The International Hydrological Programme

(IHP)

Intergovernmental programme on Water Resources of UNESCO

160 Countries established National Committees and jointly formulate regional and global water strategies

Jaroslav Vrba, UNESCO Sen. Consultant

International Hydrological Programme

Water Resources recognized as

UNESCO Priority Action

A new consensus is emerging in international thinking about Water Resources

1965-1974 IHD Experimental Basins
Catalogue of Very Large Floods
Fresh Water Balance

1975-1980 IHP-I

1981-1983 IHP-II

1984-1989 IHP III

1990-1995 IHP IV Hydrology and Water Resources for Sustainable Development

1996-2001 IHP-V Hydrology and Water Resources under Vulnerable Environment

2002-2007 IHP-VI Water Interactions: System at Risk and Social Challenges

Water Interactions : Systems at Risk and Social Challenges

Phase VI (2002-2007)

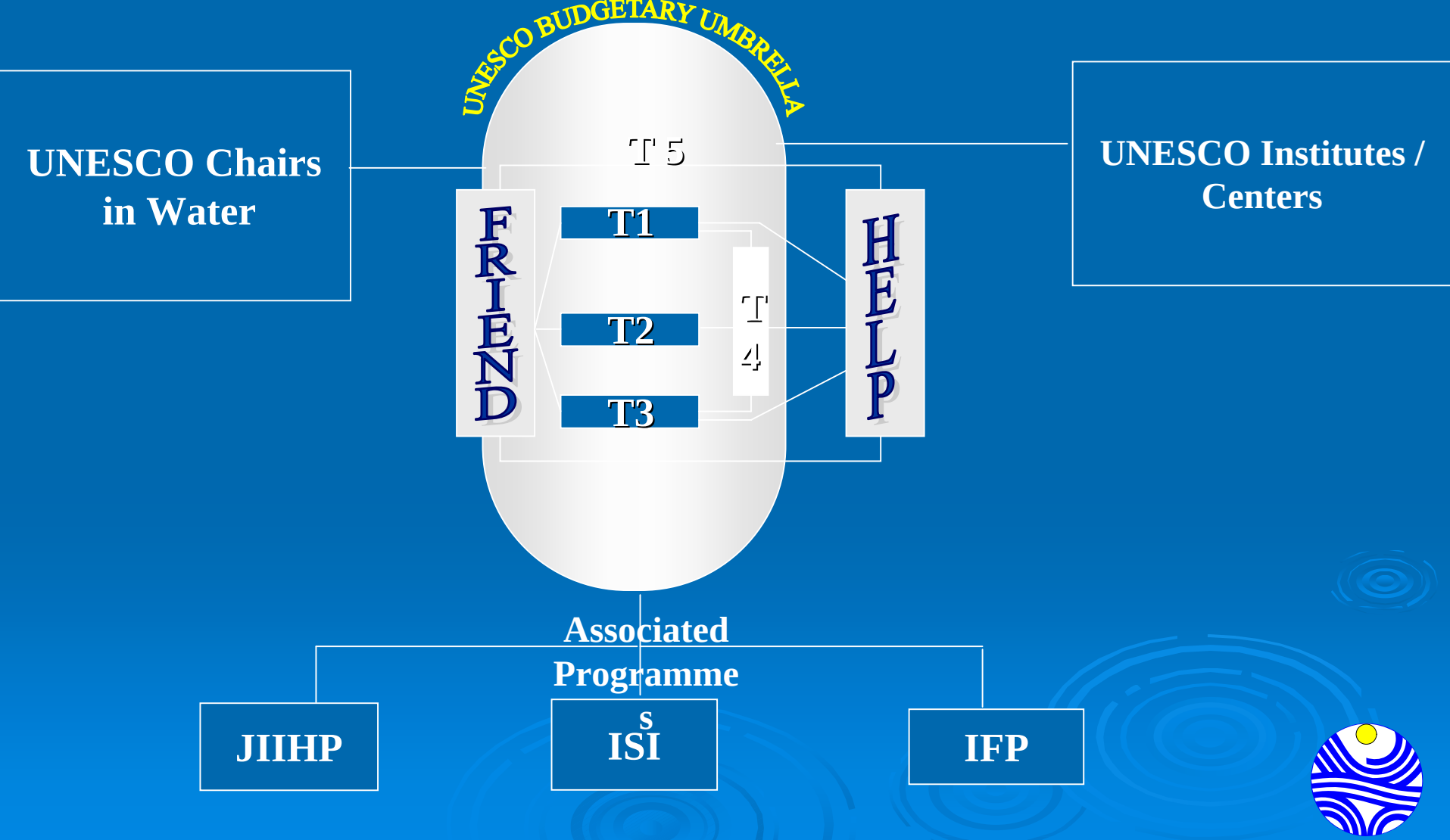
International Hydrological Programme

of UNESCO

IHP VI (2002-2007)

- **Examples of Interactions**
  - Surface water and groundwater
  - Atmospheric and terrestrial part of hydrologic cycle
  - Freshwater and salt water
  - Global watershed and river reach scales
  - Quatity and quality
  - Water bodies, terrestrial and aquatic ecosystems
  - Water and society
  - Science and policy
  - Water and civilization

INTERLINKAGES OF IHP-VI, HELP AND FRIEND



International Hydrological Programme

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

UNESCO Water Education Programme

- UNESCO IHP Programme
- UNESCO-IHE Institute

  - **Regional and thematic centers under the auspices of UNESCO**
  - **Post-graduate and continuing education and training**
  - **Water-related UNESCO Chairs**
  - **Networks**

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

UNESCO ISARM 2005 - 2007

- ✓ Publication of Maps of Transboundary Aquifers
- ✓ Development of Case Studies, cooperation between countries
- ✓ Guidelines and public awareness material, training courses
- ✓ Launch of the Inventory in Central Asia and in Eastern Asia with the UNESCO offices in Iran and India
- ✓ Publication of the Regional Atlas and ISARM data base (IGRAC)
- ✓ Establishment of the IHP Center for Water Law, Policy and Science (Dundee, Scotland) . Resolution XVI-5 of the 16th IHP Intergovernmental Council 2004-Training Courses
- ✓ Establishment of the Tripoli Center in cooperation with the NEPAD
- ✓ International Seminar, UNESCO Paris November 2007

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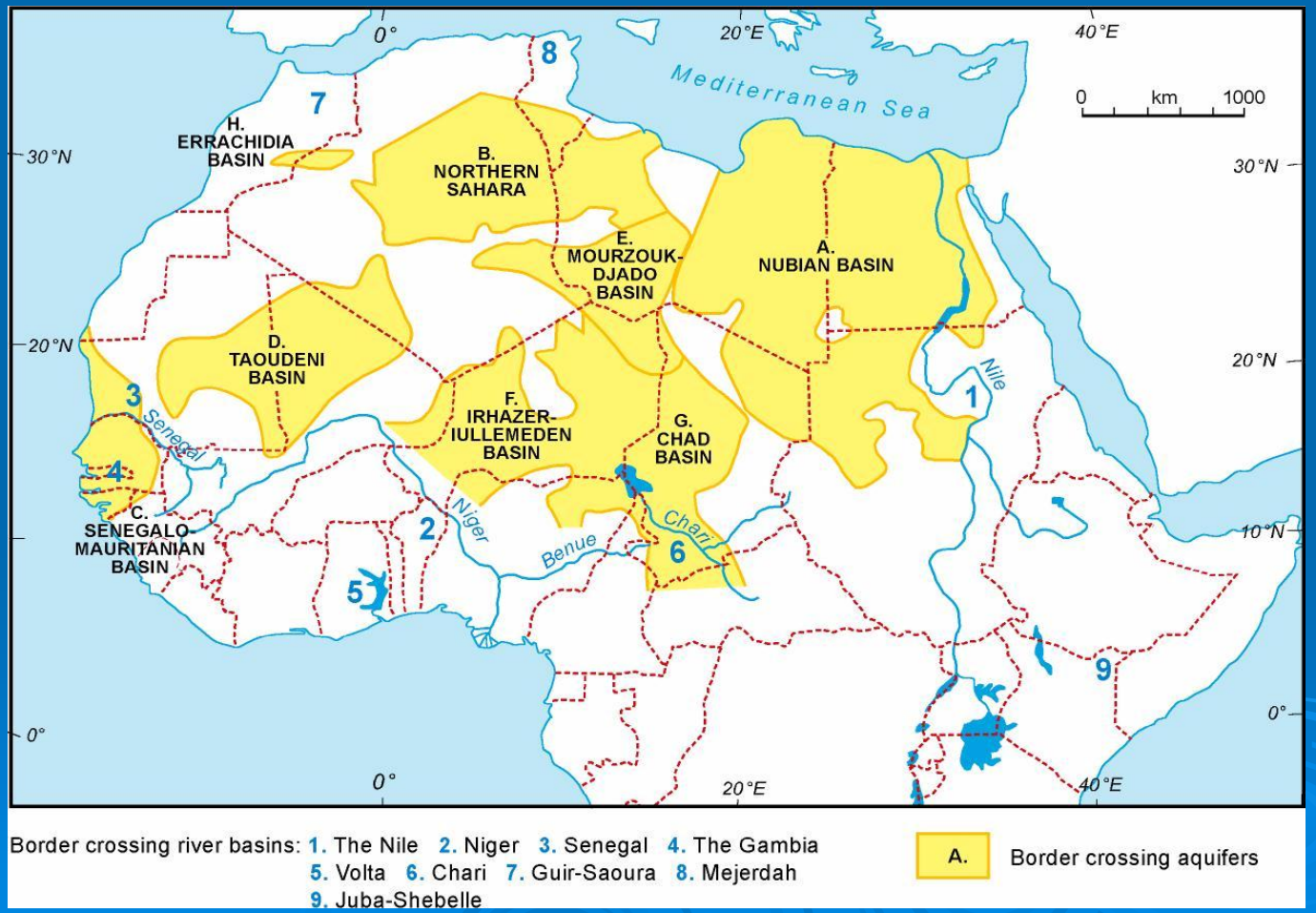
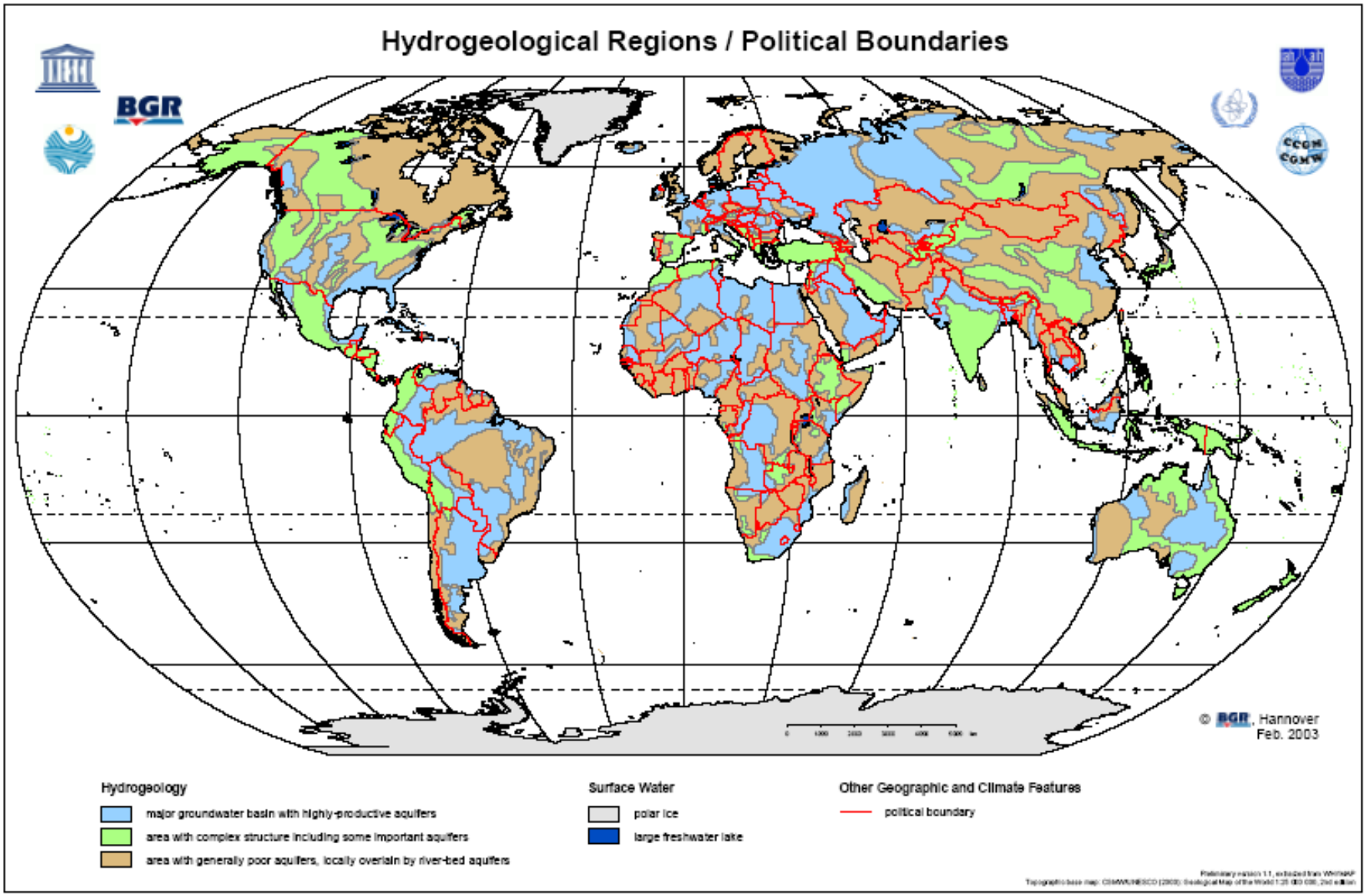
Trasboundary Aquifers in Africa

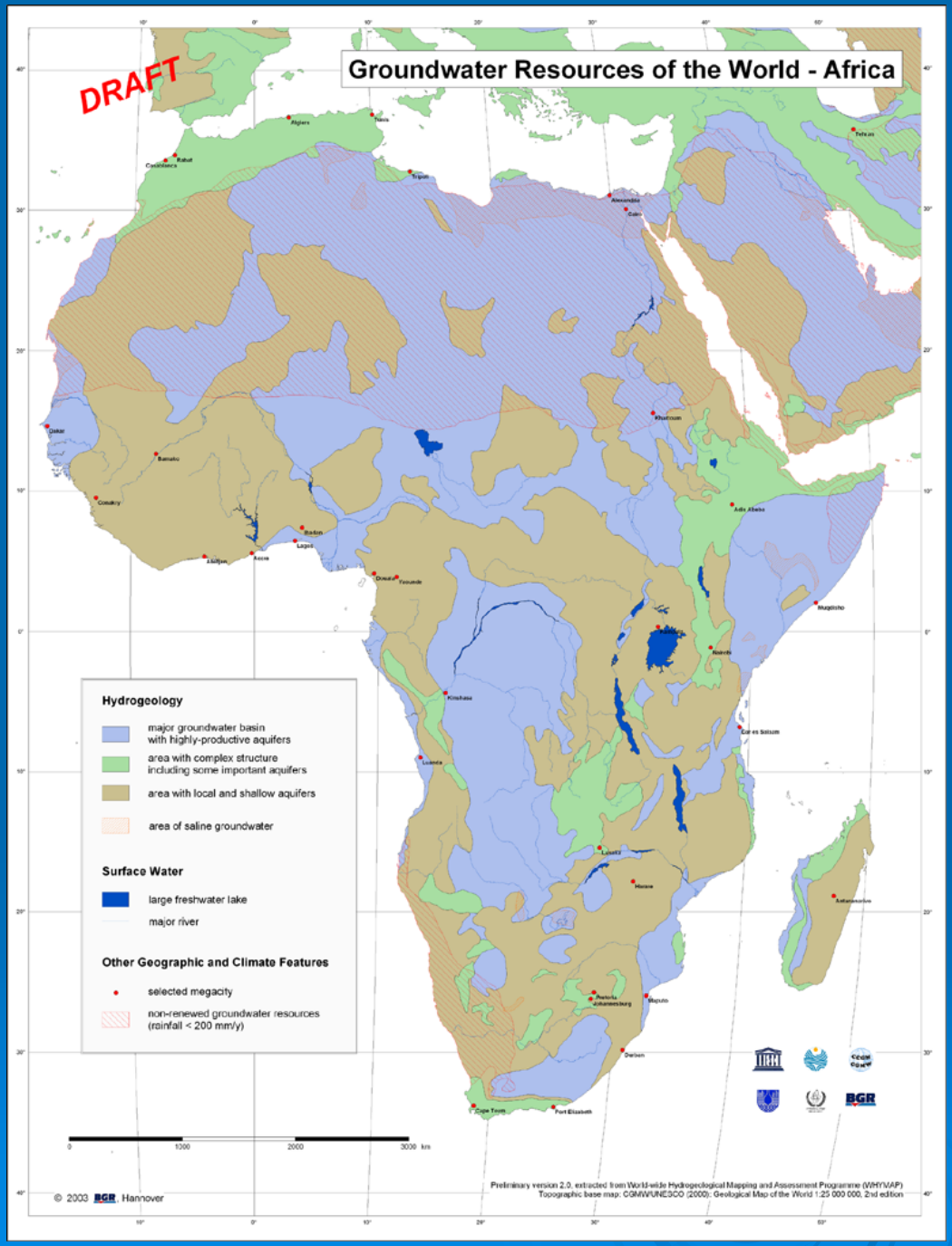
In common with many parts of the World, Africa too is endowed with transboundary aquifers that have not as yet been completely investigated



from MARGAT(UNESCO-OSS)

Groundwater Resources of the World





UNESCO

WHYMAP

World-wide Hydrogeological Mapping and Assessment Programme

Map of the African Continent

-

This First Map shows :

- **hydrogeological regions**
- **areas of saline groundwater**
- **non-renewed groundwater resources rainfall < 200 mm/y)**

http://www.igrac.nl/

INTERNATIONAL GROUNDWATER RESOURCES ASSESSMENT CENTER

facilitates and promotes world-wide exchange of groundwater knowledge...

...to improve, development, assessment and management of groundwater resources

From Potential Conflict to Co-operation Potential

✓ **Series on Water and ethics : Ethics and Water Resources Conflicts.** UNESCO-IHP and COMEST (World Commission on the Ethics of Scientific Knowledge and Technology)

✓ **International conference 'Water: A Catalyst for Peace'**, Zaragoza, Spain, 6- 8 October 2004. This event was part of the UNESCO-IHP/WWAP programme dedicated to shared waters, (PC-CP).

✓ **Water Cooperation Facility**

The facility should be an alliance of institutions that are active in the **management of shared water resources**. UNESCO, through its programme (PC-CP) and the World Water Council (WWC) are organizing a meeting for all of the institutions interested in joining this initiative as Facility Partners. The meeting was held at the UNESCO-IHE Institute for Water Education, in Delft, The Netherlands, on 25-26 November 2004.

UNESCO and the United Nations International Law Commission (UNILC) 2002

Within the framework of UNESCO-ISARM, an ad-hoc task force of experts has been established by UNESCO in close cooperation with FAO and IAH to assist the Special Reporter of the UNILC on the preparation of a new International legal instrument on Transboundary Aquifers

In the global scale IHP VI is focused particularly on

- Water Education and Water Policy,
- Indicators and Databases for Water Resources Assessment,
- Management of Non-Renewable Groundwater Resources,
- Transboundary Aquifers,
- Mapping of World Water Resources,
- Impact of Extreme Events on Water Resources
- Effects of Climate Changes on Recharge