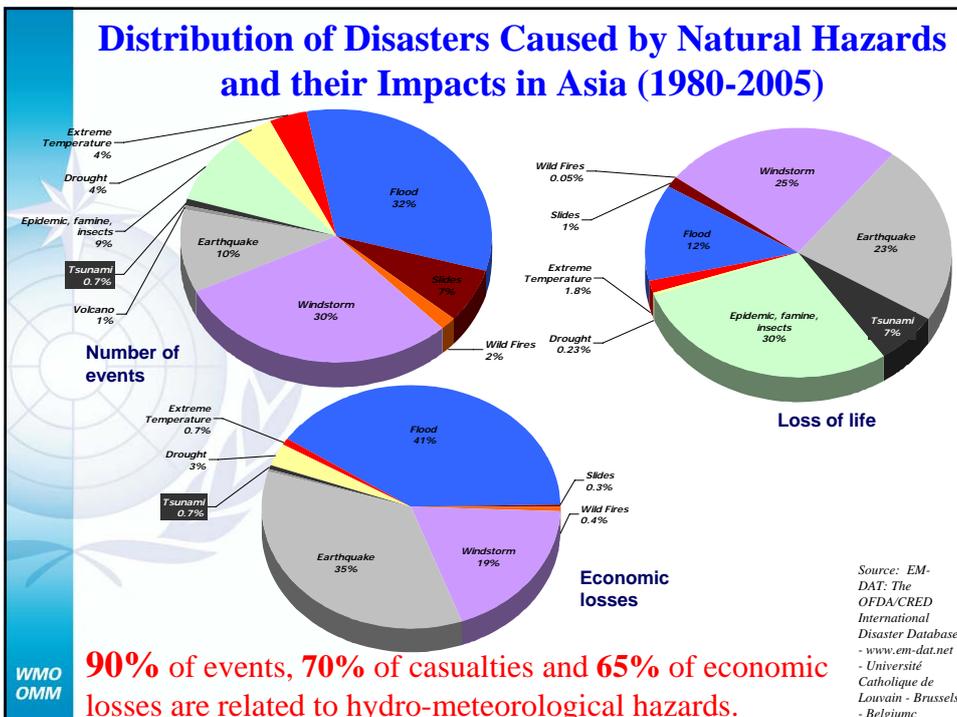
Agenda

1. Disasters and their impacts
2. Overview of WMO
3. WMO Initiatives for
Strengthening National Capacities
in Disaster Risk Management
4. Conclusions

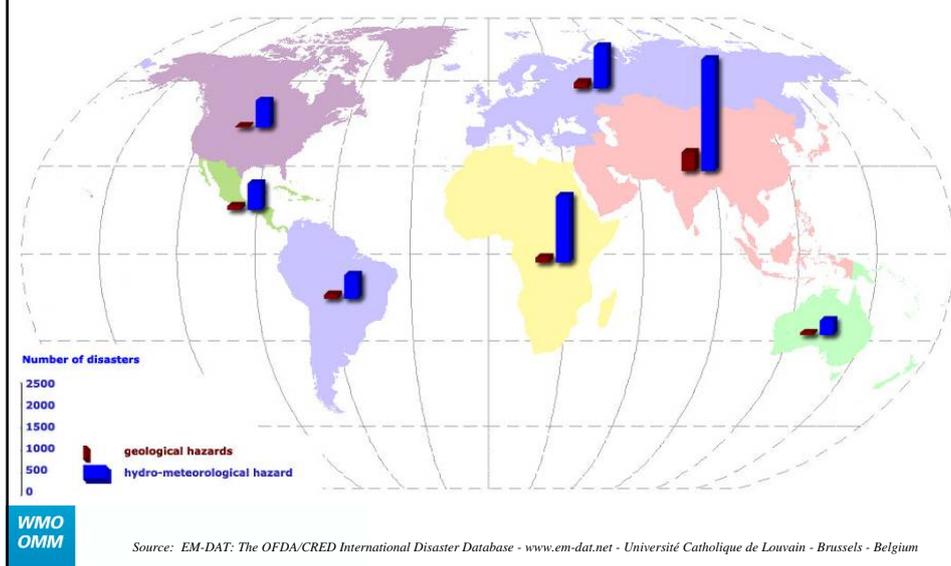
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1. Disasters and their impacts



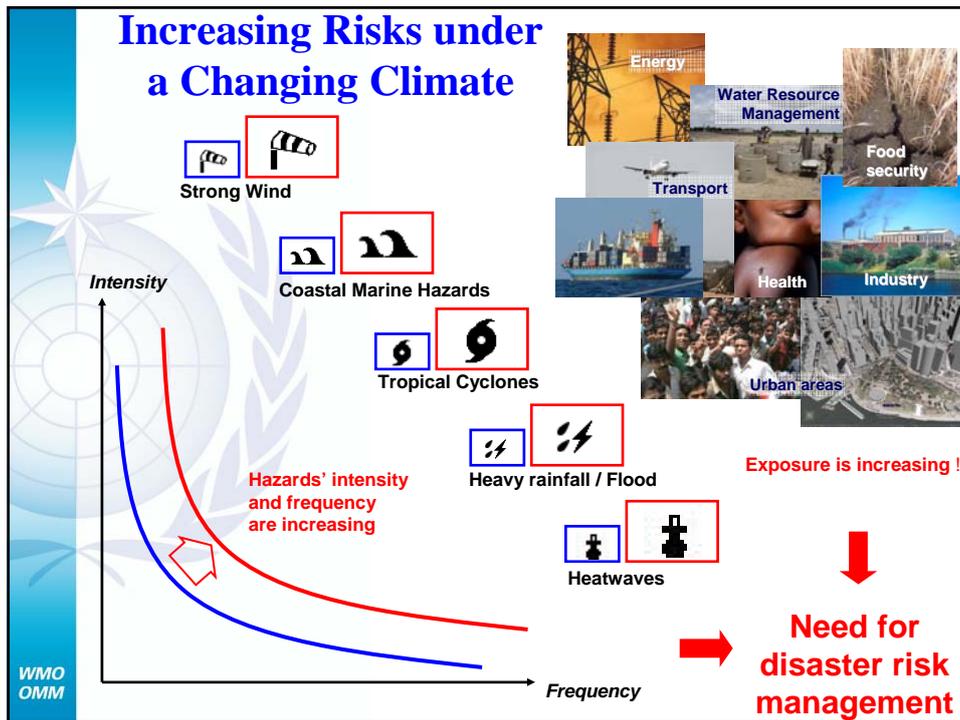
90% of Disasters are Hydro-Meteorological (Number of Events, 1980-2005)



Conclusions from 4th IPCC WG II (Impacts, Adaptation and Vulnerability)

Phenomenon	Likelihood	Major projected impacts
Increased frequency of heat waves	Very likely	Increased risk of heat-related mortality
Increased frequency of heavy precipitation events	Very likely	Increased loss of life and property due to flooding, and infectious, respiratory and skin diseases
Area affected by drought increases	Likely	Increased risk of food and water shortage
Intense tropical cyclone activity increases	Likely	Increased risk of deaths, injuries, water- and food-borne diseases; Disruption by flood and high winds; Potential for population migrations, loss of property
Increased incidence of extreme high sea level	Likely	Increased risk of deaths and injuries by drowning in floods; Potential for movement of populations and infrastructure

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Disaster risks are increasing, due to:

- Increasing intensity and frequency of hydrometeorological hazards;
- Increasing value of exposed elements due to development and demographic expansion.

Disaster risk management is a critical component of climate change adaptation.

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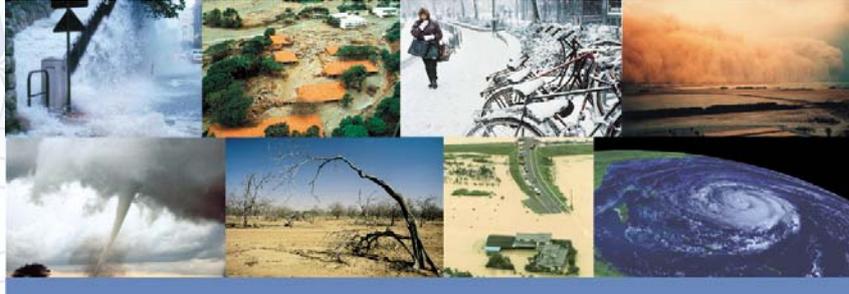
2.

Overview of WMO

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- ## WMO
- **Specialized Scientific and Technical Agency of the United Nations Responsible for Observing, Monitoring, Detecting, Forecasting and Warnings of Meteorological, Hydrological and Climate Conditions**
 - **188 Members, Represented by the Heads of the National Meteorological and Hydrological Services at the WMO Governing Bodies**
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Mandate for Natural Hazards related to Weather, Climate and Water ...



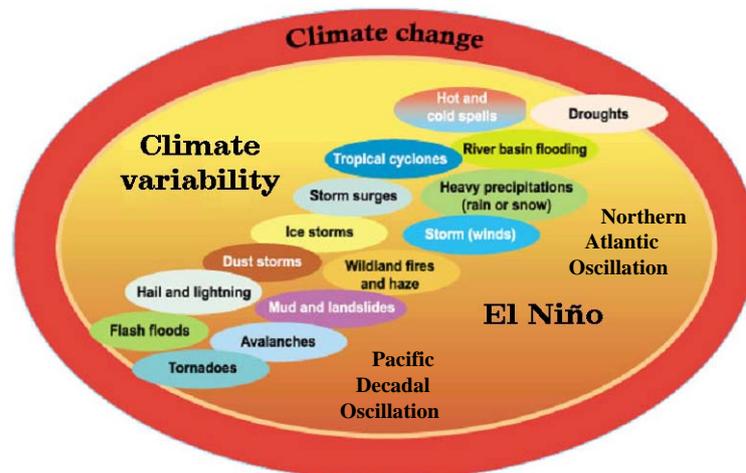
Primary mandate for: Severe storms, tropical cyclones (hurricanes and typhoons), storm surges, floods, cold spells, heat waves, cold waves, droughts, volcanic ash transport, air pollution, Sand and dust storms, etc.

Contributing to: Forest fires, locust swarms, health epidemics, tsunami, etc...

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Research Side: International Coordination of Scientific Research and Assessment

World Climate Research Programme (WCRP)
World Weather Research Programme (WWRP)/THORPEX
IPCC



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Operational Side: Global Coordination of Network of National Meteorological and Hydrological Services and Space Agencies

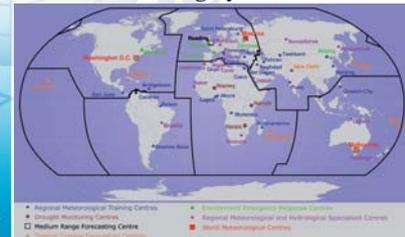
- Coordination of global observing networks
- National data policy and exchange issues
- Standardization and protocols for observing, forecasting, dissemination and exchange,
- Global Telecommunication System
- Global Data Processing and Forecasting System (40 specialized centers)
- International and Regional Technical Cooperation Projects
- Technical advise and national capacity development

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Operational Side: Global Coordination of Observing & Telecommunication Networks



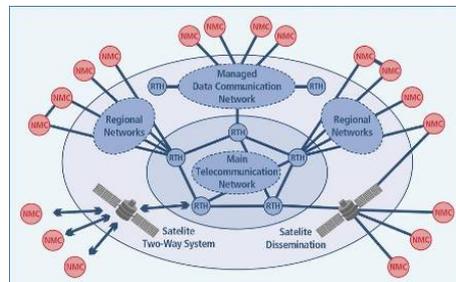
Global Observing System



Global Data Processing and Forecasting



Coordinated Satellite Activities

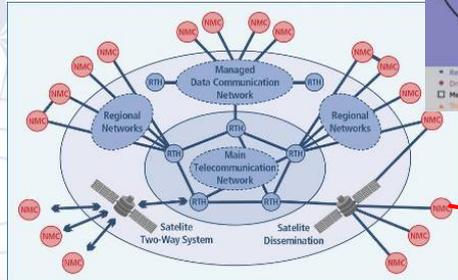
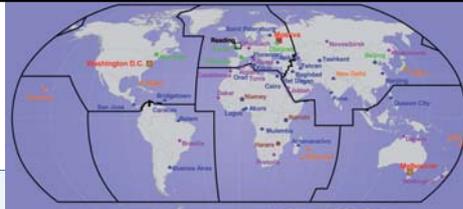


Global Telecommunication System

*Global Data Exchange:
 WMO Resolutions 40 and 25*

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Communication, dissemination and service delivery

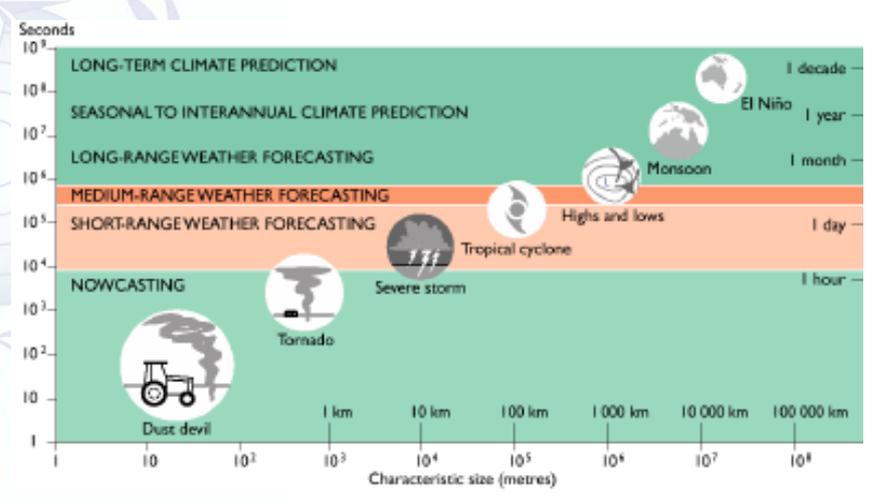


National Meteorological and Hydrological Services



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- **Critical information is now available. It still can be better customized to support DRR**
- **Requirements of different sectors are being identified and prioritised.**



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DRR Strategic Goals - Key Words

1. Analyzing and providing **hazard information** for risk assessment
2. Strengthening and sustainability of multi-hazard **early warning systems**
3. Delivery of timely and understandable warnings and specialized forecasts -- **driven by user requirements**
4. Strengthening WMO/NMHS **cooperation and partnerships** with disaster risk reduction organizations
5. **Public outreach** campaigns

Implemented through national and regional development projects leveraging WMO and partners' resources/expertise.

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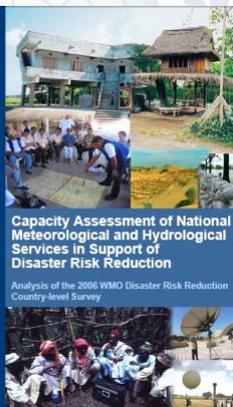
Analysis of NMHSs' Capacities, Gaps and Needs related to DRR and EWS

139 National Meteorological and Hydrological Services participated:

1. Assessment of role of NMHSs as reflected in planning, legislation and national DRR coordination mechanisms;
2. Assessment of NMHS' capacities in observing, data management, forecasting and warning services;
3. Capacities to deliver products and services and warnings;
4. Assessment of NMHSs' cooperation and coordination with other agencies and ministries.

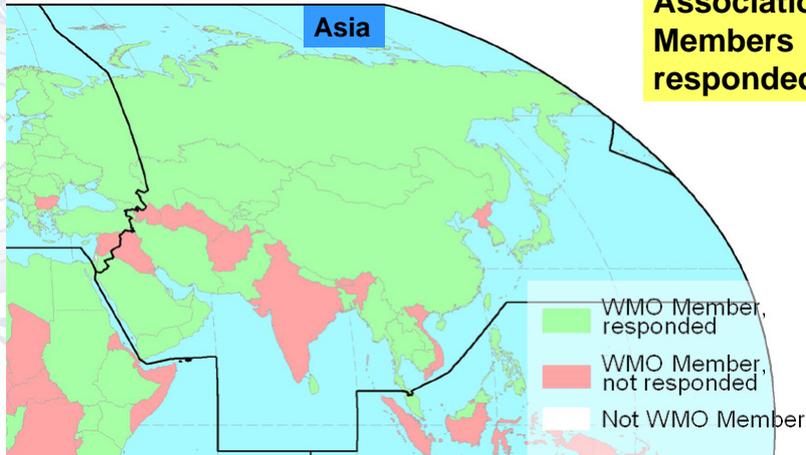
report available:

http://www.wmo.int/pages/prog/drr/natRegCap_en.html



Responses to the WMO Country-Level DPM Survey in Asia

25 out of 34 Asian Regional Association Members responded

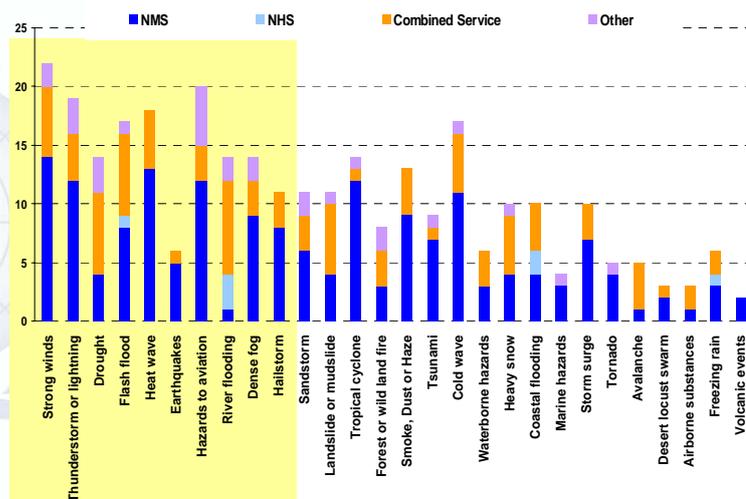


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Example: Number of Asian Members issuing warnings for listed hazards

HIGH HAZARD DISTRIBUTION

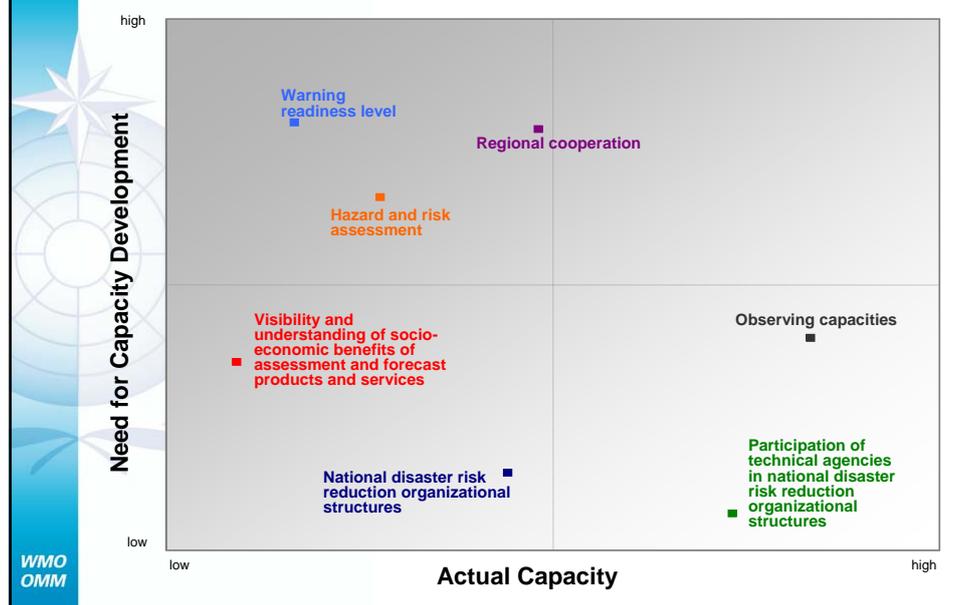
LOW HAZARD DISTRIBUTION



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Warnings could be significantly enhanced through strengthening of National Meteorological and Hydrological Services' capacities

Summary : NMHSs' Capacities and Needs in Asia

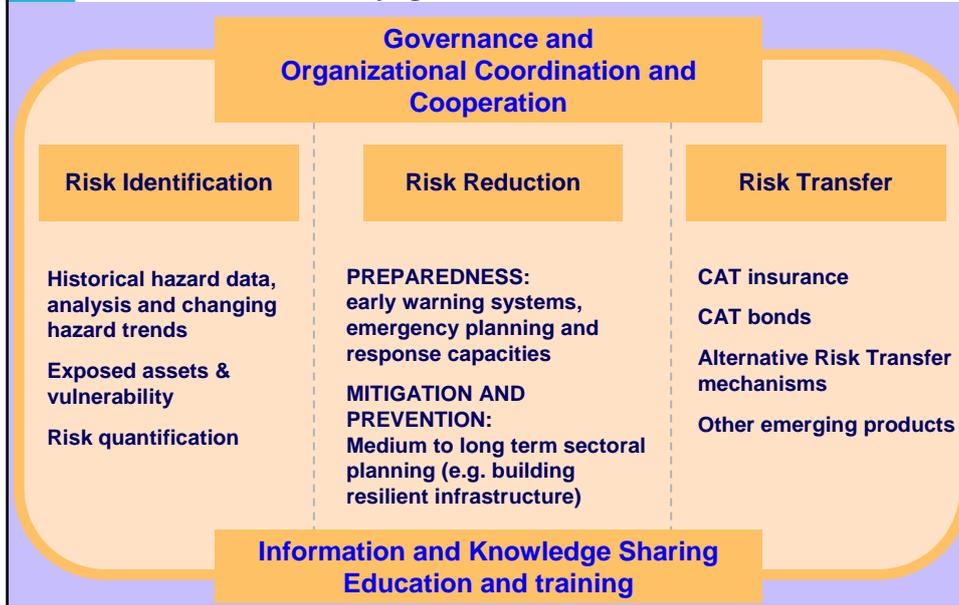


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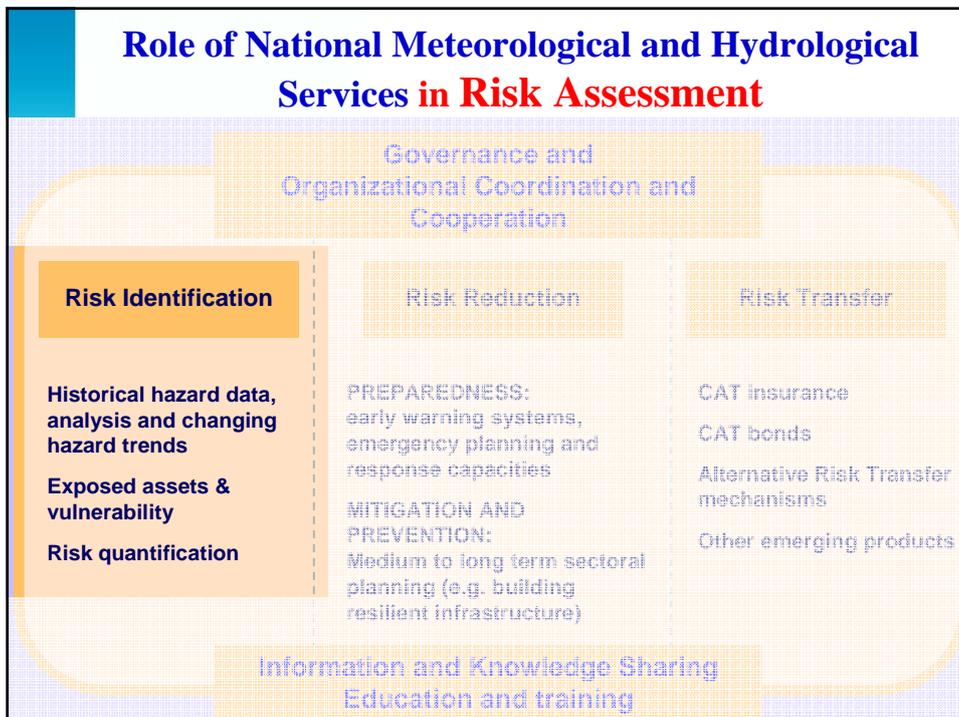
WMO Initiatives for Strengthening National Capacities in Disaster Risk Management

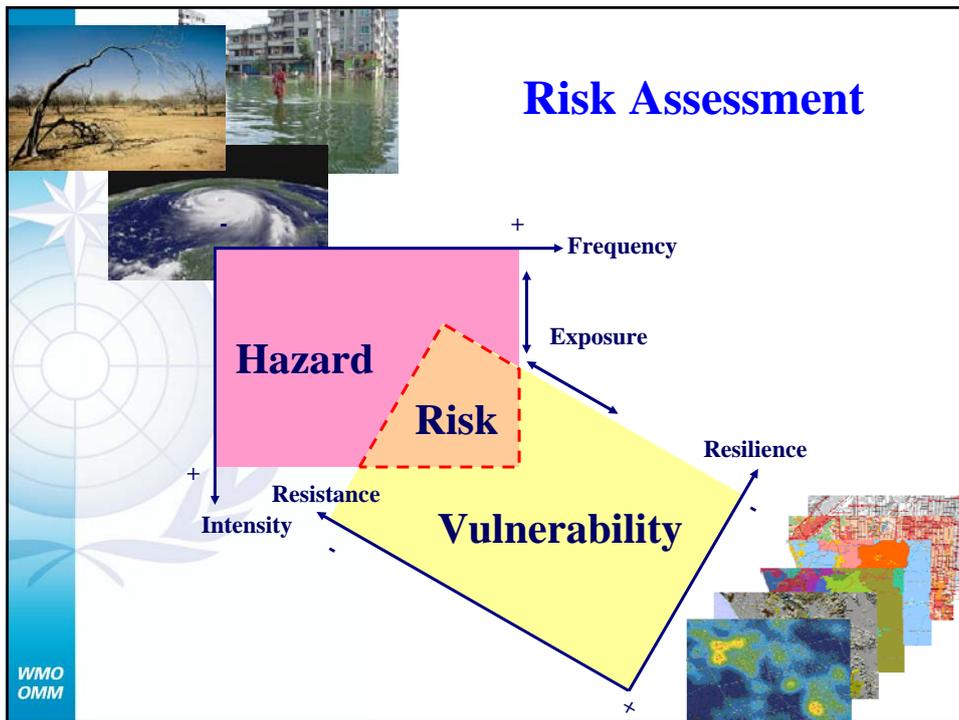
Disaster Risk Management Framework

Derived from Hyogo Framework for Action 2005-2015



Role of National Meteorological and Hydrological Services in Risk Assessment





WMO Projects to Support National Hazard Analysis and Support Risk Assessment

Flood, Drought, Tropical Cyclone and Severe Storms and other meteorological hazards underway

1. Standardized hazard data and metadata
2. Standardized hazard analysis and mapping methodologies
3. Mainstreaming risk assessment in sectoral planning (partners)
4. Capacity development and training
5. Demonstration projects in selected countries



FLOOD



**SEVERE STORMS /
TROPICAL CYCLONES**



DROUGHT

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Role of National Meteorological and Hydrological Services **in Risk Reduction**

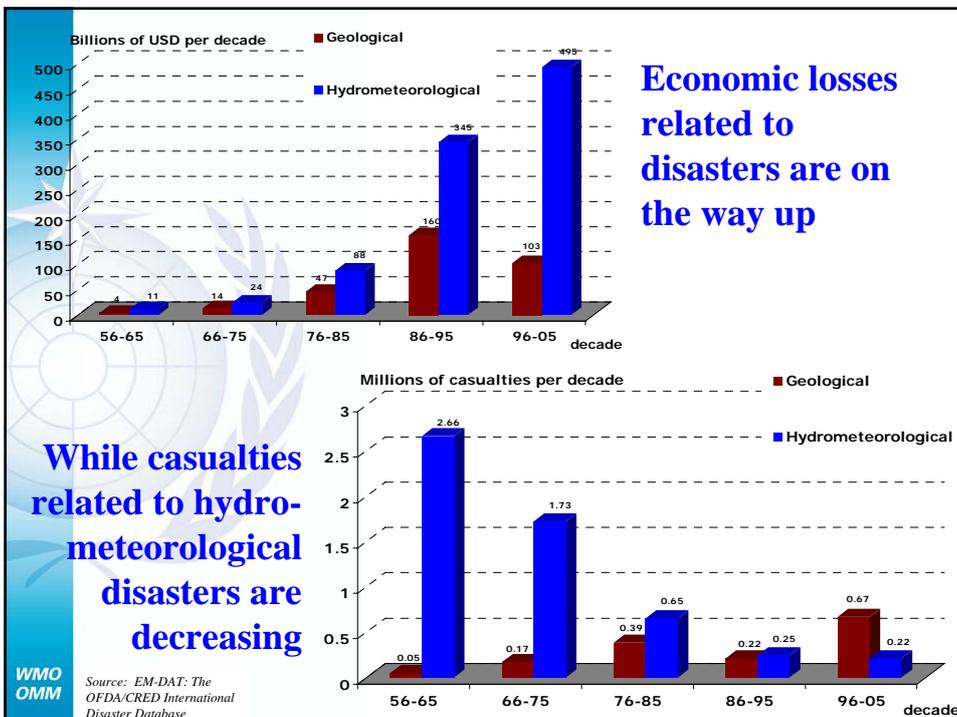


Enhanced risk information provides inputs for mid- to long-term planning:

- landuse planning
- infrastructure development
- building codes
- climate adaptation strategies

Reducing disaster risks through mid- to long-term sectoral planning and early warning systems

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WMO Initiatives for Strengthening EWS

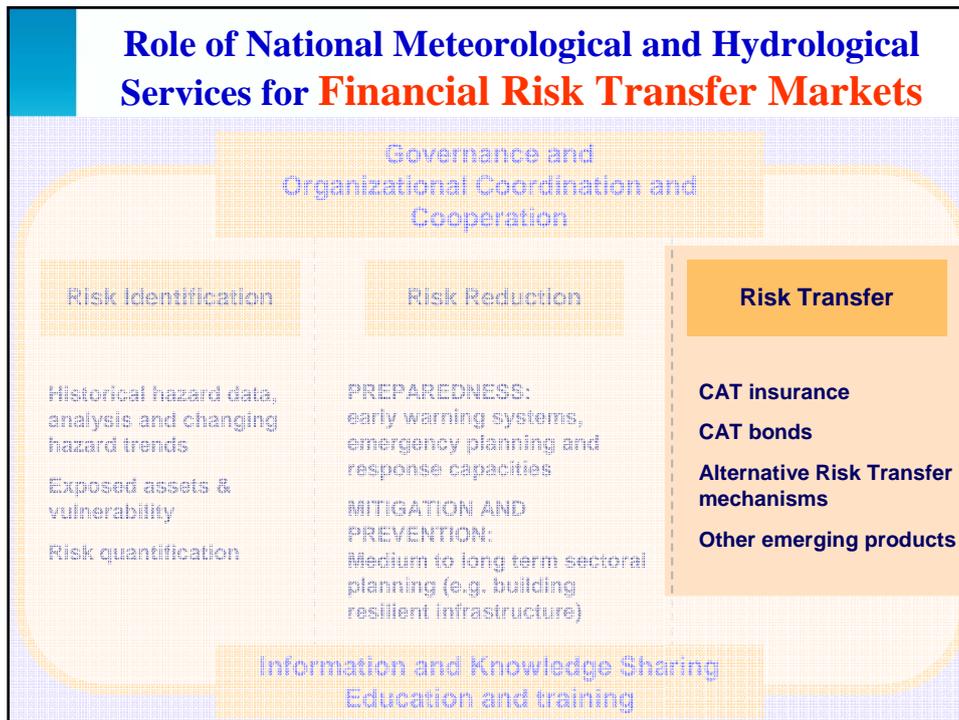
- Symposia on Multi-Hazard Early Warning Systems (Geneva, May 2006 / Toulouse, May 2009...)
- Documentation of good practices in early warning systems (France, China (Shanghai), Bangladesh, Cuba and others), focusing on governance, inter-agency coordination and operational aspects of EWS.
- Development of guidelines on “Early Warning Systems with a Multi-Hazard Approach” in 2009.
- Early warning pilot projects in Central America (Costa Rica, El Salvador and Nicaragua) in 2008, to be followed by Africa, Pacific and **Asia in 2009-2010** (with IFRC, World Bank, OCHA, regional agencies and their national counterparts).

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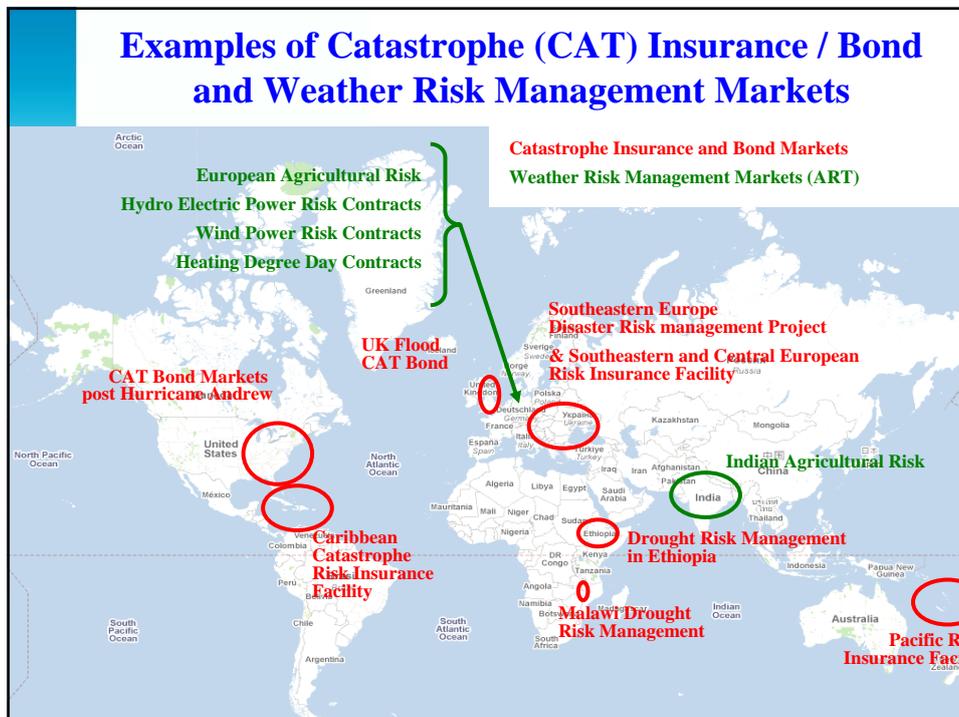
Comprehensive EWS Pilot Projects with Multi-Hazard Approach (since 2006)



Role of National Meteorological and Hydrological Services for **Financial Risk Transfer Markets**



Examples of Catastrophe (CAT) Insurance / Bond and Weather Risk Management Markets



Access to hydro-meteorological data is critical for development of these markets

- Historical records
 - Temporal and geographical coverage
 - Need for data rescue activities
- On-going real-time observations and updates
- Tamper-proof weather stations
- Data accessibility and quality
- Use of new technologies (satellites)
 - Verification
 - Enhanced estimates
 - Currently, challenge is lack of sufficient historical records

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WMO Contributes to Development of Financial Risk Transfer Markets with World Bank, WFP and WRMA

- 1) Raising **awareness** on needs and opportunities
 - Joint publication “*Managing Weather and Climate Risks Through Financial Risk Transfer Markets*” (for Release in 2008-2009) (Springer Verlag)
- 2) Developing a joint work plan (2008 - 2009) for **national capacity development projects**
 - **Modernization** of observing networks, **Data Rescue** Programmes, Data management and archiving systems, technical tools and methodologies
- 3) Motivating **coordinated climate research**
 - **Patterns of risk** (spatial and temporal correlations)

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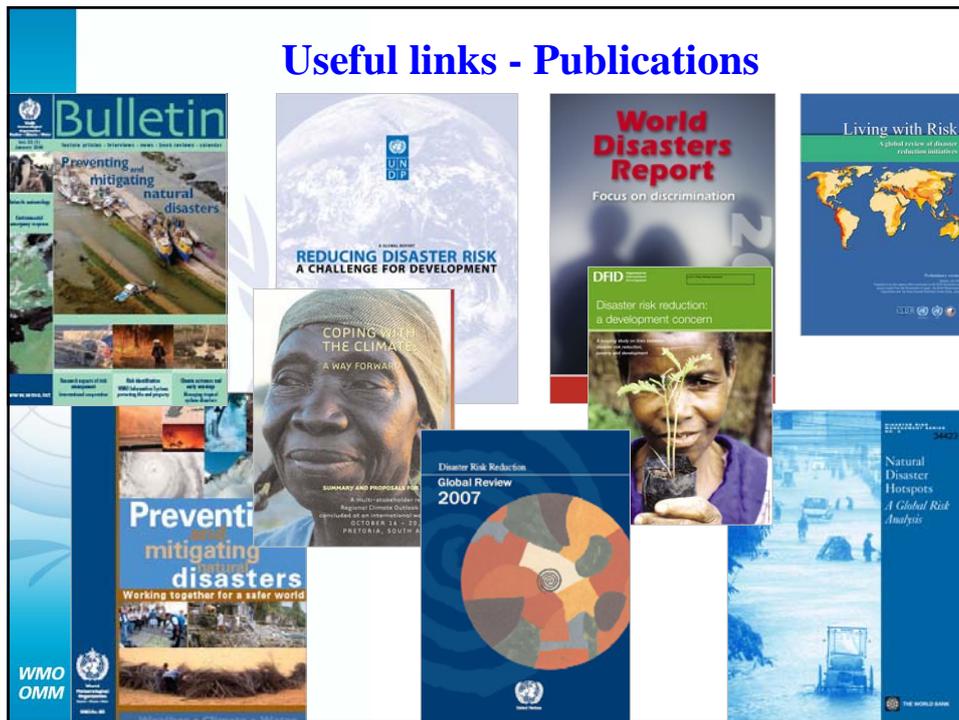


4. Conclusions

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- ## Conclusions
- WMO has initiated a crosscutting programme on DRR (2003)
 - WMO initiatives in DRR focus on:
 - Hazard data analysis as an input to risk assessment;
 - Early warning systems;
 - Financial risk transfer mechanisms.
 - WMO is exploring opportunities to initiate DRR projects in Asia in 2009-2010
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Useful links - Publications



Useful links – International Programmes

- World Meteorological Organization – Disaster Risk Reduction Programme
<http://www.wmo.int/disasters>
- United Nations International Strategy for Disaster Reduction (ISDR)
<http://www.unisdr.org>
- PreventionWeb
<http://www.preventionweb.net>
- World Bank – Disaster Risk Management Team
<http://www.worldbank.org/hazards>
- UNDP – Bureau for Crisis Prevention and Recovery
<http://www.undp.org/cpr>
- International Federation of Red Cross and Red Crescent Societies (IFRC)
<http://www.ifrc.org>
- Provention Consortium
<http://www.proventionconsortium.org>
- Office for the Coordination of Humanitarian Affairs (OCHA)
<http://ochaonline.un.org>
- Global Facility for Disaster Reduction and Recovery (GFDRR)
<http://gfdr.org>
- Global Risk Identification Programme
<http://www.gri-p.net>
- Dartmouth Flood Observatory (DFO)
<http://www.dartmouth.edu/~floods>
- University of Colorado at Boulder: Natural Hazards Center
<http://www.colorado.edu/hazards>
- Gateway to the United Nations System's Work on Climate Change
www.un.org/climatechange

Thank You

For more information please contact:

Maryam Golnaraghi, Ph.D.

Chief

Disaster Risk Reduction Programme

World Meteorological Organization

Tel. 41.22.730.8006

Fax. 41.22.730.8023

Email. MGolnaraghi@WMO.int



<http://www.wmo.int/disasters>

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