United Nations Educational, Scientific and Cultural Organization

International Center for Integrated Water Resources Management under the auspices of UNESCO

Capacity-Building in Water Resources Management in a Global Context

William S. Logan
Deputy Director
International Center for
Integrated Water Resources Management (ICIWaRM)
"Under the auspices of UNESCO"
Institute for Water Resources,
US Army Corps of Engineers
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3er Encuentro Universitario del Agua, RAUNAM, August 24-25, 2011

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Agreement with the National Autonomous University of Mexico (UNAM)

IWR INSTITUTE FOR WATER RESOURCES

Red del Agua UNAM

MEMORANDUM OF UNDERSTANDING
BETWEEN
INSTITUTE FOR WATER RESOURCES
AND
THE UNAM´S WATER NETWORK

This Memorandum of Understanding (MOU) is entered into by and between the United States Army Corps of Engineers' (USACE) **Institute for Water Resources (IWR)** and the **UNAM´s Water Network (RAUNAM)**, hereinafter referred to as "the Parties".

IWR is a U.S. national center of expertise for integrated water resources management, including analysis of emerging water resources trends and issues; state-of-the-art planning and hydrologic

INSTITUTO DE INGENIERÍA UNAM

Ciudad Universitaria, D.F. a 23 de mayo de 2011

Ing. Sergio Soto Priante
Subdirector General de Infraestructura Hidroagrícola
Comisión Nacional del Agua

Estimado Ing. Sergio Soto,

Como es de su conocimiento, en cumplimiento de nuestro contrato correspondiente a la 3ª etapa del PHIT, integramos un Comité de Consultores expertos en la problemática hidráulica tabasqueña, a quienes llevamos a visitar las obras del 12 al 15 de abril pasado. Como resultado de su visita y los análisis correspondientes, los expertos presentaron el reporte que adjuntamos a la presente, en el que resaltan las siguientes observaciones:

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Outline

- UNESCO-International Hydrological Programme (IHP), ICIWaRM, and other “Category 2 centers”
- Tools for Capacity-Building in IWRM
- Discussion – Role of UNAM?

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ICIWaRM is a "Category 2 UNESCO Center"

- "Under the auspices of UNESCO"
- "Provided and funded by Member States"
- "Committed to engage in support of UNESCO's strategic programme objectives"
- "Render technical assistance…through capacity-building and training, research, networking, knowledge-sharing and exchange of information"
- "Form a unique network…to complement and expand…implementation of UNESCO's programmes"
- "Enhance the impact and visibility of UNESCO"
- "A modality without precedence in the UN system"

Source: UNESCO 180 EX/18 (2008)

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International Center for Integrated Water Resources Management

AGREEMENT BETWEEN

THE GOVERNMENT OF THE UNITED STATES OF AMERICA AND THE UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION (UNESCO)

CONCERNING THE ESTABLISHMENT OF THE INTERNATIONAL CENTRE FOR INTEGRATED WATER RESOURCES MANAGEMENT AT THE U.S. ARMY CORPS OF ENGINEERS INSTITUTE FOR WATER RESOURCES, ALEXANDRIA, VIRGINIA, USA, AS A CATEGORY 2 CENTRE UNDER THE AUSPICES OF UNESCO

Whereas at the 18th session of the Intergovernmental Council of the International Hydrological Programme (IHP) of the United Nations Educational, Scientific and Cultural

2008, the Member States adopted

For the United States of America
U.S. Army Corps of Engineers

Major General Don T. Riley

Deputy Commanding General

For the United Nations Educational,
Scientific and Cultural Organization

Koïchiro Matsuura

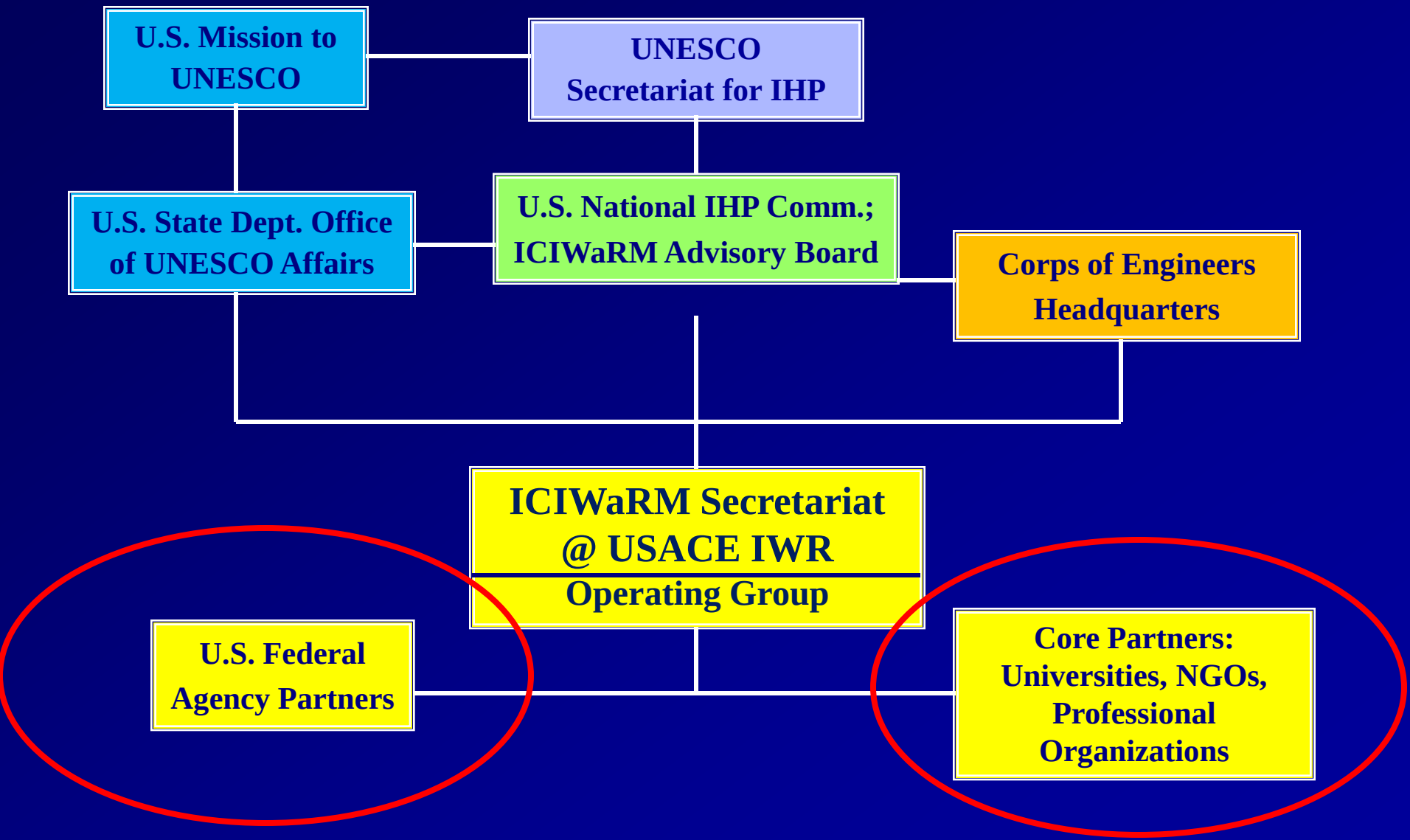
Director-General

United Nations Educational, Scientific and Cultural Organization

ICIWaRM

International Center for Integrated Water Resources Management under the auspices of UNESCO

ICIWaRM Organizational Structure & Relationships



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ICIWaRM's Focus

- Practical science and technology which can be readily transferred.
- Partner with and support existing UNESCO-IHP programs – GWADI, HELP, "IWRM at River Basin Scale".
- Collaborate with existing UNESCO Centers on joint applied research, capacity-building and training – CAZALAC, CIH, CEHICA, HidroEx
- Emphasize Latin America/Caribbean, and Africa.

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The *Network* of UNESCO "Category 2" Water Centers

What is UNESCO-IHP?

UNESCO functions at a *country* level

UNESCO functions at a *regional* level

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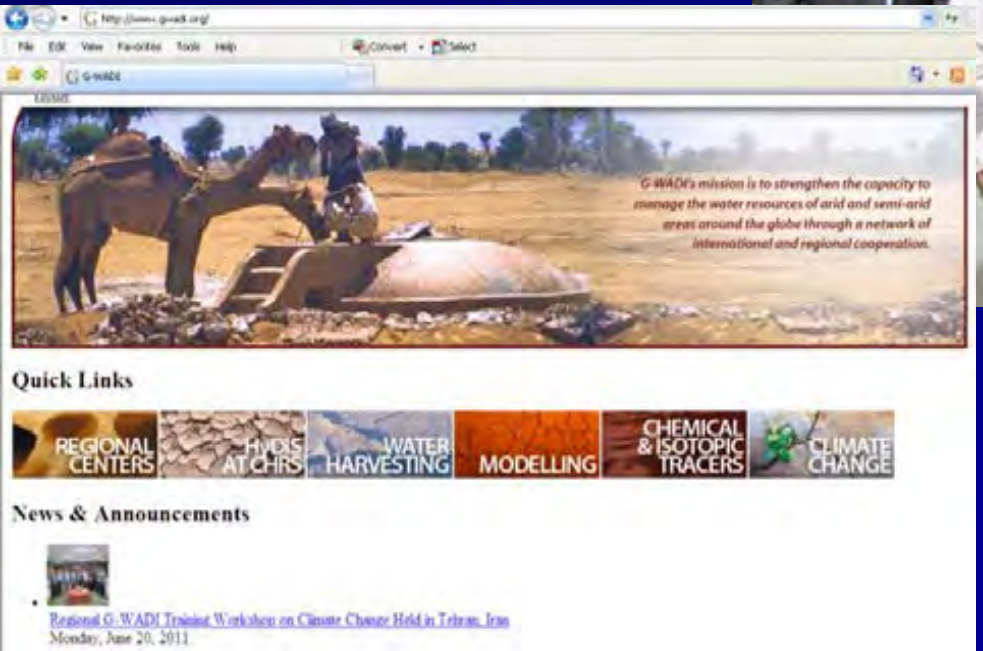
Technical Secretariat for UNESCO global network "Water and Development Information for Arid Lands," or G-WADI.

- Regional networks:
  “GWADI-Arabia”
  “GWADI-Africa”
  “GWADI-LAC” and
  “Asian G-WADI”



www.gwadi.org

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Illustrations of ICIWaRM Activities Related to Capacity Building

http://www.sharedvisionplanning.us/

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Welcome to Shared Vision Planning

CONTACTS | SEARCH | SITE MAP | FAQS | ABOUT THE PROGRAM

Shared Vision Planning

- PLANNING PRINCIPLES
- SYSTEMS MODELING
- COLLABORATION

- News and Events
- Current Initiatives
- Tools and Techniques
  - Methods
  - Models
- Resources
  - Case Studies
  - References
- Training
- CADRe Partners

About Shared Vision Planning

Shared Vision Planning (SVP) is a collaborative approach to formulating water management solutions that combines three disparate practices: 1) traditional water resources planning, 2) structured public participation and 3) collaborative computer modeling. Although each of these elements has been successfully applied, what makes Shared Vision Planning unique is the integration of traditional planning processes with structured public participation and collaborative computer modeling.

Goal

The goal of Shared Vision Planning is to improve the economic, environmental and social outcomes of water management decisions. Shared Vision Planning facilitates a common understanding of a natural resource system and provides a consensus-based forum for stakeholders to identify tradeoffs and new management options. Shared Vision Planning creates user-friendly and understandable computer models that are relevant to stakeholder interests and adaptable to changing conditions.

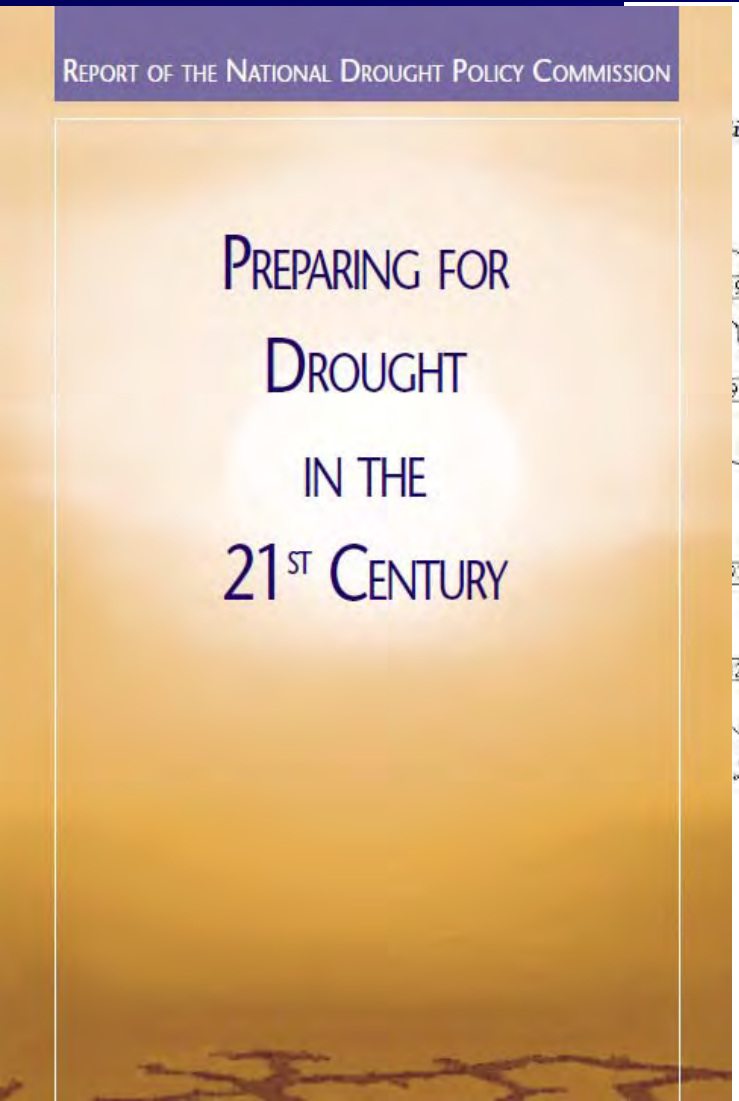
Shared Vision Planning integrates

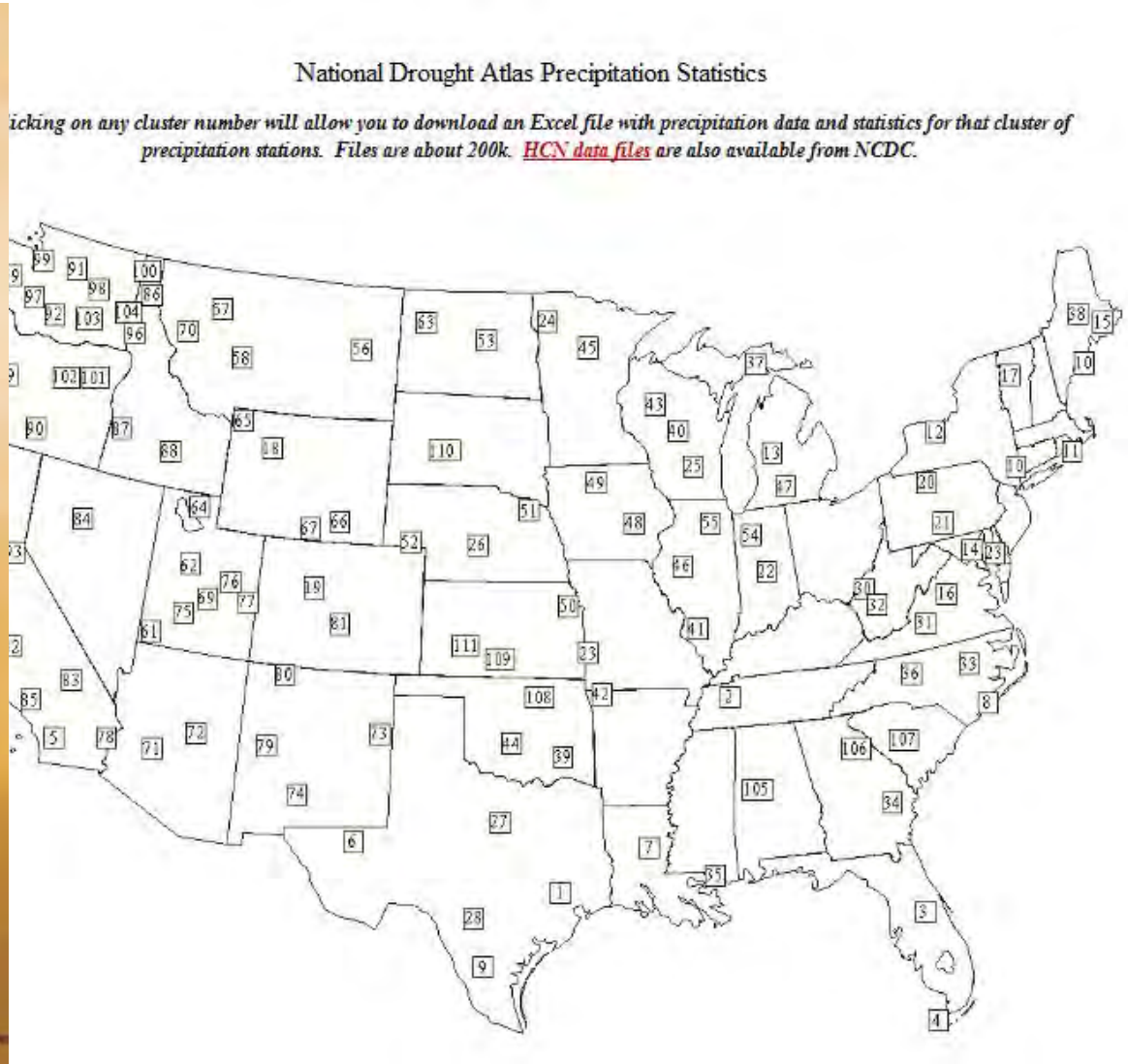
Participative Planning with Peru's National Water Authority

- Providing training, guidance, and supervisory assistance in Shared Vision Planning (SVP) for IWRM plans at six pilot basins
- Partners: World Bank, Inter-American Development Bank, ANA (US$40M)
- Progress to date: A series of 5 workshops for the Peruvian government and at pilot basins

SVP integrates:
- Systems modeling
- Structured participation
- IWRM planning

Droughts in 1988 led to a national drought study (1989-1994) led by the Corps of Engineers. This in turn led to statistical methods for regional statistical analysis of hydrometeorological data.





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Drought Atlas for Pilot Regions of Latin America (with CAZALAC, Chile)

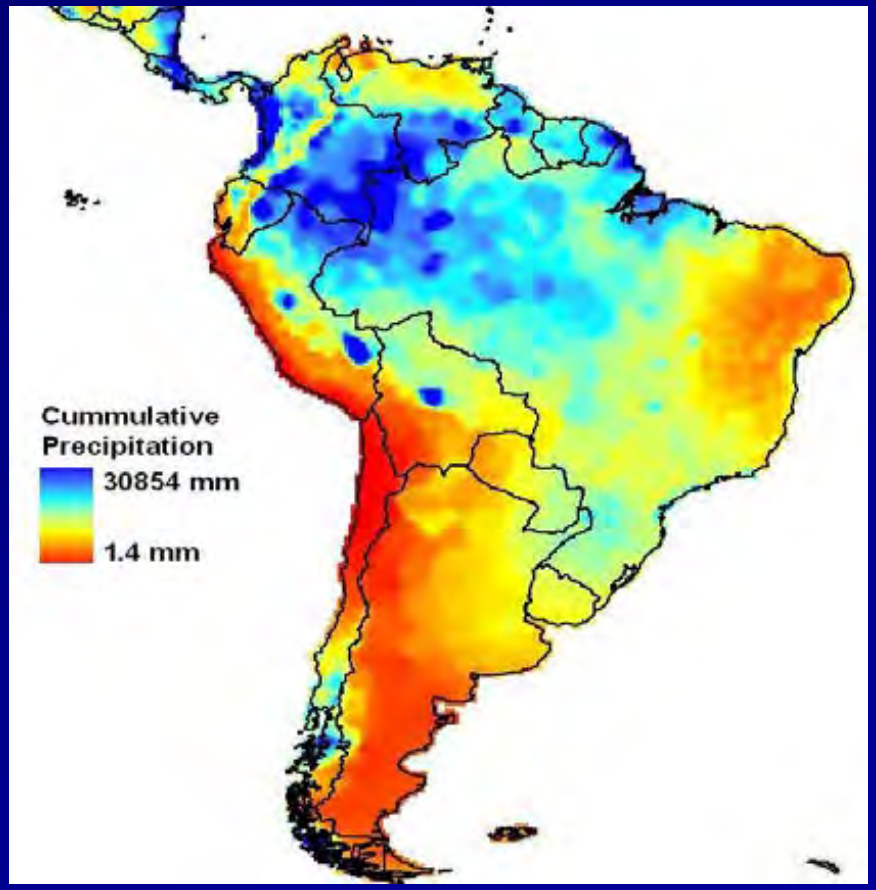
Even with poor datasets, helps answer questions managers ask:

For example,

- How unusual is the current drought?
- What is the likelihood that the current drought lasts X months?

ICIWaRM is creating a free, non-proprietary program for regional frequency analysis…

adaptable to even data-poor regions.



5 yr precipitation total with a 2% likelihood to exceed during a 50yr drought event

http://www.hec.usace.army.mil/

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Hydrologic Engineering C... | Mitt Romney now trailing Rick...

Latest Software Releases...

- HEC-GeoEFM 1.0 NEW
- HEC-GeoHMS 5.0
- HEC-GeoRAS 4.3
- HEC-SSP 2.0
- SnoTel 1.2 Plugin
- HEC-HMS 3.5
- HEC-FDA 1.2.5a
- HEC-DSSVue 2.0.1
- HEC-RAS 4.1
- HEC-DSS Excel Add-In
- HEC-GeoDozer 1.0
- HEC-EFM 2.0
- HEC-EFM Plotter 1.0
- HEC-GeoRAS 4.2.92
- HEC-GeoHMS 4.2.92
- HEC-ResSim 3.0

The Hydrologic Engineering Center (HEC), an organization within the Institute for Water Resources, is the designated Center of Expertise for the US Army Corps of Engineers in the technical areas of surface and groundwater hydrology, river hydraulics and sediment transport, hydrologic statistics and risk analysis, reservoir system analysis, planning analysis, real-time water control management and a number of other closely associated technical subjects. HEC supports Corps field offices, headquarters, and laboratories by providing technical methods and guidance, water resources models and associated utilities, training and workshops, accomplishing research and development, and performing technical assistance and special projects. The products that are developed from these activities are for the Corps but are available to the public and may be freely downloaded from this web site.

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(530) 756-1104
HEC Fax:
(530) 756-8250
Webmaster E-mail Address:
Webmaster-HEC@usace.army.mil

Mailing Address:
Department of The Army
Corps of Engineers
Institute for Water Resources
Hydrologic Engineering Center
609 Second Street
Davis, CA 95616-4687

Hydrologic-Hydraulic Modeling Short Course - UNESCO Hydroinformatics Center (CIH), Asunción, Paraguay

- 7 days of HEC model training in Spanish, March 2011
  - Basic theory, application, tips in hydrology, hydraulics, reservoir operations modeling
  - 2 days problem solving / advice on ongoing modeling projects
  - 40-45 participants (!) - Paraguay, Brazil, Uruguay, Argentina & Chile

Corps of Engineers Mission: IWRM










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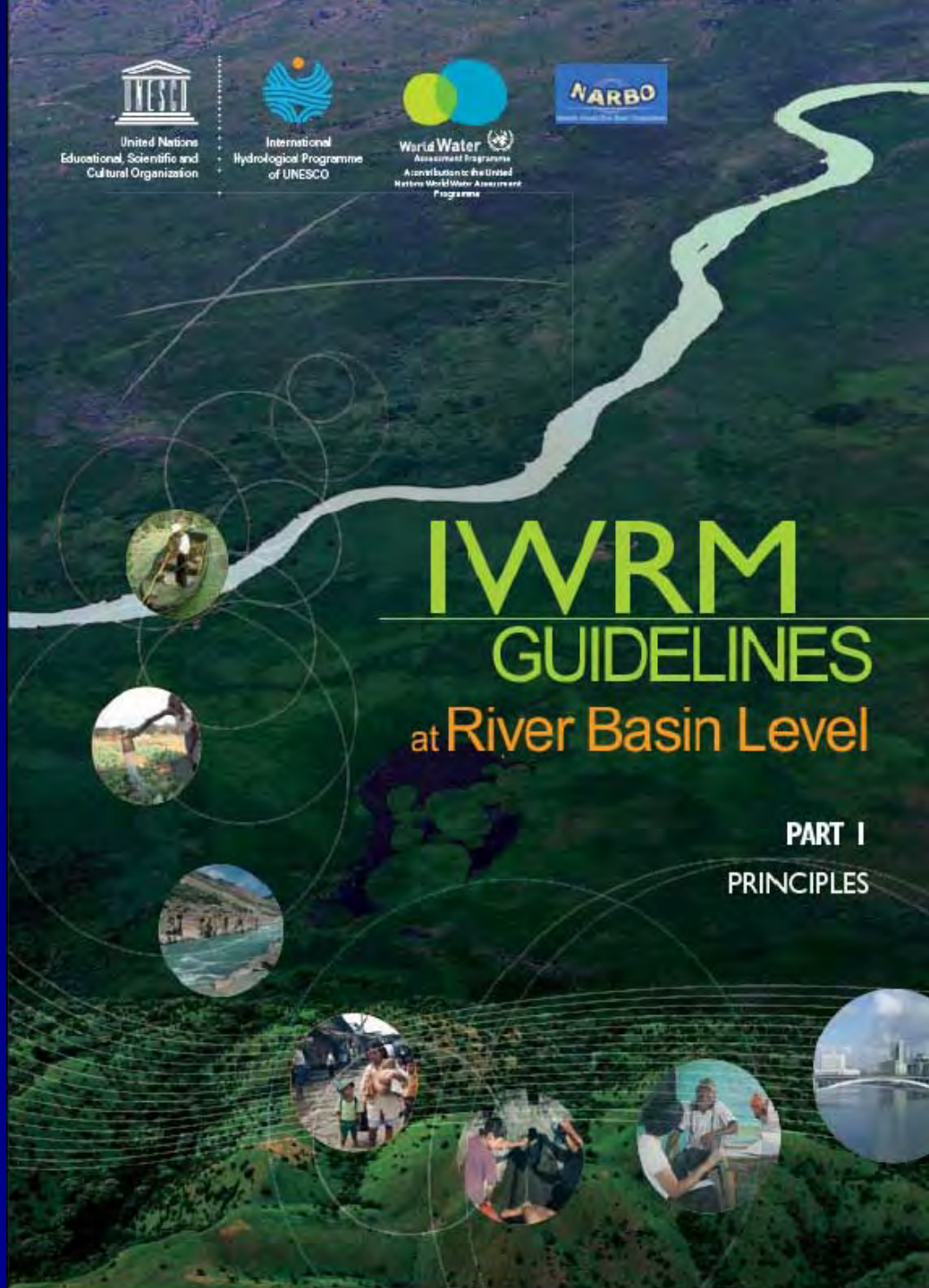
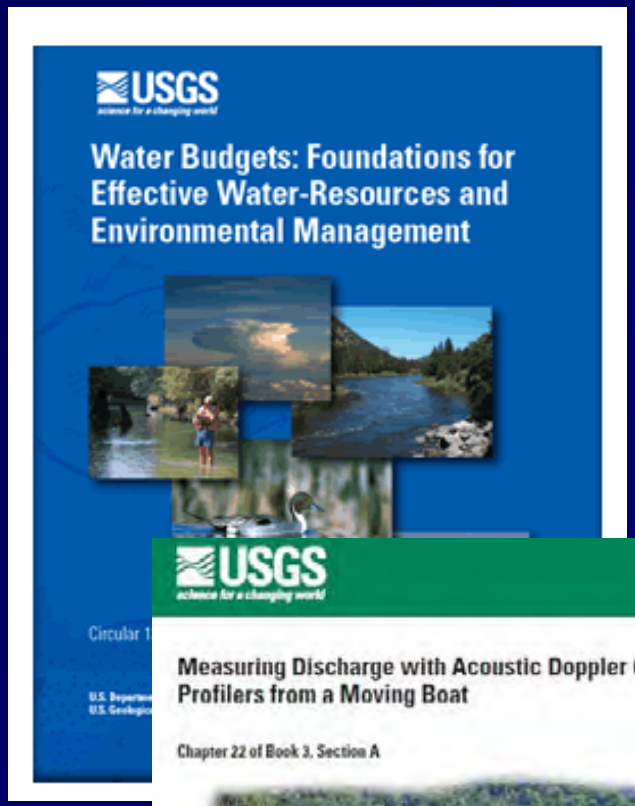
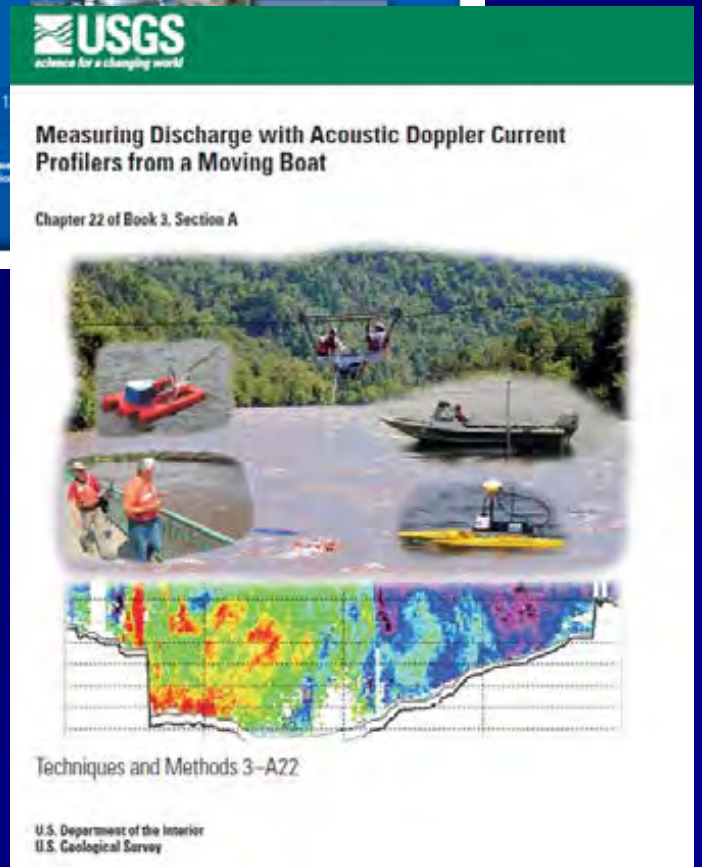
ICIWaRM Co-Chairs Steering Committee of UNESCO IHP/ WWAP/ NARBO publication series **“Integrated Water Resources Management Guidelines at River Basin Scale”**

Working on translations to Spanish with IDB and UNESCO-LAC.

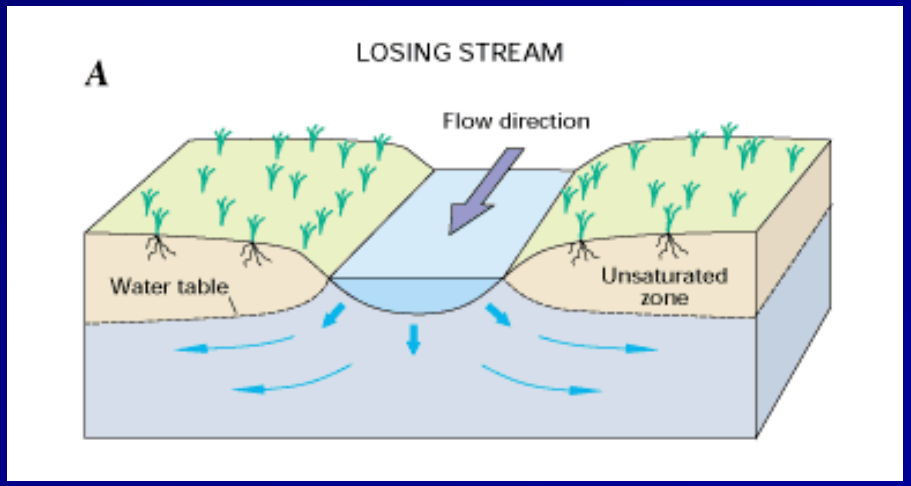






Water.usgs.gov/pubs

Ground Water and Surface Water: A Single Resource--USGS Circular 1139



U.S. ENVIRONME

Watershed Academy Web

Online Training in Watershed Management

This is the Watershed Academy's Distance Learning Program—**Watershed Academy Web**. The Web site offers a variety of self-paced training modules that represent a basic and broad introduction to the watershed management field. The modules are organized by the six themes listed above. Modules vary in the time they take to complete, from ½ hour to 2 hours. Fifteen of them (marked with asterisks * below) are the core modules for the Watershed Academy Certificate Program.

Module Themes

Introductory/Overview Modules

These modules introduce the principles of the watershed approach and the value of working at a watershed level.

* Principles of Watershed Management | Printable Version (PDF) (25 pp, 2.1MB)
Sustaining Healthy Aquatic Ecosystems | Printable Version (PDF) (18 pp, 278K)
* Ecosystem Services: Benefits to Human Societies | Printable Version (PDF) (18 pp, 542K)
The "Why Watersheds?" Report
Ohio's Virtual Watershed Tour

Watershed Ecology Modules

Rapid Bioassessment Protocols | Watershed Academy Web | US EPA - Windows Internet Explorer

http://cfpub.epa.gov/watertrain/moduleFrame.cfm?module_id=25&parent_object_id=1019&object_id=1019

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Rapid Bioassessment Protocols | Watershed Academy...

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Watershed Academy Web

Rapid Bioassessment Protocols

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Introduction

| Watershed Academy Web | US EPA - Windows Internet Explorer

p://cfpub.epa.gov/watertrain/module.cfm?module_id=29&object_id=705

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nvasions | Watershed Academy Web | US EPA

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Watershed Academy Web

Academy Web Home

Biotic Invasions: Causes, Epidemiology, Global Consequences and Contr

The Ecological Society of America (ESA), the nation's leading professional society of ecological scientists, is an essential source of information for th
the many complex tasks associated with watershed management. An occasional publication series, **Issues in Ecology**, is an especially useful resou
resource managers, policymakers, and others designing and implementing watershed approaches to environmental management. Each **Issues in E**
designed to report, in language understandable by non-scientists, the consensus of a panel of scientific experts on issues relevant to the environm

Number 5 (Spring 2000): Biotic Invasions: Causes, Epidemiology, Global Consequences and Control

- Full color PDF version (350K, 22 pages, about PDF)
- Abstract

A full suite of **Issues in Ecology** reports is available on the ESA Web site EXIT Disclaimer.

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odule Listing » Module Description

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Flash Flood Processes: International Edition

Publish Date: 2011-02-22
Skill Level: 1
Completion Time: 1.00 - 1.25 h
Includes Audio: no
Required Plugins: Flash
Topics: Hydrology/Flooding
Included in Courses: Basic Hydrologic Sciences: International Edition

BEGIN MODULE

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Take the quiz?
Begin Quiz

Module Resources

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- View the print version

Registration Support and FAQs

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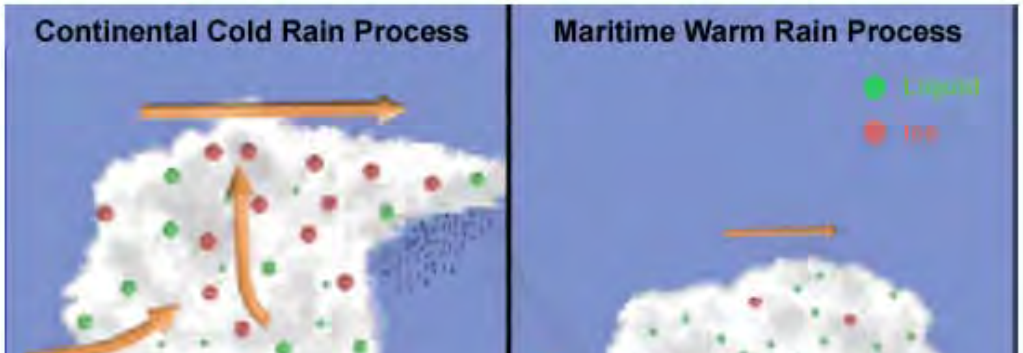
https://www.meted.ucar.edu/index.php

In some situations, especially in maritime tropical environments, precipitation can be produced predominately via the warm rain process. Here, precipitation particles mainly grow in the liquid phase at altitudes where the temperature is greater than o°C . By contrast, the very common cold rain process describes a situation in which precipitation particles grow mainly in the ice and snow phase and then melt on the way to the surface.



THE NATIONAL ACADEMIES PRESS

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Water Quality
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Missouri River Planning:Recognizing and Incorporating Sediment Management
Historically, the flow of sediment in the Missouri River has been as important as the flow of water for a variety of river functions. The sediment has helped form a dynamic network of islands, sandbars, and floodplains, and provided habitats ...
More

A Scientific Assessment of Alternatives for Reducing Water Management Effects on Threatened and Endangered Fishes in California's Bay Delta
California's Bay-Delta estuary is a biologically diverse estuarine ecosystem that plays a central role in the distribution of California's water from the state's wetter northern regions to its southern, arid, and populous cities and agricultural areas. Recently, the Fish ...
More

Ecosystem Concepts for Sustainable Bivalve Mariculture
U.S. mariculture production of bivalve molluscs-those cultivated in the marine environment-has roughly doubled over the last 25 years. Although mariculture operations may expand the production of seafood without additional exploitation of wild populations, they still depend upon and affect natural ...
More

Progress Toward Restoring the Everglades:The Second Biennial Review, 2008

MOCHA

MOdular Curriculum for Hydrologic Advancement

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NEWS: UCOWR has awarded MOCHA with the 2011 Education and Public Service Award!

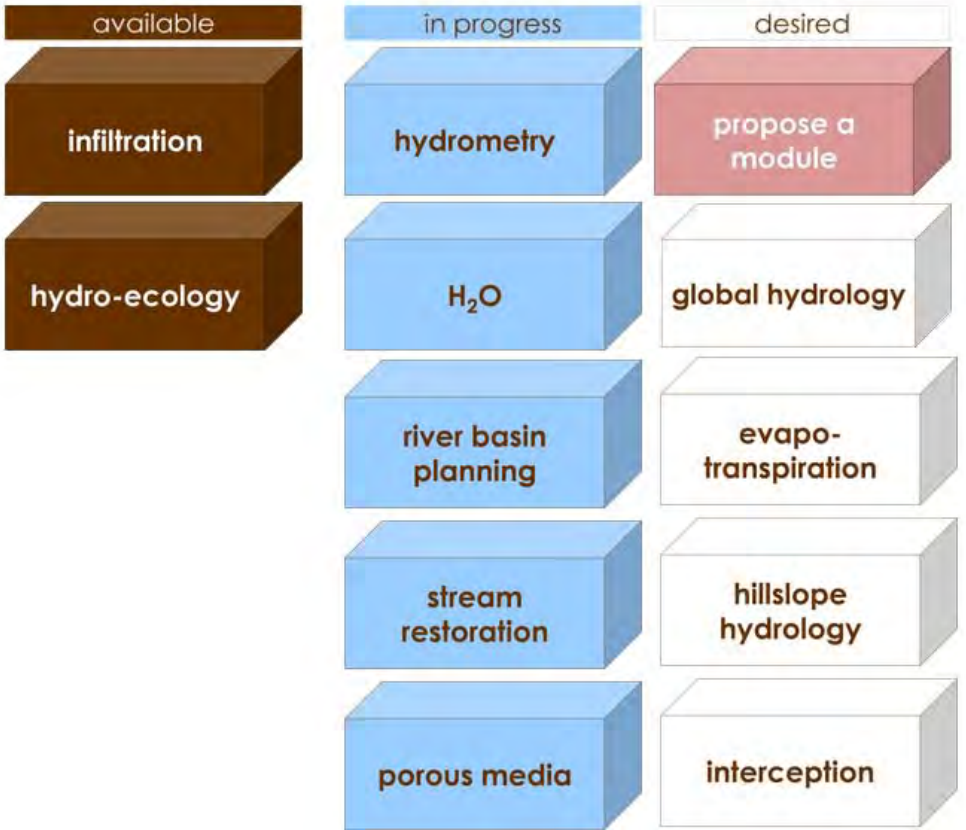
MOCHA ...

... is creating a curriculum for hydrology education based on evolving te
modules, developed and reviewed by the growing MOCHA community
and become part of MOCHA today!

use modules for your course

MOCHA modules represent three hours of lecture material on a particul

www.mocha.psu.edu

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http://serc.carleton.edu/NAGTWorkshops/search.html
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Activity Feedback
Review Processes
Workshop Schedule
Resources for STEM faculty
About this Project
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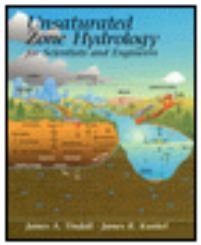
Help
Subject: Geoscience
81 matches General/Other
Atmospheric Science 148 matches
Biogeosciences 5 matches
Geology 1124 matches
Hydrology 171 matches
Lunar and Planetary Science 35 matches
Oceanography 99 matches
Paleontology 156 matches
Resource Type
Activities 1489 matches
Assessments 49 matches
Course Information 380 matches
Curriculum Description 3 matches
Datasets and Tools 89 matches
Audio/Visual 109 matches
Computer Applications 28 matches
Pedagogic Resources 47 matches
Scientific Resources 3 matches
On the Cutting Edge
Professional Development for Geoscience Faculty

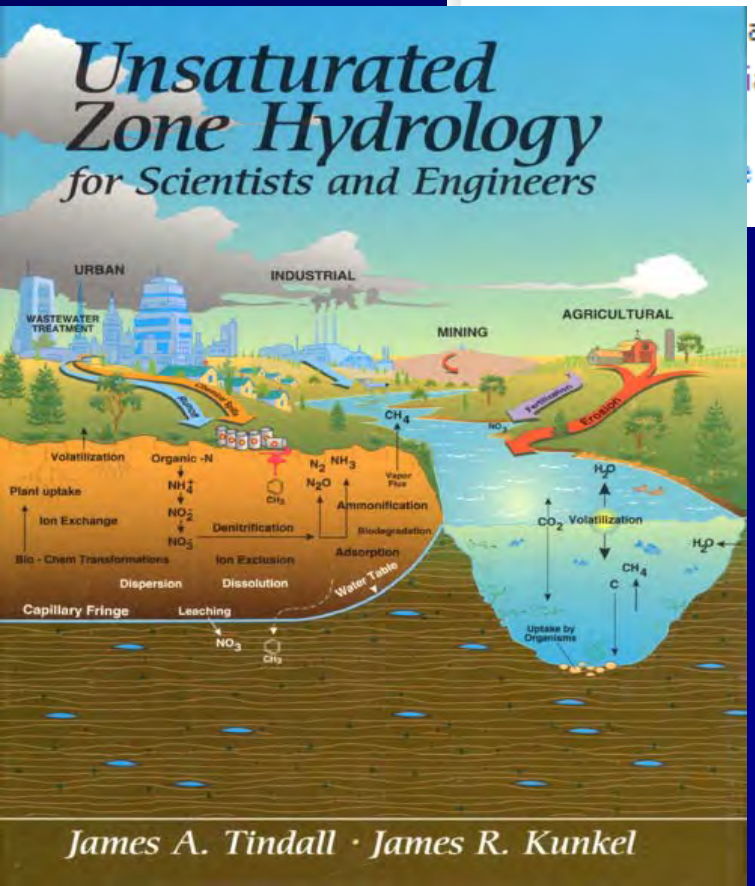
Free texts

Unsaturated Zone Hydrology for Scientists and Engineers



Download free book "Unsaturated Zone Hydrology for Scientists and Engineers" from U.S. Geological Survey in pdf format. This book presents systematic, integrated A-to-Z coverage of state-of-the-art unsaturated zone hydrology. Multi-disciplinary in approach, it provides both a soil physics and an engineering approach to unsaturated zone hydrology. Coverage begins with the basic physical properties and the ays, and moves on to contaminant transport and other parameters such iability, scaling, and fractals in the earth sciences.

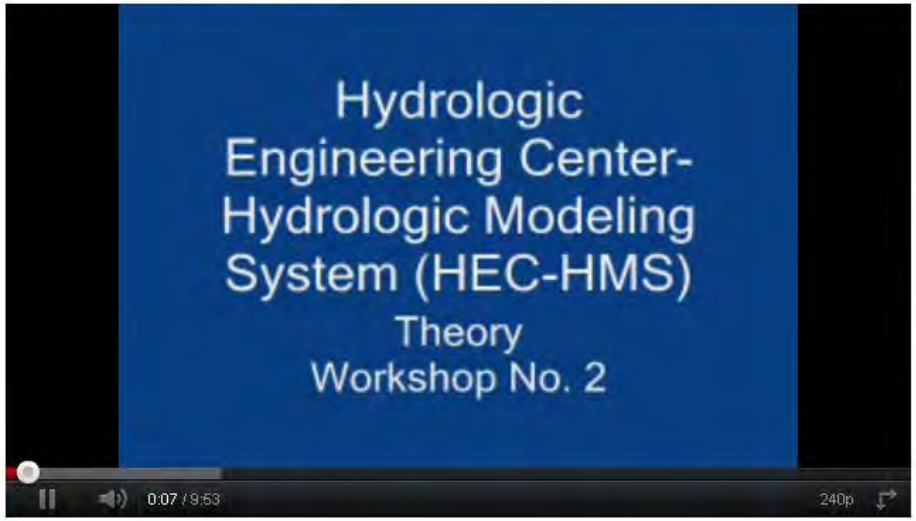
book.



http://wwwbrr.cr.usgs.gov/projects/GW_Unsat/Unsat_Zone_Book/

Hydrologic Modeling System (HEC-HMS) Theory

drquek3 40 videos Subscribe



Suggestions

HEC HMS Darang
by BossYes1
418 views

HEC-HMS Worked Example 2.1- Parameters Selection
by drquek3
2,675 views

HEC-HMS Worked Example 2.1- Solving From Scratch
by drquek3
1,372 views

HEC-HMS --- Hydrology - Castro HW
by jluisao2
673 views

River Analysis System (HEC-

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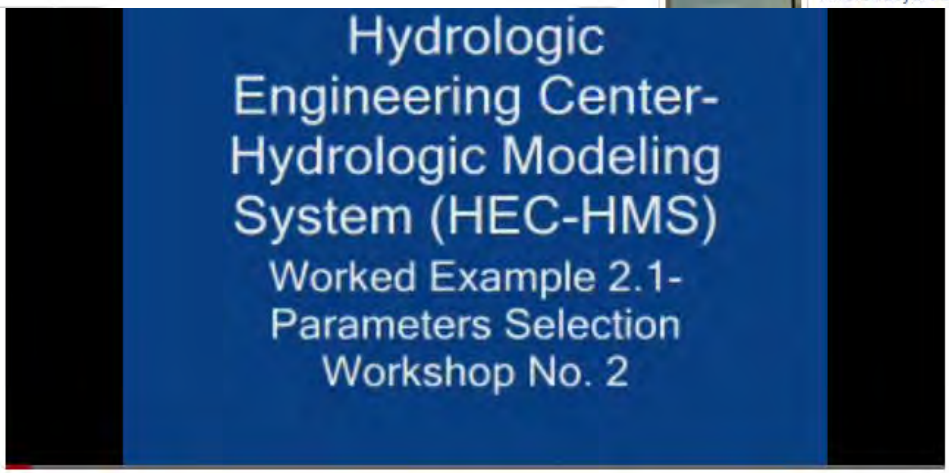

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Hydrologic Engineering Center- Hydrologic Modeling System (HEC-HMS):

,,ydrology Example
by EngineeringVideosNet
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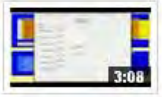
Premio ASIA 2009.mpg
by cascam65
174 views



HMS - Video Tutorial
by eM3ijiroE
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HEC-HMS --- Hydrology - Castro HW
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Urban Drainage Uninorte Park

Joint research – capacity-building programs

UNESCO-IHE Institute for Water Education

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INTERVIEW WITH HANS D'ORVILLE, UNESCO ADG FOR STRATEGIC PLANNING

Hans d'Orville, Assistant Director-General for Strategic Planning, at UNESCO Headquarters in Paris, visited UNESCO-IHE. See...

INTERVIEW WITH MEHRI MADARSHAHI, PRESIDENT MELODY FOR DIALOGUE ASSOCIATION

Mehri Madarshahi, President of the Melody for Dialogue among Civilizations Association, visits UNESCO-IHE Institute for Wate...

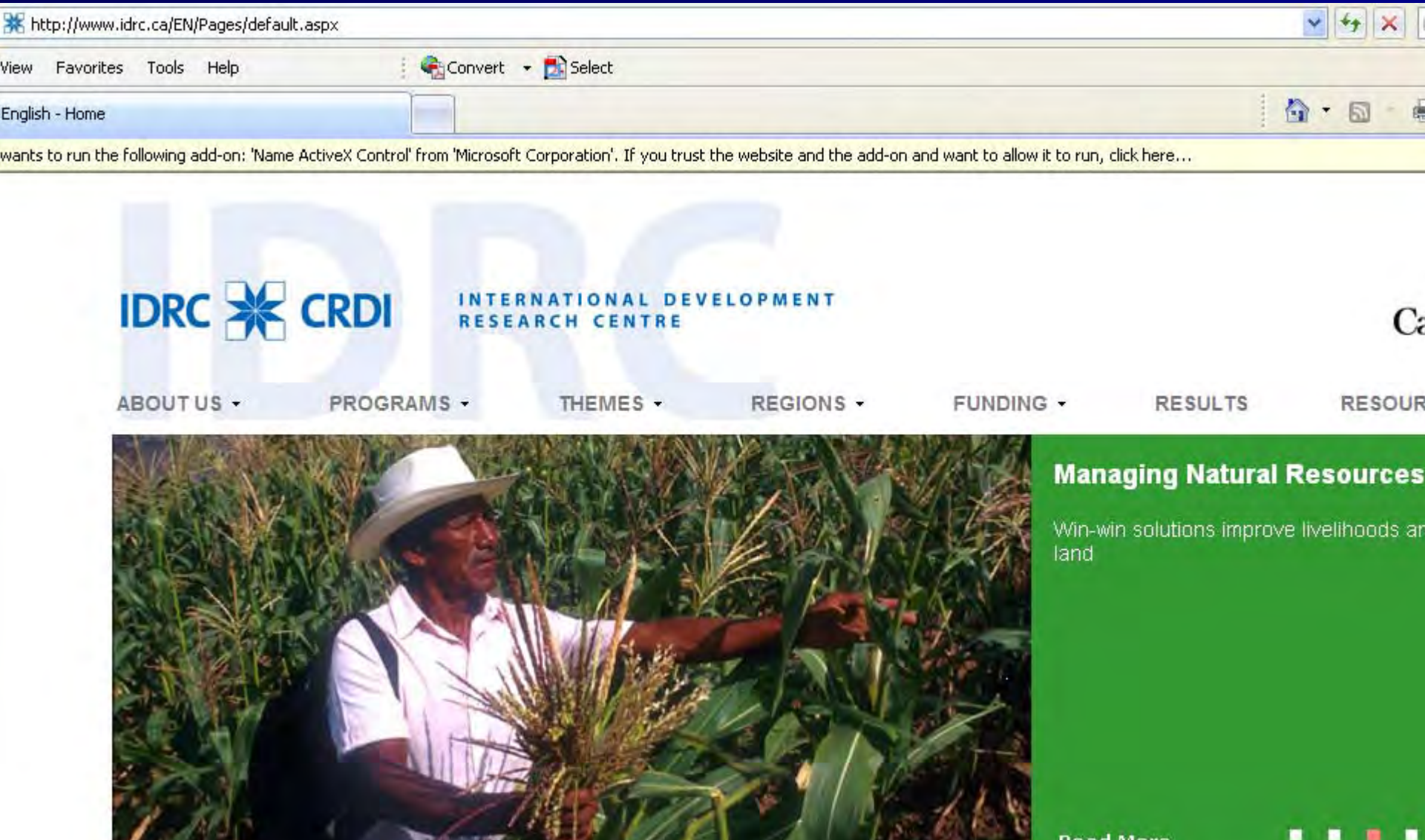
UPCOMING EVENTS

- 29/08/2011
  Public Defence and Awarding Ceremony of Sampson Oduro-Kwarteng
- 19/09/2011
  Refresher Seminar Bolivia
- 21/09/2011
  Climate change, conflict and migration: the water context

LATEST RESEARCH OUTPUT

- Isotopic characterization of snow variability in two mountainous catchments, black forest mountains, Germany

International Development Research Centre (Canada)



National Science Foundation – USAID Agreement

- Just signed July 7, 2011
- USAID might expand the impact of NSF-supported activities through complementary assistance to local institutional capacity development or by augmenting the participation of the non-U.S. participants in the NSF activities.
- Likewise, NSF might expand the impact of USAID-supported activities via solicitations that address major research challenges relevant to both the U.S. and to the USAID mission in developing countries.

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International Center for Integrated
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UNAM's role?