



OVERVIEW OF THE SIXTH PHASE OF IHP

Theme 1 Global Changes and Water Resources

- Focal Area 1.1, Global estimation of resources: water supply and water quality (*) (**)
- Focal Area 1.2, Global estimation of water withdrawals and consumption (**)
- Focal Area 1.3, Integrated assessment of water resources in the context of global land-based activities and climate change (*) (**)

Theme 2 Integrated Watershed and Aquifer Dynamics

- Focal Area 2.1, Extreme events in land and water resources management (*)
- Focal Area 2.2, International River Basins and Aquifers(*)
- Focal Area 2.3, Endorheic Basins (*)
- Focal Area 2.4, Methodologies for integrated river basin management (*) (**)

Theme 3 Land Habitat Hydrology

- Focal Area 3.1, Drylands (*) (**)
- Focal Area 3.2, Wetlands (*)
- Focal Area 3.3, Mountains (*) (**)
- Focal Area 3.4, Small islands and coastal zones (*)
- Focal Area 3.5, Urban areas and rural settlements (*)

Theme 4 Water and Society

- Focal Area 4.1, Water, civilization and ethics
- Focal Area 4.2, Value of water
- Focal Area 4.3, Water conflicts - prevention and resolution (**)
- Focal Area 4.4, Human security in water-related disasters and degrading environments (*) (**)
- Focal Area 4.5, Public awareness raising on water interactions (*) (**)

Theme 5 Water Education and Training

- Focal Area 5.1, Teaching techniques and material development (*) (**)
- Focal Area 5.2, Continuing education and training for selected target groups (*)
- Focal Area 5.3, Crossing the digital divide (*)
- Focal Area 5.4, Institutional development and networking for WET (*)

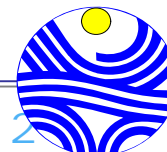
(*) Indicates connections with FRIEND

(**) Indicates connections with HELP



Existing Institutes / Centers

- UNESCO-IHE Institute for Water Education (Delft, The Netherlands)
- RCUWM - Regional Center on Urban Water Management (Tehran, I.R. of Iran)
- Regional Center for Training and Water Studies of Arid and Semiarid Zones (Cairo, Egypt)
- CATHALAC - Center for the Humid Tropics of LAC (Panama City, Panama)
- Humid Tropics Hydrology Center for SE Asia and the Pacific (Kuala Lumpur, Malaysia)
- IRTCUD - International Research and Training Center on Urban Drainage (Belgrade, Serbia & Montenegro)
- IRTCES - International Research and Training Center on Erosion and Sedimentation (Beijing, China)
- IGRAC - International Groundwater Resources Assessment Center (Utrecht, The Netherlands)
- CAZALAC - Water Center for Arid and Semiarid Regions of LAC (La Serena, Chile)





Centers in the Process of Development

- Regional Center for the Management of Shared Groundwater Resources (Tripoli, Libya)
- Regional Center on Urban Water Management for LAC (Bogota, Colombia)
- Regional Center for Ecohydrology (Warsaw, Poland)
- International Center on Qanats and Historic Hydraulic Structures (Yazd, I.R. of Iran)
- Center on the Global Water Cycle (UNH, New Hampshire, USA)
- Regional Center on Drought for Sub-Saharan Africa (site to be identified)

UNESCO-IHP VI initiatives:

- **International Groundwater Resources Assessment Center (IGRAC)-UNESCO-WMO**
- **Internationally Shared Aquifer Resources Management (ISARM) -IAH- UNESCO-FAO-UNECE**
- **Joint International Isotopes in Hydrology Program (JIIHP)-UNESCO-IAEA**
- **HELP- Hydrology for the Environment, Life and Policy-UNESCO-WMO**
- **WHYMAP Digital Groundwater Map of the World - UNESCO- IAH-CGMW- BGR- IAEA**



WSSD Follow-up Programme

ESA -Tiger- UNESCO-SHIP Partnership/Initiative on

Earth Observation for integrated water resources management in Africa



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UNESCO SHIP

- **UNESCO** identified as strategic partner under **SHIP** agreement.
- **UNESCO** with its coordinating role in **IHP, MAB, IGCP Intergovernmental Programmes** and the Secretariat of WWAP set up in UNESCO provides scientific leadership on water related issues and facilitates the exchange of information and the cooperation with the hydrologists and the water related institutions worldwide.





The aim of the joint ESA-UNESCO /SHIP Initiative is to facilitate the integration of space information and technology in hydrological and hydrogeological practices through:

- **Development of tools for better understanding of specific hydrological processes and improving assessment, development and management of water resources**
- **Support of national regional and international programmes in water resources**
- **Incorporation of space hydrology as part of hydrological databases at national regional and global scales**
- **Integration of space information and technology in hydrological databases at national regional and global scales**



TIGER – Selection of topics

Starting point

- Political priority of Johannesburg Summit
- Expressed (African) user interest
- Of strategic importance to sustainers

Choice of topics

- Food security → vegetation monitoring
- Wetland monitoring → Ramsar convention
- Ground water resources → Aquifer mapping



Potential building blocks:

1. Food security and vegetation monitoring

2. Monitoring Wetlands
 - Project: GLOBWETLAND
 - Users: Ramsar Convention, Centre du Suivi Ecologic (CSE)
 - Kick-off: Sep/Oct 2003

3. Water extraction monitoring in the North Western Sahara Aquifer System
 - Project: TESEO-Desertification
 - Users: UNCCD, Observatoire du Sahara et du Sahel (OSS)
 - Kick-off Mar 2004

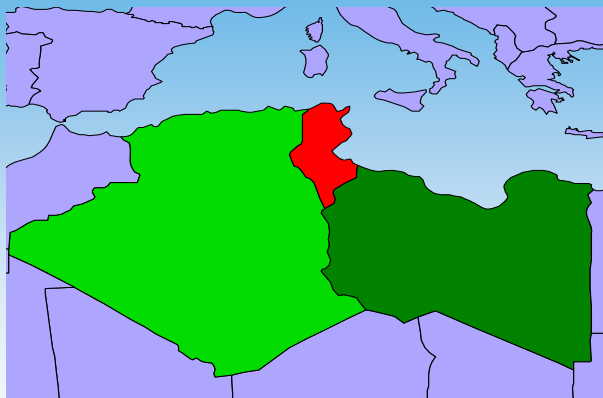


Potential building blocks:

4. Hydrology for agriculture and mining business
5. Wetland monitoring
 - Project: SNSB/SIDA project
 - Objective: earth observation for wetland monitoring
 - Users: regional authorities in Senegal, Ramsar Convention
 - Kick-off: Sep 2003 (linked with building block 2)
6. Data transfer into Africa
 - Set-up infrastructure to transfer/receive required EO data (in)to Africa
 - Users: Users of above projects



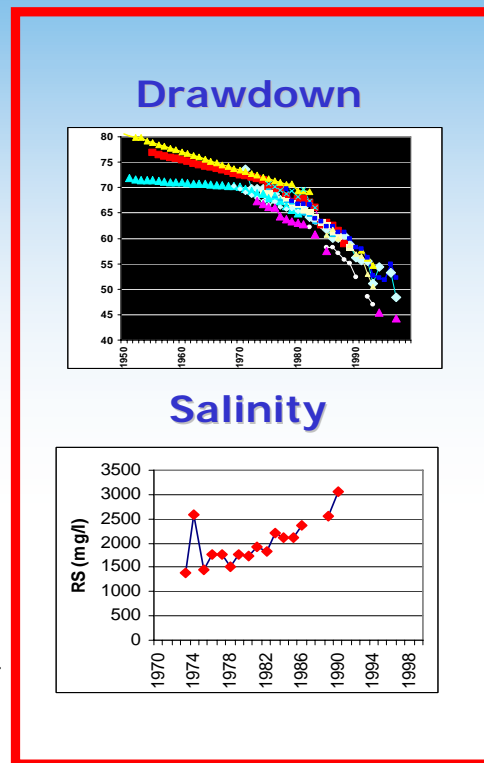
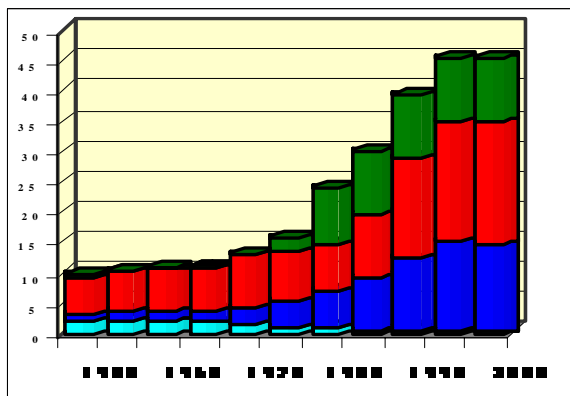
Water extraction monitoring in the North Western Sahara Aquifer System



Fast Development



Increasing extraction rates



System fragility

