

# UNESCO's water programs and IWRM

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# UNESCO International Hydrological Programme



## Overview of UNESCO's International Hydrological Programme

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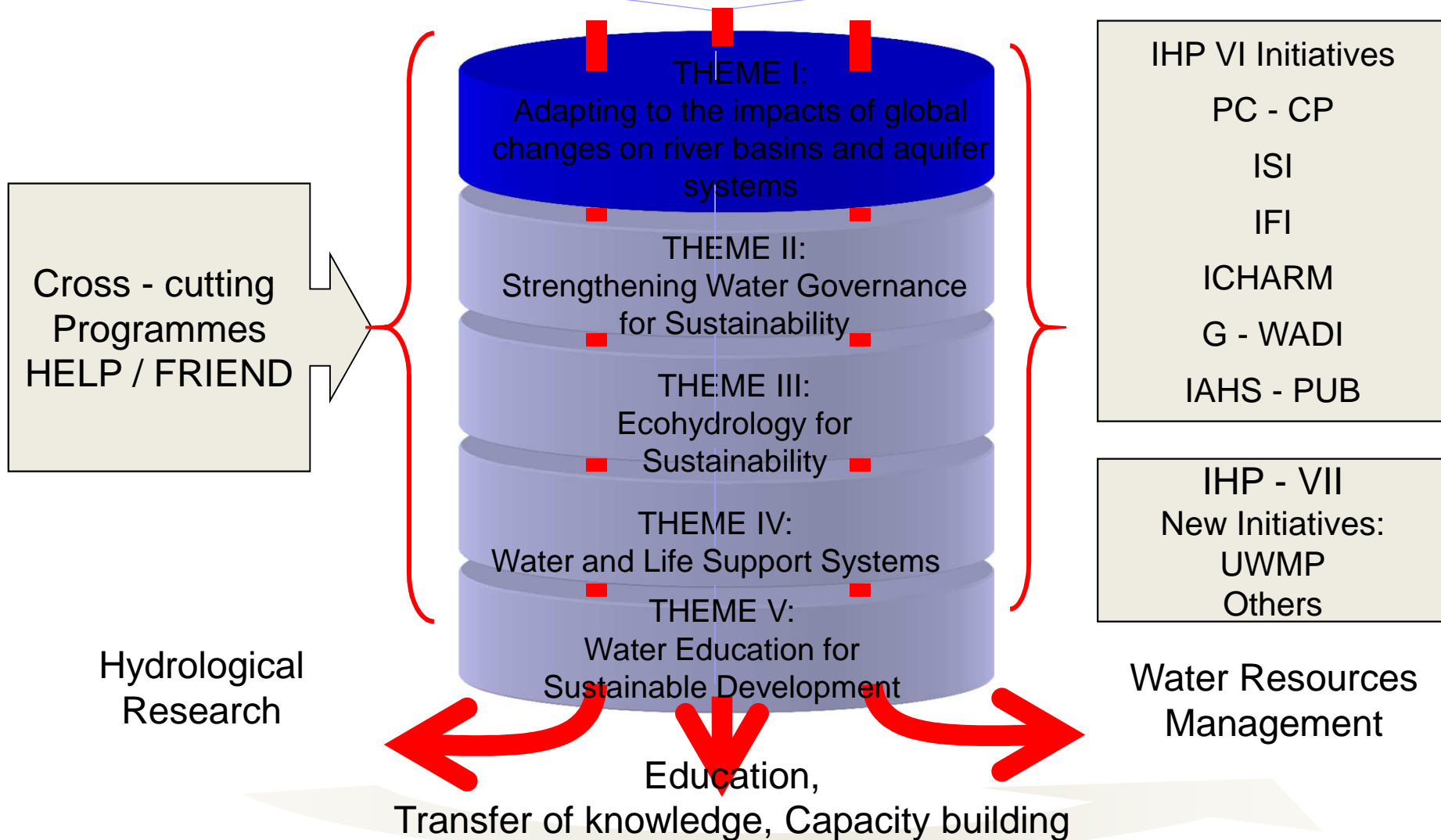


# Objectives

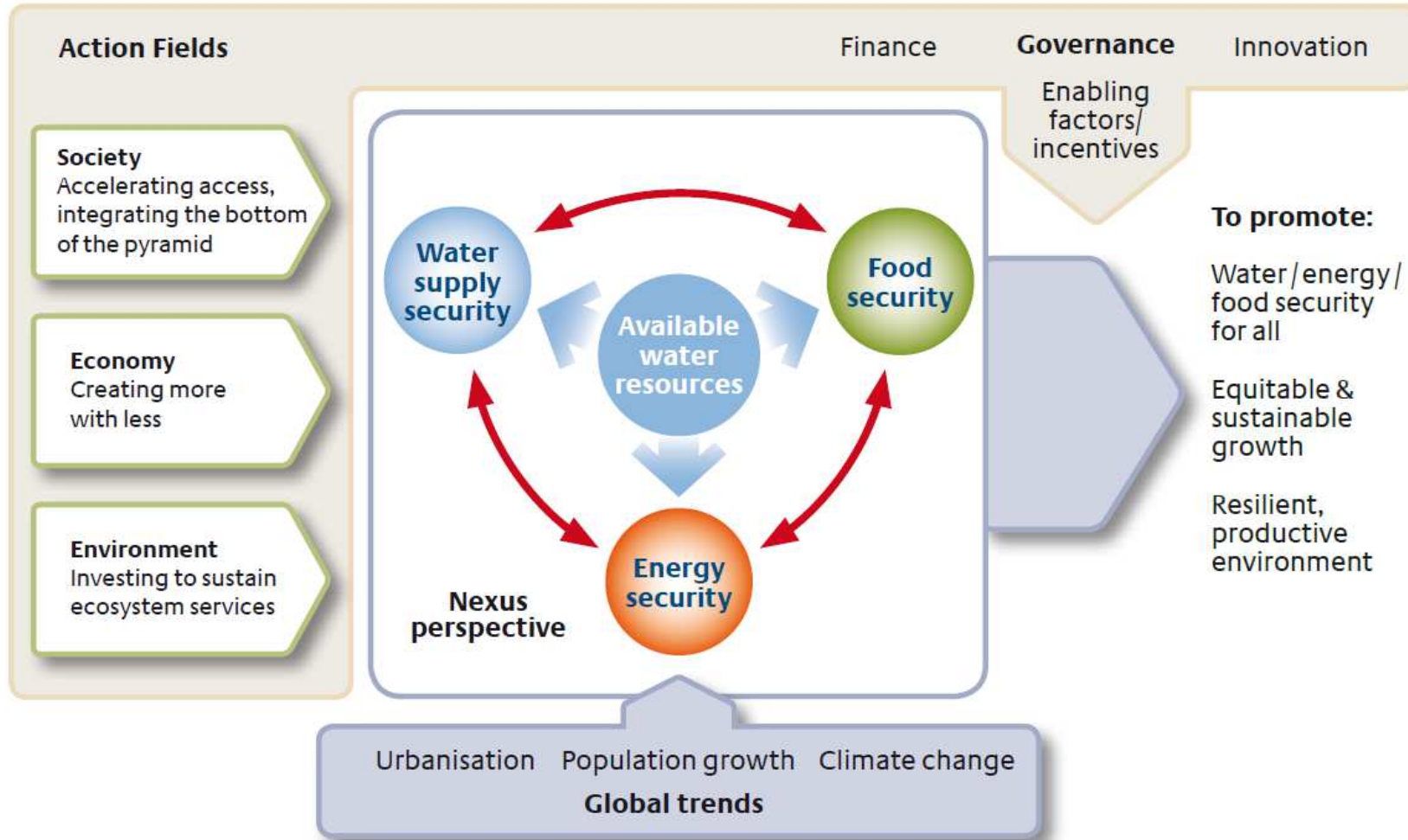
- Hydrological science for policy relevant advice
- Water resources assessment and management to achieve environmental sustainability
- Training, Education and capacity building responding to growing needs of sustainable development

# IHP-VII (2008-2013)

## Water Dependencies: Systems under Stress and Societal Responses



# Water security in a changing world



Hoff, H. (2011)

# Water Security: challenge of 21<sup>st</sup> Century

## **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”

# UNESCO's water strategic plan: IHP Phase 8, Water Security





**Water security:  
Responses to local, regional, and global challenges**

**Water Education,  
Key for Water  
Security**

1. Enhancing tertiary water education and professional capabilities in the water sector
2. Addressing vocational education and training of water technicians
3. Water education for children and youth
4. Promoting awareness of water issues through informal water education
5. Education for transboundary water cooperation

**Ecohydrology,  
Engineering Harmony  
for a Sustainable World**

1. Hydrological dimension of a catchment – identification of potential threats and opportunities for a sustainable development
2. Ecological catchment structure shaping for ecosystem potential enhancement – biological productivity and biodiversity
3. Ecohydrology system solution and ecological engineering for the enhancement of water and ecosystem resilience and ecosystem services
4. Urban ecohydrology – stormwater purification and retention in the city landscape, potential for improvement of health and quality of life
5. Ecohydrological regulation for sustaining and restoring continental to coastal connectivity and ecosystem functioning

**Water and Human  
Settlements of  
the Future**

1. Game changing approaches and technologies
2. System wide changes for integrated management approaches
3. Institution and leadership for beneficitation and integration
4. Opportunities in emerging cities in developing countries
5. Integrated development in rural human settlement

**Addressing  
Water Scarcity  
and Quality**

1. Improving governance, planning, management, allocation, and efficient use of water resources
2. Dealing with present water scarcity and developing foresight to prevent undesirable trends
3. Promoting tools for stakeholder involvement and awareness, and conflict resolution
4. Addressing water quality and pollution issues within an IWRM framework – improving legal, policy, institutional, and human capacity
5. Promoting innovative tools for safety of water supplies and controlling pollution

**Groundwater in a  
Changing Environment**

1. Enhancing sustainable groundwater resources management
2. Addressing strategies for management of aquifers recharge
3. Adapting to the impacts of climate change on aquifer systems
4. Improving management of shallow and coastal aquifers
5. Promoting management of transboundary aquifers

**Water-related Disasters  
and Hydrological Change**

1. Risk Management as a adaptation to global changes
2. Understanding coupled human and natural processes
3. Benefiting from global and local Earth observation systems
4. Addressing uncertainty and improving its communication

**Global Change**

**Governance**

**Human Dimension**

**Transboundary or  
Shared Waters**

**Integrated Water  
Resource Management**



# Mobilize UNESCO IHP water family

- National IHP committees (more than 168)
- UNESCO-IHE (More than 15 000 trained)
- 18 operational water centres worldwide
- 8 centres approved by General Conference
- 29 water related Chairs
- IHP scientists networks (FRIEND, HELP, ISARM, G-WADI,..)

# **2013 International year of water cooperation**

In December 2010 the United Nations General Assembly (UNGA) declared 2013 as the United Nations International Year of Water Cooperation (IYWC), (Resolution A/RES/65/154)

UNESCO led the year on behalf of UN-Water

# Objectives of the water cooperation year

- Raise awareness on the importance, benefits and challenges of water cooperation;
- Enhance knowledge and develop capacity for water cooperation;
- Spark concrete and innovative action towards water cooperation;
- Foster partnerships, dialogue and cooperation around water as a top priority, during and beyond 2013;
- Strengthen international cooperation among institutions, users, social and economic sectors and others in order to reach a consensus on Sustainable Development Goals for the post-2015 era which will effectively address our future water needs.

# Main Events of the year



<http://www.watercooperation2013.org>



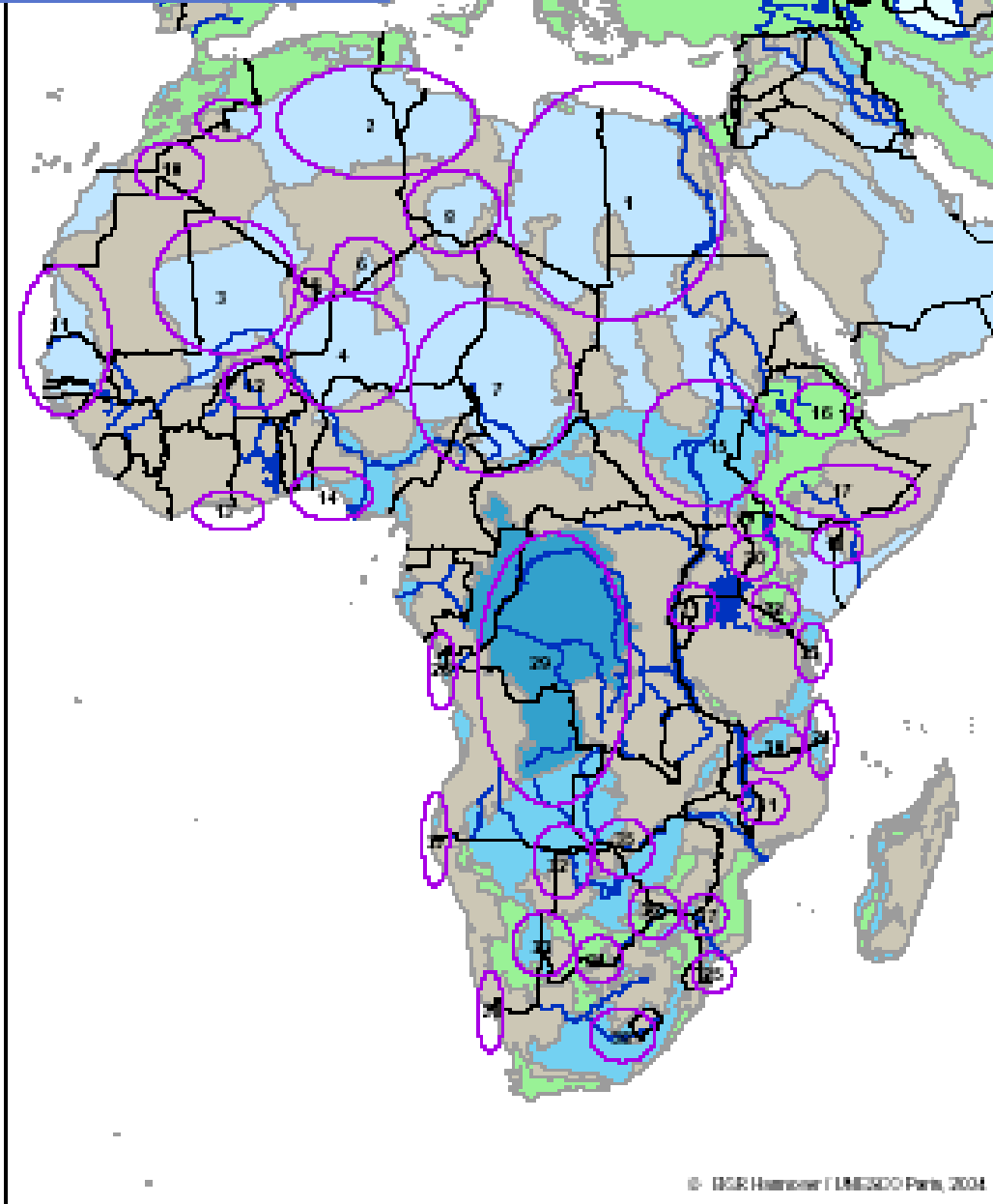
# **Water for Peace Africa Programme**

***Promote the water cooperation for peace and sustainable development in Africa by enhancing the capacity of Member States to manage potential conflicts, with the support of sound knowledge***





## Transboundary Aquifers in Africa



Around 41 transboundary aquifers identified so far

There is a great lack of scientific knowledge on TBA in Africa

More than 60 TBA have been identified now through ISARM initiative in Africa

# Specific objectives

- To create, cooperatively, and use a technically sound knowledge base in support of promoting informed and peaceful conflict management with the view of promoting sustainable water management in river basins in Africa.
- To enhance the capacity of high level decision makers in Africa on water conflict management and cooperation, while learning from case study basins activities

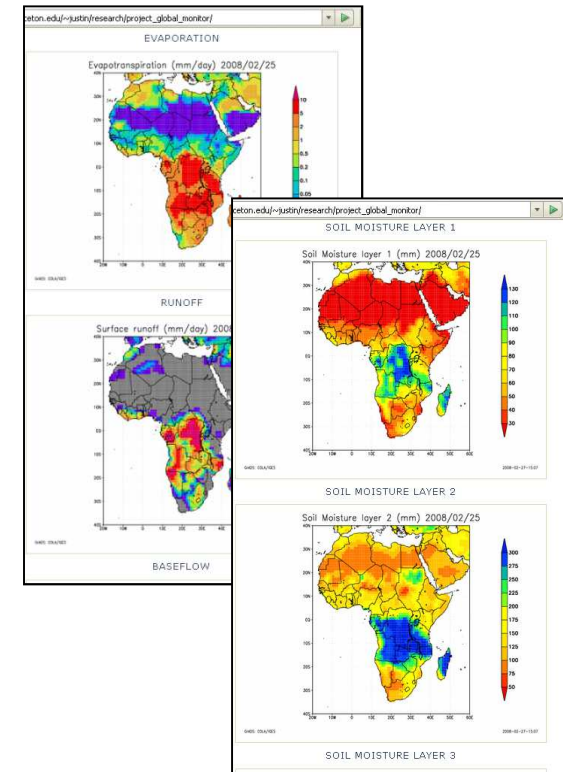
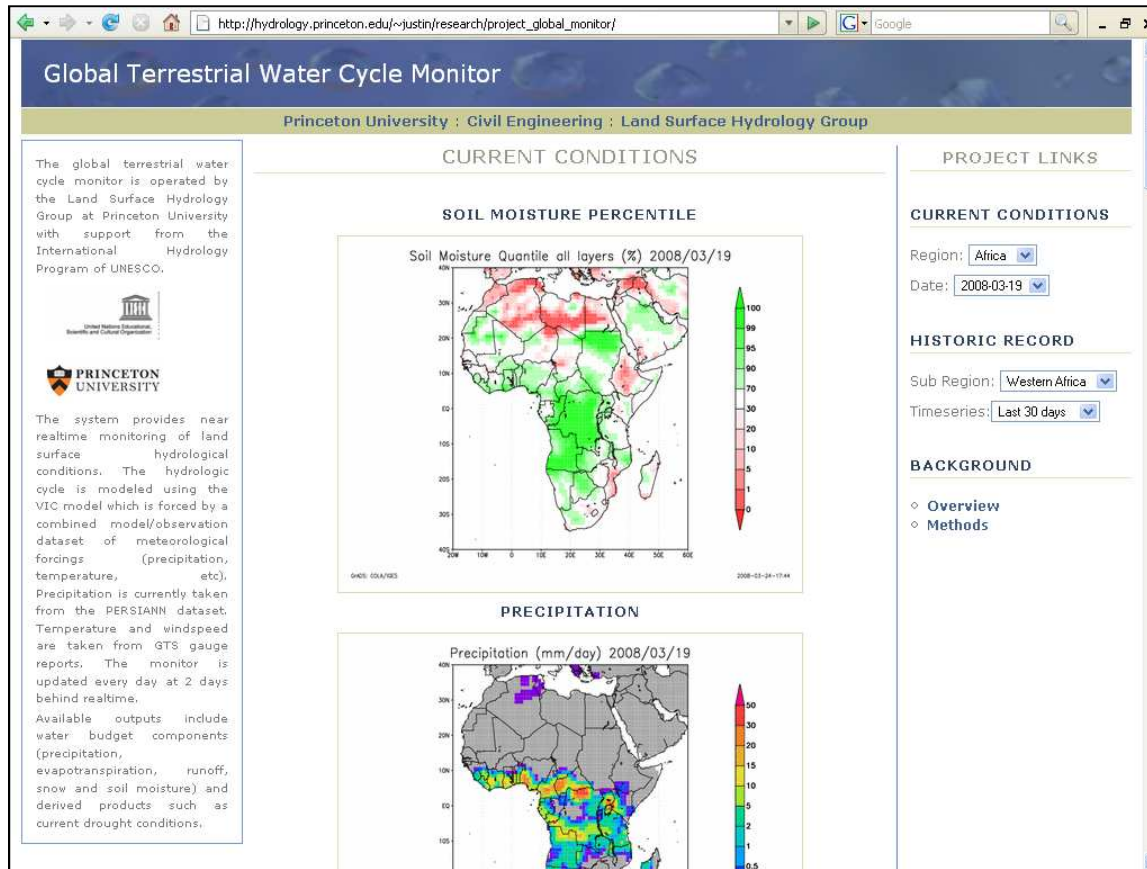
# All IHP programmes at basin level

- Mobilizing all IHP programmes for an integrated sound water sciences at basin scale
  - FRIEND
  - HELP, IWRM, ECO-HYDROLOGY
  - ISARM
  - G-WADI
  - PCCP
  - IFI, IDI, Drought Monitor package
  - IWQI

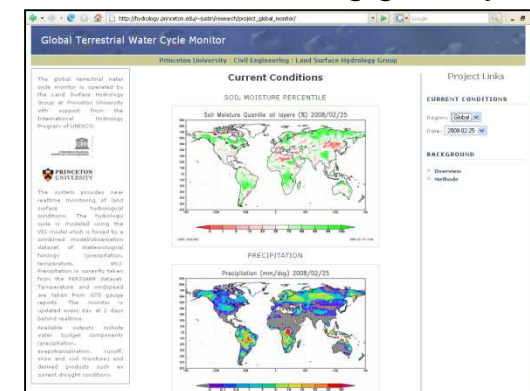


# Water Cycle and Drought Monitoring over Africa

<http://hydrology.princeton.edu/monitor>

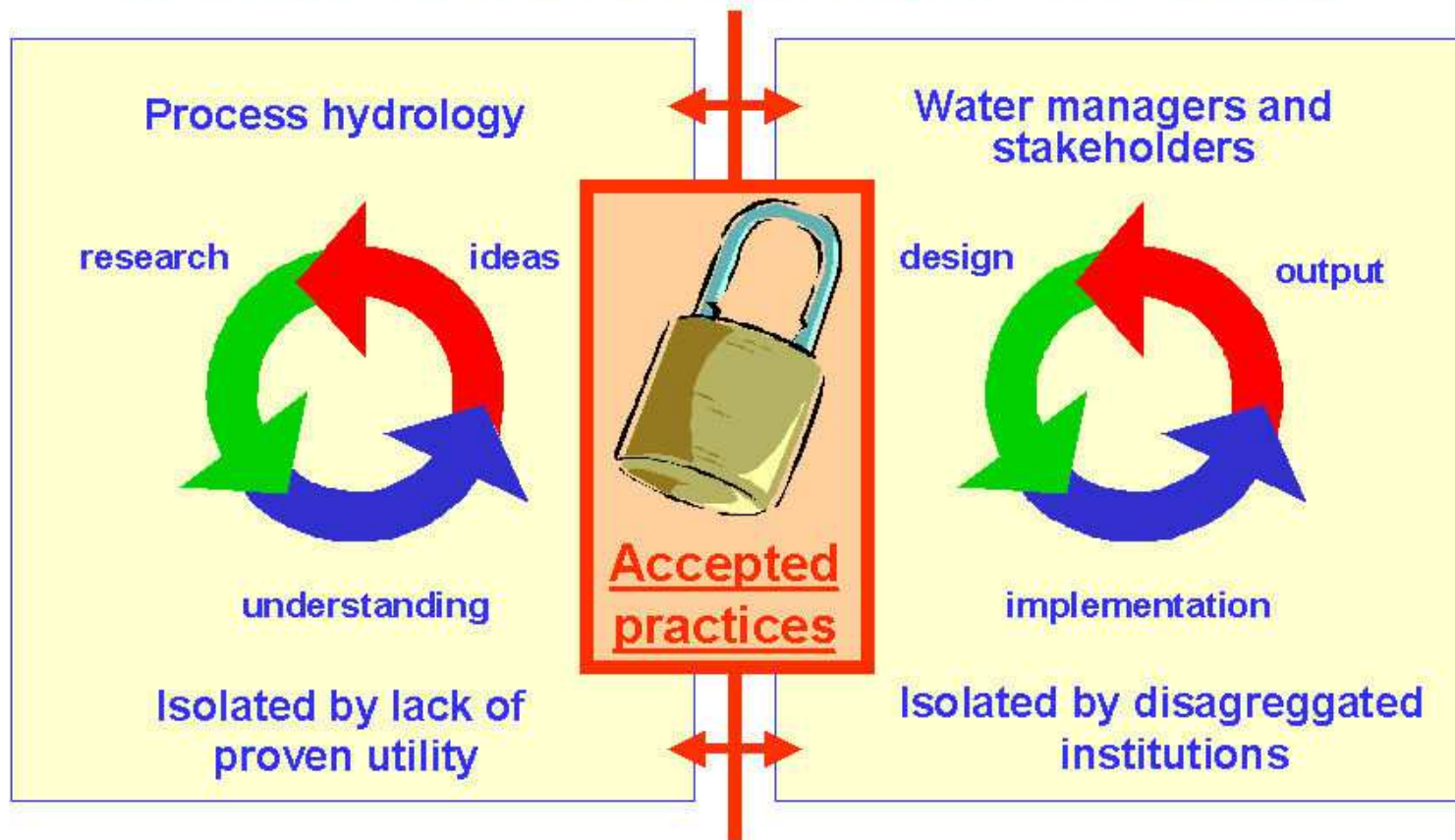


We are also monitoring globally...



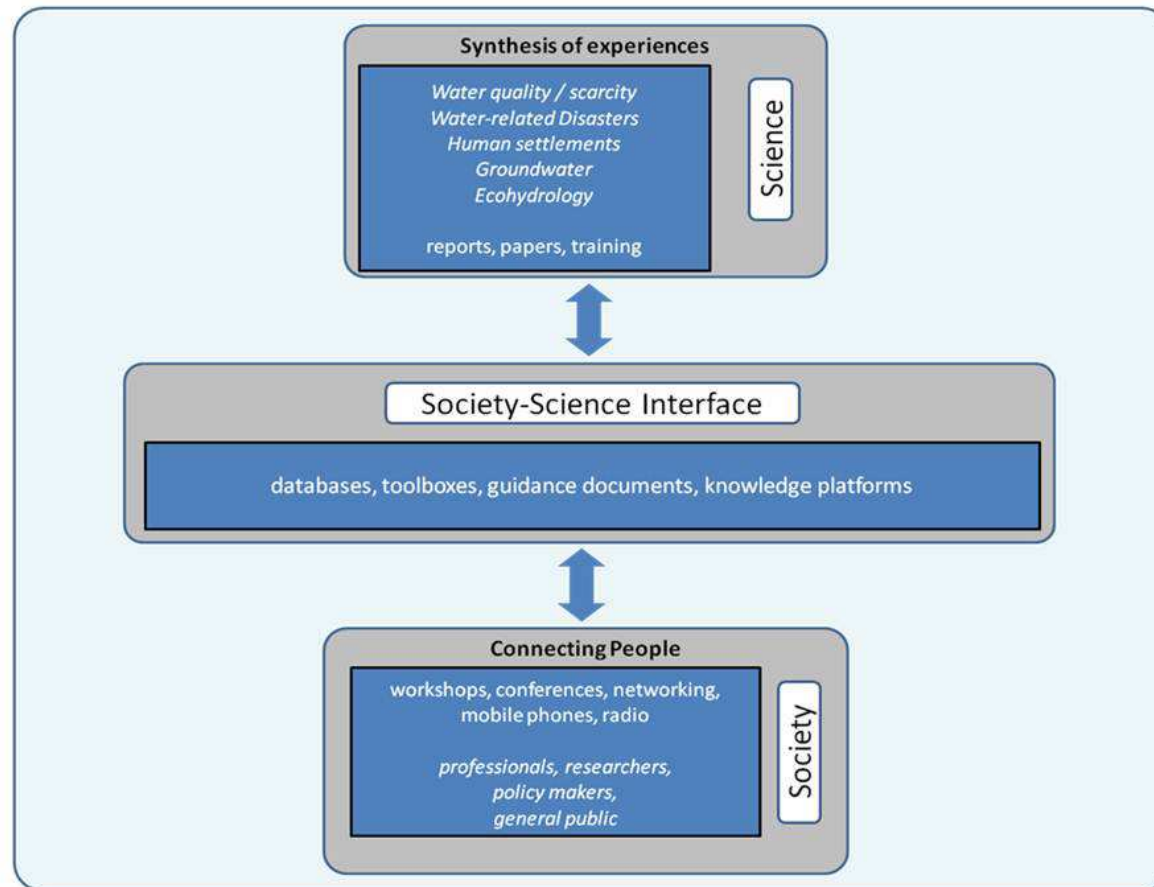
Terrestrial water cycle (evaporation, runoff, soil moisture, snow) simulated using the VIC land surface model, forced by observed and remotely sensed precipitation and temperature

.....based on outdated knowledge and technology





# Science-policy-society



# Platform at basin level

A platform will be put in place, through networking and capacity building for exchange and conveyance of experience and hydrological knowledge of the basin between academicians,

- researchers and scientists (***science informing policy***)
- policy makers (i.e. Parliamentarians: ***policy driving science***)
- various stakeholders (***management, beneficiaries, including women***), and
- media professionals (***contact with stakeholders/public and strategic promotion of culture of peace through water cooperation***).

Build trust and confidence and avoid conflict

Enhance research cooperation (based on needs)

Thank you

<http://www.unesco.org/water>