



United Nations
Educational, Scientific and
Cultural Organization



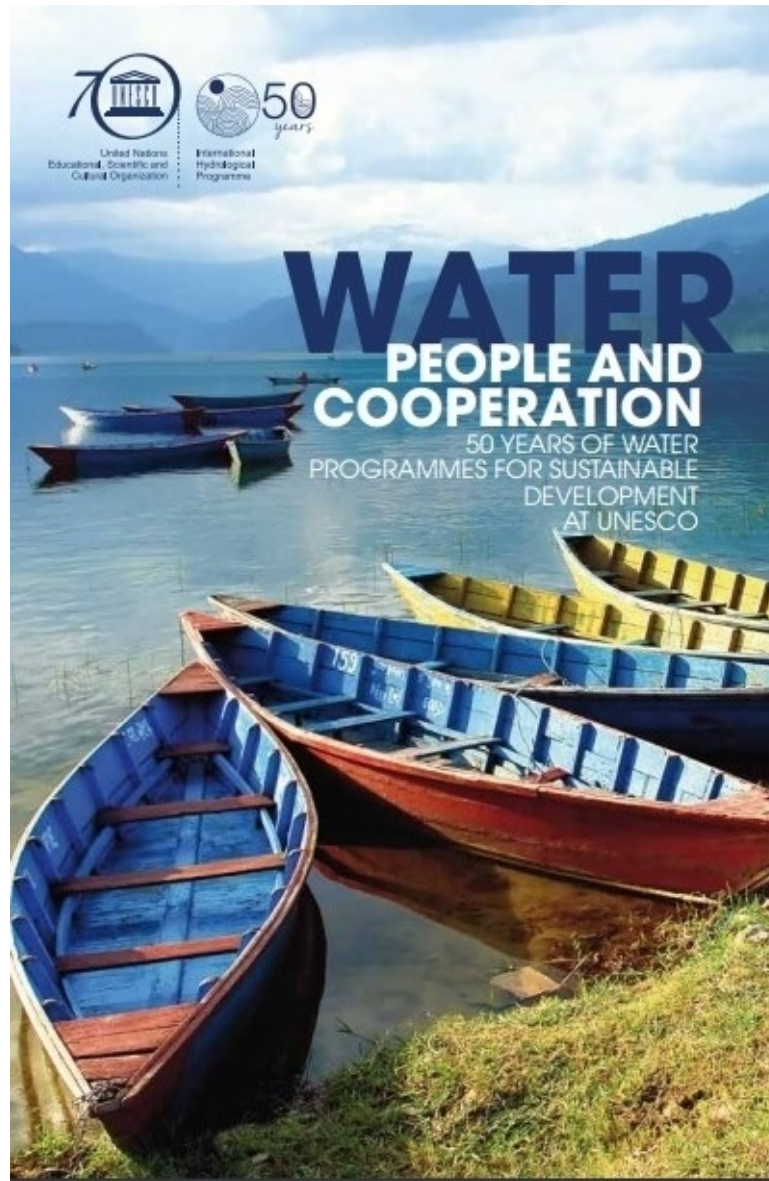
International
Hydrological
Programme

ADDRESSING WATER SECURITY

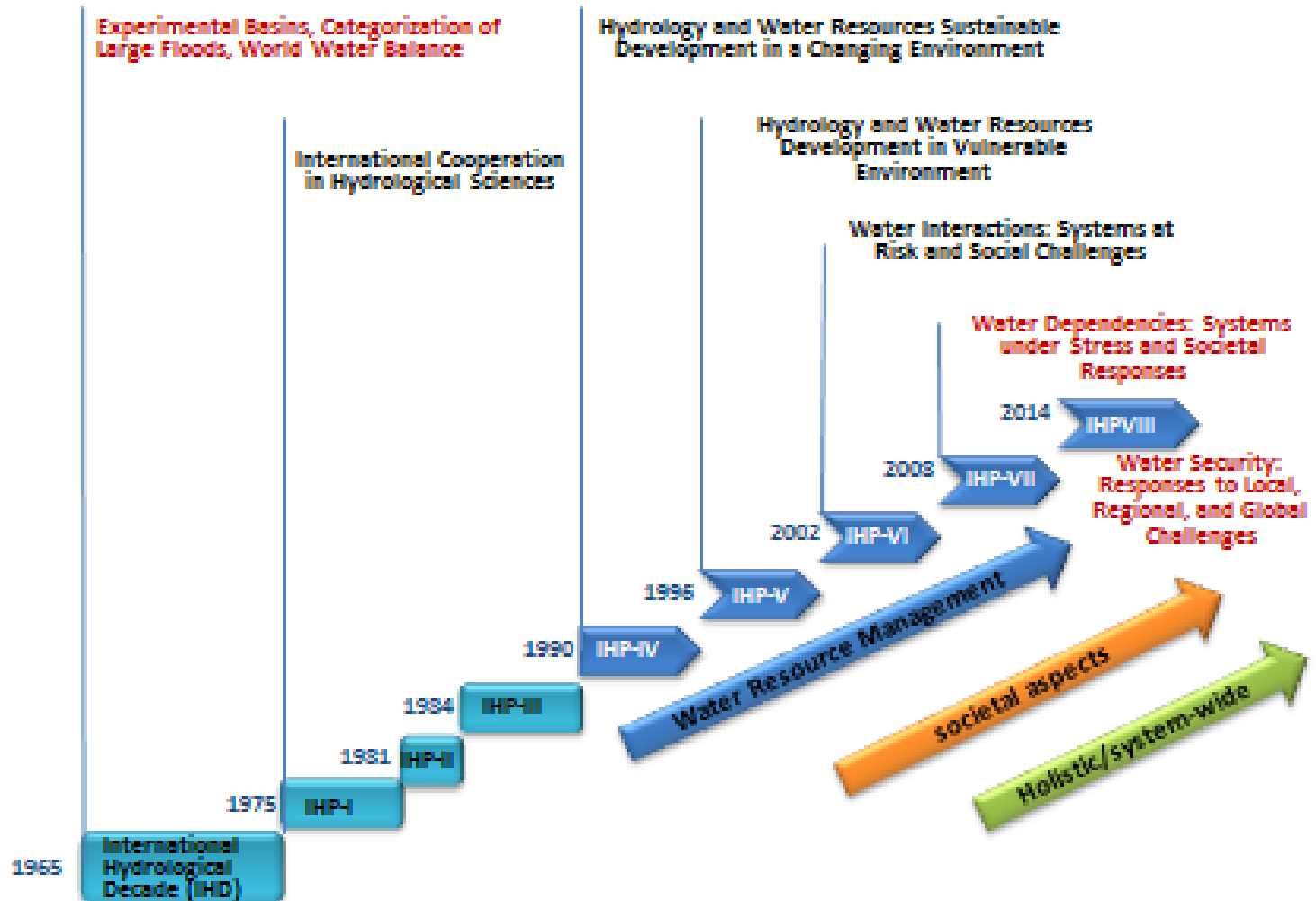
Anil Mishra
UNESCO-IHP

28th Session of the GEWEX Scientific
Steering Group (SSG-28)
Zürich, Switzerland
25-28 January 2016

UNESCO-IHP 50th Anniversary Publication



Evolution of IHP: From Hydrological Science to Integrated Science, Policy, and Society



IHP-VIII Responses: 6 Themes, 3 Axes

2014-2021

AXIS 1

Mobilizing International cooperation to Improve knowledge and innovation to address water security challenges

WATER-RELATED
DISASTERS AND
HYDROLOGICAL
CHANGE



GROUNDWATER
IN A CHANGING
ENVIRONMENT



ADDRESSING
WATER SCARCITY
AND WATER
QUALITY



WATER AND
HUMAN
SETTLEMENTS OF
THE FUTURE



ECOHYDROLOGY
ENGINEERING
HARMONY FOR
A SUSTAINABLE
WORLD



EDUCATION,
KEY TO WATER
SECURITY



WATER SECURITY, ADDRESSING LOCAL, REGIONAL AND GLOBAL CHALLENGES

AXIS 3

Developing institutional and human capacities for water security and sustainability

AXIS 2

Strengthening the Science-Policy interface to reach water security at local, national, regional, and global levels

CLIMATE-RELATED DISASTE AROUND THE WORLD 1980-2011

 **3455**
FLOODS

 **2689**
STORMS

 **470**
DROUGHTS

 **395**
EXTREME TEMPS



The United Nations Office for Disaster Risk Reduction
<http://www.unisdr.org>

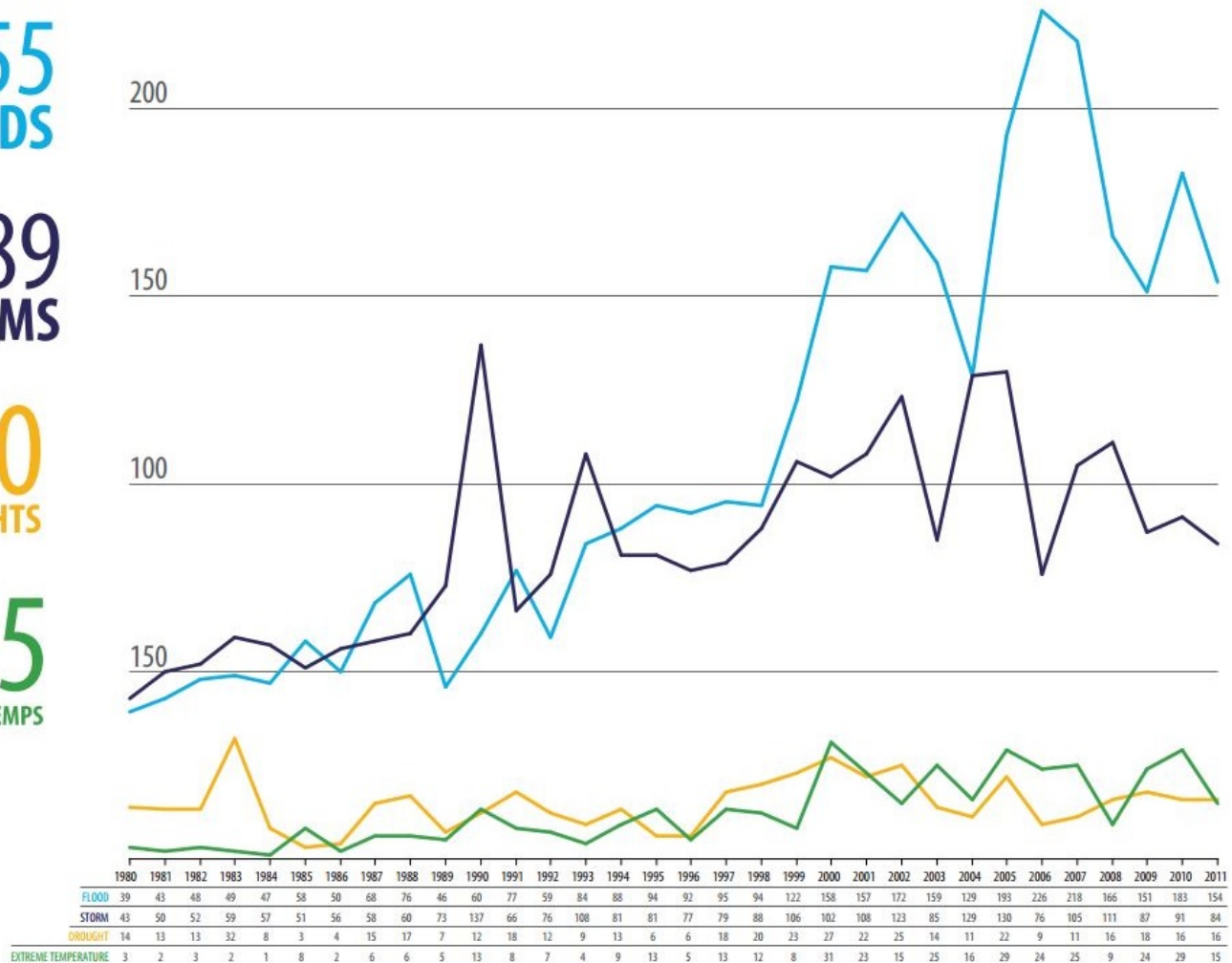
Created on 13 June 2012

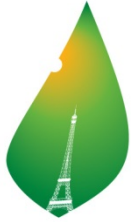
DATA SOURCES

EM-DAT - <http://www.emdat.be/> - The OFDA/CRED International Disaster Database; Data version: 13 June 2012 - v1.2.07

Humanitarian Symbol Set (2008):

<http://www.wangjwg.org/map/guideline.php>





PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21·CMP11

COP-21 (Paris, December, 2015) outcomes related with Water issues

COP21 and SDG – Water related issues

- Inclusion on Article 8 of the Paris Agreement of the importance of minimizing the loss and damage associated with climate change effects, including extreme weather.
- The reference to the post-2015 Sustainable Development Framework, in which water is a specific goal in Global Goal 6.
- Importance given to adaptation, where water is a central issue, and it's financing.



The Sustainable Development Goals: Water and Climate Change

SDG's



Addressing Water Security: Climate Impacts and Adaptation responses in Africa, the Americas, Asia and Europe

1- Vulnerability assessment, mapping and implementation of adaptation strategies

2- Raise awareness on potential impacts of climate change on mountain glaciers and downstream water supply

3- Development of a global knowledge forum

Exhibition Mountains: Early Warning Systems for Climate Change

Exhibition showcasing satellite images aerial and ground pictures was presented during COP21 in Paris last November.



Schéma d'un glacier Diagram of a glacier

The diagram illustrates a glacier's internal structure, showing layers of ice and sediment. Labels include 'Moulin', 'Lac', 'Lac de moraine', and 'Lac de cirque'. The diagram is set against a dark background with a light sky.

Un bilan de santé pour la Terre The Earth needs a health check

The section features a central image of a satellite in orbit over Earth. To the right, there are three smaller maps: a green map of Europe, a blue map of the Arctic region, and a satellite image of a forest. The ESA logo is visible on the right.

Les Satellites d'Observation de la Terre surveillent les changements environnementaux terrestres liés au Changement Climatique

Différents types de Satellites d'Observation de la Terre contribuent à la surveillance de l'environnement : forêts, banquise, gaz à effet de serre et précipitations, entre autres.



Jungfrau-Aletsch : Une belle région menacée Jungfrau-Aletsch : A beautiful region under stress

The section contains several images: a 1991 aerial photo of a glacier, a 2007 aerial photo showing significant glacier retreat, a wide-angle view of a glacier valley, and smaller ground-level photos of the region's landscape. The ESA logo is visible on the right.

Les images de satellite montrent la dégradation de la région de Jungfrau-Aletsch. Les glaciers ont reculé de plusieurs kilomètres depuis 1991. Les images de satellite montrent également la dégradation de la région de Jungfrau-Aletsch. Les glaciers ont reculé de plusieurs kilomètres depuis 1991. Les images de satellite montrent également la dégradation de la région de Jungfrau-Aletsch. Les glaciers ont reculé de plusieurs kilomètres depuis 1991.

International Scientific Cooperation

Panta Rhei - IAHS Scientific Decade 2013–2022



INARCH: International Network for Alpine Research Catchment Hydrology



- To better understand alpine cold regions hydrological processes, improve their prediction and find consistent measurement strategies.



Synergy with GEWEX

- Observations and Predictions of Precipitation
- Global Water Resource Systems
- Changes in extremes
- Water and Energy Cycles and Processes
- State of the Water Cycle ?

Upcoming events



G-WADI





Global Conference

**“Water and sustainable development for arid region
river basins”**

September 27-29, 2016

Beijing, China


G-WADI Website

  **G-WADI** Water & Development Information for Arid Lands: A Global Network

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G-WADI's mission is to strengthen the capacity to manage the water resources of arid and semi-arid areas around the globe through a network of international and regional cooperation.

Quick Links

**REAL TIME
PRECIPITATION
ESTIMATES**

**HYDROLOGIC
MONITORING &
FORECASTING**

**FREQUENCY
ANALYSES**

**CHEMICAL
& ISOTOPIC
TRACERS**

**WATER
HARVESTING**

**REGIONAL
CENTERS**

News & Recent Events



Technical training session on PERSIANN held during Thai Hydrologist Association's (THA) 2015 conference

2015-01-29

About 50 water scientists and engineers attended a technical training session on "Satellite-based Rainfall (...)



Expert Symposium "Coping with Droughts" and Flood and Drought Monitor for Latin America and the Caribbean workshop in Santiago de Chile

2014-11-19

As part of the GWADI Network and in the setting of the Project "Managing Water Resources in Arid and semi-Arid Regions of Latin...



ICIWaRM Deputy Director strengthens ties with Oman Water resources authorities and supports the Arab GWADI regional network.

2014-10-18

ICIWaRM Deputy Director Dr. Will Logan participated in the Water Sciences and Technology Association's (WSTA) 11th Gulf Water...



Hydrologic Modeling and Water Management Workshops in Nairobi (Kenya) and the Mara Basin.

2014-06-30

News & Recent Events



G-WADI highlighted at the 21st session of the IHP Intergovernmental Council

2014-06-18

G-WADI and its programs played a prominent role at the 21st session of the International Hydrological Programme's (IHP)...



2014-04-20

Members of the GWADI Network such as the International Hydrologic Programme (IHP), the International Center for Integrated Water...



G-WADI PERSIANN-CCS GeoServer Captures the Immensity of Total Precipitation of Super Typhoon Haiyan

2014-01-21

Super Typhoon Haiyan was an extremely intense and costly weather event in terms of damages and lives lost and much has already been said...



Representatives from the G-WADI Team Supports Water Cooperation in the Nile Basin

2013-12-20

Representatives from the International Center for Integrated Water Resources Management (ICIWaRM)—the Technical Secretariat for G...

G-WADI Networks



Center for Hydrometeorology and Remote Sensing (CHRS) - University of California, Irvine, USA

Asian G-WADI Network

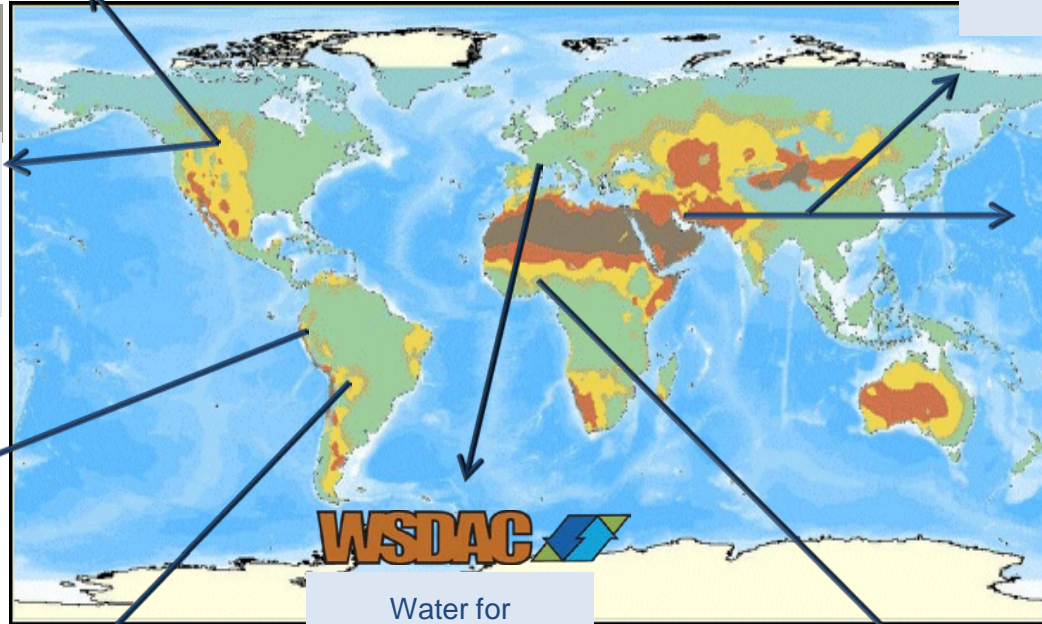
Cold and Arid Regions Environmental and Engineering Research Institute

Chinese Academy of Sciences

United Nations Educational, Scientific and Cultural Organization

International Center for Integrated Water Resources Management under the auspices of UNESCO

International Center for Integrated Water Resources Management



Arab G-wadi

Ministry of Regional Municipalities and Water Resources Sultanate of Oman

MWAR-LAC

Managing Water Resources in Arid and semi-Arid Regions of Latin America and the Caribbean



The Water Center for Arid and Semi-Arid Zones in Latin America and the Caribbean



Water for Sustainable Development and Adaptation to Climate Change - Serbia



African Network AGRYHMET Regional Centre - Niamey, Niger.



Recent publications

