

United Nations Educational, Scientific and Cultural Organization

Introductions to the International Activities on Water

WG1: GEOSS ASIAN WATER CYCLE INITIATIVE (AWCI)



Prof. Dr. Shahbaz Khan

Director and Representative UNESCO Regional Science Bureau for Asia and The Pacific

Acknowledgement – Contributions by IHP Experts and Networks



United Nations Educational, Scientific and Cultural Organization

UNESCO IHP-VIII 2014-2021

Axis 1 Mobilizing International cooperation to Improve knowledge and innovation to address water security challenges Axis 3 Developing Water Addressing Water and institutional and Groundwater Related Human Water in a Changing **Disasters and** human capacities Scarcity and **Settlements Hydrological** Environment for water security Quality of the Future Changes and sustainability

Axis 2 **Strengthening the Science-Policy** interface to reach water security at local, national, regional, and global levels

Regional Sciences Bureau for Asia and the Pacific - UNESCO Office, Jakarta

EcohydrologyE

ngineering

Harmony for

a Sustainable

World

Education,

Key to Water

Security



Water Security for Sustainable Development

United Nations Educational, Scientific and Cultural Organizatior



WATER SECURITY is defined as the capacity of a population to safeguard access to adequate quantities of water of acceptable quality for sustaining human and ecosystem health on a watershed basis, and to ensure efficient protection of life and property against water related hazards -floods, landslides, land subsidence,) and droughts.







United Nations Educational, Scientific and Cultural Organiza

Integrated Climate Risk Management

Three Pillars of Drought Risk Management

1. Monitoring and forecasting/early warning
Foundation of a drought plan Indices/ indicators linked to impacts and action triggers
Feeds into the development/delivery of information and decision-support tools
Meteorological, Hydrological and Agricutural Droughts

- Real-time Alerts
- Forecasts and projections

 2. Vulnerability/ resilience and impact assessment
 Identifies who and what is at risk and why

Involves monitoring/ archiving of impacts to improve drought characterization

Impact Evaluation

Drought Vulnerability



3. Mitigation and response planning and measures

Pre-drought programs and actions to reduce risks (short and long-term)

Well-defined and negotiated operational response plan for when a drought hits

Safety net and social programs, research and extension

- Drought Declaration
- Support national policies













THE WORLD'S WATER: RISING DEMAND, INCREASING SCARCITY, DEGRADING QUALITY AND <u>INCREASING RISKS</u>

Uncertainty of Climate Projections to the Watershed Level?





Decision Making and Large Uncertainty in the Different Models

United Nations Educational, Scientific and Cultural Organization

Example: Six different models projections for the River Nile discharge



Simulated decadal mean flows at Dongola on the main Nile from six GCM experiments. The values represent averages of 10 realizations of statistically downscaled scenarios for each experiment while the base refers to the baseline period 1992–2001.

How to utilize the information in the coarse Global Circulation Models to take long-term decisions at the local level?





Climate Risk Informed Decision Analysis (CRIDA)



A bottom-up approach to utilize the information in the GCMs



Providing tools to identify Climate Risks



The Latin American and Caribbean Drought Atlas



DROUGHT ATLAS

Identifying the <u>frequency of drought</u> events: a. How rare is the current drought?

- a. How rare is the current drought?b. How large a drought should we plan for?
- c. How rare is the drought of record?

A long-term regional activity, spanning the 2008-2015 period:

- 12494 precipitation stations analyzed
- From 21 countries in the region
- More than 10 regional workshops were organized
- Funding provided through multiple sources



Installed Entline of \$3 Paulo



Flemish government





The national and regional drought observatories



United Nations Educational, Scientific and Cultural Organization

International Hydrological Programme

Increasing climate change preparedness:

- Greater understanding and knowledge regarding waterrelated vulnerabilities
- Enabling early-warning of water-related disasters
- across sectors
- Greater understanding of the linkages between various sectors



Chilean Agroclimatic Observatory

The national and regional drought observatories



United Nations • Educational, Scientific and • Cultural Organization •

International Hydrological Programme

- a. Place current droughts into context
- b. Unlocking national datasets for monitoring different aspects of drought and climate risks
- c. Drought early warning for pro-active drought management and policy



The African and Lac flood and drought Monitors



United Nations Educational, Scientific and Cultural Organization International Hydrological Programme

.

African and LAC Droughts monitors:

Strengthen the capacity of African and LAC countries for near real-time monitoring and seasonal forecasting to raise awareness of the impact of floods and droughts on vulnerable and disadvantaged groups.





Launch of App for Mobile Devices during COP22



Water and Climate Day - COP22 Launching of the iRain Mobile App 🟛 🔮 🗘 – 🚊 🟯 G-WADI Visualize real time global satellite precipitation observations Report rainfall at their location and 3 Share real-time view reports of others O Download the App here: Google play 📾 🎯 🎯 🛞 🛞 🕲







Edu Global Geological data for modeling Elevation data, Land use data, etc.



input

based rainfall **SSMaP** NRT **B42RT(V6** 3**B**42RT OMORPH

IFAS Integrated Flood Analysis System Model creation



River course model

Asia and

, 101



Rainfall distribution



Reduce/Prevent

flood damage

Courtesy of JAXA

Calculation



Flood forecasting/warning Regional Sciences Bureau

ific - UNESCO Office, Jakarta

River discharge, Water level,



raining progra

Strategic Strengthening of Flood Warning and Management Costacity of Pakatan Phase II

Sol & Mater Conservation Priorink Indians, Chekowi Phone: USAS, SPESSA: Sax 1543-374304 Jand Garren Stand Law

United Nations Educational, Scientific and

ADCP, Auto Weather Stations and Community Trainings

Training provided to PCRWR, four Provincial Irrigation Department, WAPDA and PMD (21 trainees)



verPro

River Transect
 measurements
 on Jhelum river
 5-6 August 2017

Young engineers of PMD developed this in house developed Automated Weather Station (AWS) (more than 35% cheaper than international standard price)

e for flood

IHP contributes to SDGs and 2030 Agenda





Namibia Uses IHP-supported **G-WADI's Precipitation** Estimates in their Daily Flood

Rainmapper A New Mobile Device Application for Realtime Global Precipitation Monitoring

New brochures for 'Latin American Flood and Drought Monitor' and 'Latin American & Caribbean Drought Atlas'

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

Sendai Framework for Disaster Risk Reduction

2015 - 2030



July 2017, Langkawi, Malaysia

Building resilience to climate change risk and vulnerability

31 participants from 10 countries (45% women)





Regional Workshop on BUILDING RESILIENCE TO CLIMATE CHANGE RISK AND VULNERABILITY TO MEET WATER SECURITY CHALLENGES



United Nations Educational, Scientific and Cultural Organization

Further update on activities Shahbaz Khan UNESCO

