



# G-WADI

An introduction to G-WADI and the Lanzhou Workshop

**Water and Development  
Information  
for Arid Lands – A Global  
Network**

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# Why G-WADI?

- Arid lands face the greatest pressures to deliver and manage water resources
- Scarce water resources face increasing demand - due to population growth, economic development and agricultural expansion
- Water resources are under increasing threat - from over-abstraction, agricultural/urban pollution and climate change



# Arid regions have special characteristics:

- Rainfall is highly variable, in time and space
- Floods are damaging and difficult to quantify
- Groundwater recharge is extremely uncertain
- Data are limited – in extent, quality and record length
  
- The science base is relatively poor – but developing rapidly
- Appropriate technology is needed for management and decision support



# UNESCO has recognised:

- Water resources and ecosystems as the priority for science
- Arid and semi-arid regions as a special priority for the water programme
- The need to strengthen the global capability to manage the water resources of arid and semi-arid regions
- The need to build an effective global community through integration of regional network and centres with international experts and centres of excellence



## As a result:

G-WADI was conceived in 2002 and endorsed as a framework for cooperation in April 2003 by 24 participants from over 18 countries, representing international agencies, research institutions, centres and individuals



G-WADI seeks to provide support systems for regional networks, regional centres and individuals and to facilitate:

- improved understanding of the special characteristics of hydrological systems in arid regions
- awareness of the potential of new technologies for data provision, data assimilation and system analysis
- the development and use of appropriate decision support tools for integrated basin management



- the exchange of management experience, for example through case studies
- the exchange of data
- the broad dissemination of understanding of these systems and their integrated management to stakeholders and the general public



# What has G-WADI achieved?

- A launch budget – with support from UNESCO and the UK government
- A web-site: [www.g-wadi.org](http://www.g-wadi.org)
  - with news, information, data products, lectures, tutorials and software
- A workshop on hydrological modelling in arid and semi-arid areas, Roorkee, India, Feb 2005 – with lectures, tutorials and software available via the web, and a book in press
- The Cairo workshop (with GEWEX) on hydroclimatic forecasting, April 2005



- The Oxford workshop on the use of natural isotopes and geochemical tracers, July 2005 – with web-based case studies and tutorial material
- Launch of the G-WADI Asia regional network
- The Aleppo meeting on rainwater harvesting, November 2006
- Co-sponsorship of the Tunis meeting on the future of drylands, June, 2006
- Co-sponsorship with the Arab region of the 4<sup>th</sup> international conference on Wadi Hydrology, Muscat, December, 2007
- Co-sponsorship with the Asian region of the Roorkee international water conference, December, 2007



And the Lanzhou workshop, June 2007:

## **Groundwater modelling for arid and semi-arid areas**

Co-sponsored by:

UNESCO International Hydrology Programme

UNESCO Asian Region

UK Department for International Development

and our hosts:

CAREERI (Cold and Arid Regions Environmental and Engineering Research Institute),

Chinese Academy of Sciences, Lanzhou.



# Groundwater modelling for arid and semi arid areas

## Motivation:

- Groundwater is a vital resource in arid areas, but increasingly under threat from pollution and over-exploitation
- Active management of groundwater systems has the potential to increase sustainable yields and remediate pollution
- The sustainable management of groundwater depends on the assimilation of complex information on aquifer properties, and the estimation of recharge, which is dependent on climate and land use and which varies in time and space
- Modelling is an essential tool to understand and manage groundwater systems, but little information is available to provide guidance for the special problems of arid and semi-arid areas



# Groundwater modelling for arid and semi arid areas

The aims of the workshop are:

- to bring together the world's leading experts in arid zone groundwater modelling to deliver a definitive set of lectures and case studies to an audience of active researchers from the world's arid regions
- to draw on the experience of the workshop participants in developing this material and a 'Lanzhou statement' of recommendations for future activities
- to make this material available to the global community through UNESCO and in particular the G-WADI website ([www.g-wadi.org](http://www.g-wadi.org))
- to stimulate follow-up activities, regionally and globally