Why a Global Network of Demonstration Sites in Ecohydrology? Arabic Countries Potential
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Why a Global Network of Demonstration Sites in Ecohydrology?
Arabic Countries Potential

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What is Ecohydrology?

IHP-VIII: Water Security

Responses to Local, Regional, and Global Challenges

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What is Ecohydrology?

I – FIRST PRINCIPLE (Zalewski 2010)
Quantification of hydrological cycle as a template for biogeochemical cycles analysis in a catchment scale, and identification of threats

Evapo-transpiration
Precipitation
Infiltration
Retention
Subsurface run off
Underground run off
Total run off
Surface run off

II – SECOND PRINCIPLE (Zalewski 2008)
Identification of potential areas for enhancement of ecosystem carrying capacity

- Retention in the catchment by enhancement of landscape diversity
- Transformation into biomass in land water ecosystems
- Denitrification in anaerobic conditions of wetlands
- Self-purification: mineralization of organic matter, reduction of spiraling transport rate
- Recirculation: reduction of resuspension, phosphates, enzymatic release, zooplankton excretion
- Sedimentation: pondage, at the floodplain

III – THIRD PRINCIPLE
Using biota to control hydrological processes and vice versa, using hydrology to regulate biota dynamics

Dual regulation

Bioenergy production
Diffuse pollution buffer stripes (ecotones)
Aquaculture
Reservoir – Hydrobionamielization
Land reclamation
Restoration
Water retentiveness

ECOLOGICAL ENGINEERING – constructed wetlands, ecotones

River continuum – bypass for fish migration
Sediment release/use system

H REGULATION B

CONSERVATION

TRAPPING – in plant biomass (seasonally removed) – storage in the unavailable pool in bottom sediments

RECOILUTION: reduction of resuspension, phosphates, enzymatic release, zooplankton excretion
UNESCO ECOHYDROLOGY “FAMILY”

CENTRES:
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ERCE - EUROPEAN REGIONAL CENTRE FOR ECOHYDROLOGY, POLAND
ARCE – AFRICAN REGIONAL CENTRE FOR ECOHYDROLOGY, ETHIOPIA
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FOCAL POINTS FOR ECOHYDROLOGY
LAC – LATIN AMERICA AND CARIBBEAN

SCIENTIFIC ADVISORY COMMITTEE MEMBERS - IHP COORDINATION
1 – RESEARCH
2 – EDUCATION, CAPACITY BUILDING
3 – OUTREACH AND DISSEMINATION

L. Chicharo, 2016
G. Arduino, 2018
What are the « demosites » ?

The Ecohydrology Programme is also based on a network of demonstration sites which integrate the concept of “enhanced ecosystem potential” with EH strategies closely related with water to improve IWRM on specific areas.

They:

• Are **long-term monitoring** projects involving different local stakeholders in order to solve environmental, economic and social issues.

• Use the **most appropriate** and **cost-effective** ecohydrological engineering solutions for each ecosystem as management tools for Integrated Water Resources Management (IWRM).

• Provide contribution for both **human** Sustainable Development Goals and **environmental** ones.

These projects follow a solution-oriented approach for the enhancement of **Water** resources, **Biodiversity** and ecosystem **Services** for society and of the **Resilience** to various forms of anthropogenic impacts (**WBSR**).
What are the « demosites »?
http://ecohydrology-ihp.org/demosites/
Mariout Lake (Egypt)

Water Resources Dialogue: China-Africa Water Forum Series No. 6 - Sharm El Sheik – July 23 to 27, 2018 - Egypt
EcoHydrological solutions?
The Laguna of Bizerte is a nearly circular body of brackish water about 12 km in radius and up to 13m deep, open to the sea through the narrow Bizerte canal. It is surrounded by farmland and two medium-sized metropolitan areas (Bizerte with a population of 140,000, and Menzel-Bourguiba with a population of 55,000). Major industrial plants with a strong water demand on the shores are present. The Laguna itself is exploited for fishing and shell farming.
The Laguna system has important subsistence and small scale commercial fisheries and hosts shellfish aquaculture. Aquifers provide water to the communities and are exploited by agricultural activities in the basin but also are at a receiving end of local pollutions. A variety of municipal, agriculture and industrial activities pollute the system.

The result is a system where the potential flows of ecological services are diminished by the environmental degradation, implying a strong case for remediation and prevention of additional pollution.
To learn more on EH....

http://8thfriendwater.iwhr.org/40?lang=en

http://isews.nwu.edu.cn/

Coming 2020 EcoHydroEco conference in Faro (Portugal)

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