Water Disasters
Challenges and Opportunities

Face-to-face (F2F) event of the Swiss NGO DRR Platform
Thun, Switzerland, 11 November 2015
Number of Climate-related Disasters Around the World (1980-2011)

3455 Floods
2689 Storms
470 Droughts
395 Extreme Temps

DATA SOURCES:
EM-DAT - http://www.emdat.be - The CRED/OFDA International Disaster Database; Data version: 13 June 2012 v12.07

UNISDR - The United Nations Office for Disaster Risk Reduction

Weather • Climate • Water
Sendai Framework & SDGs

Sendai Framework

- **World Conference on Disaster Risk Reduction** (March 2015)
  - Working session on water and disasters
    - Emergency preparedness

- **Sendai Framework for Disaster Risk Reduction 2015-2030**
  - Understanding disaster risk
  - Strengthening disaster risk governance
  - Investing in disaster risk reduction for resilience
  - Enhancing disaster preparedness for effective response

Sustainable Development Goals

- **SDG 11.5**

  By 2030, **significantly reduce the number of deaths and the number of people affected** and **substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters [...]**
What are we doing about it at WMO?

Understanding disaster risk
• APFM, IDMP

Strengthening disaster risk governance
• APFM, IDMP, DRR

Investing in disaster risk reduction for resilience
• WHYCOS, FFGS

Enhancing disaster preparedness for effective response
• FFGS, APFM, IDMP, DRR
Understanding risk, strengthening governance, enhancing preparedness

Associated Programme on Flood Management
(since 2001)

Integrated Drought Management Programme
(since 2013)
Investing in disaster risk reduction for resilience - WHYCOS

- **WMO global framework programme** aiming at:
  - improving basic observation activities and data management
  - strengthening international cooperation and data exchange
- Implemented through independent but coordinated **basin-wide regional components**
Preparedness: WMO DRR Programme
Why flood warning is so important?

“There are two types of levees, those that have been overtopped by floodwaters, and those that will be”

William Hammon Hall, first State Engineer of California, 1880

- Human pressure and increased urbanization have led the majority of the world population to live in flood-prone areas
- Exposure to floods can only be reduced, but should be integrated by preparedness
- Preparedness requires to know when (and possibly how) a flood is going to occur
Flash Flood Guidance System

GLOBAL FLASH FLOOD GUIDANCE SYSTEM COVERAGE

[Map showing global flash flood guidance system coverage with various regions marked in different colors.]
Services

- Enhance capacity to issue flash flood warnings and alerts
- Enhance collaborations between NMHSs and Emergency Management Agencies
- Generate flash flood early warning products by using state-of-the-art hydrometeorological forecasting models
- Provide extensive training including on-line training to the hydrometeorological forecasters
Challenges

- Decide on acceptable risk (damage/yr, fatalities/yr, disruption)
- Decide on optimum combination of measures (protection, land use, preparedness/response)
- Deal with uncertainty issues (climate variability and change, economic and demographic development)
- Bring the science base to the understanding of the decision makers
- Reach affected people
**Interdisciplinarity**

The “dimensions” of IWRM

**Scientific domains**
- Law
- Economy
- Hydrology
- Social sciences
- Engineering

**Space**
- International
- National
- Basin
- Local

**Time**
- Emergency
- Planning
- Reconstruction and rehabilitation

**High waters (floods)**

**Low waters (drought)**
Stakeholders participation

- Involvement of all stakeholders in the dialogue/decision-making process
- Decentralization of decision-making with appropriate mechanisms
- Optimal mix of bottom-up and top-down approaches
- Effective conflict resolution mechanisms
Recipe for securing meaningful stakeholder interaction

1. Identify the problem in scientific terms
2. Understand the main user (decision maker) needs
3. Translate the problem according to the decision maker needs
4. Assess the needs of the other users (floodprone population, other stakeholders)
5. Mediate between the different parties to reach an optimal solution (if not possible, aim at no-regret solutions)
6. Check the technical feasibility of the identified solution
7. Invest in communication specialist to announce the details of the solution to ensure a participatory approach
Lessons learnt

In light of the different aspects to be considered (economic growth, demographic pressure, climate variability and change), water management strategies for DRR should reflect:

- Comprehensive vision
- Adaptive strategies
- Flexible measures
- Frame short term decisions in long term perspective ("no regret" solutions)
Conclusions

An **Integrated approach to Water Resources Management** can contribute to DRR by:

- **Risk based approach** (cycle of disaster management)
- **Long term perspective** (adaptive strategies, flexible measures)
- **Building partnerships, involve stakeholders and linking agendas**
- **Adequate institutional arrangements**
National priority and institutional setting

Disaster risk awareness and early warning

Culture of safety and resilience at all levels

Reduce risk factors

Strengthen disaster preparedness