

# Global Groundwater Monitoring Network

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## The state of development

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Tokyo, March 2011

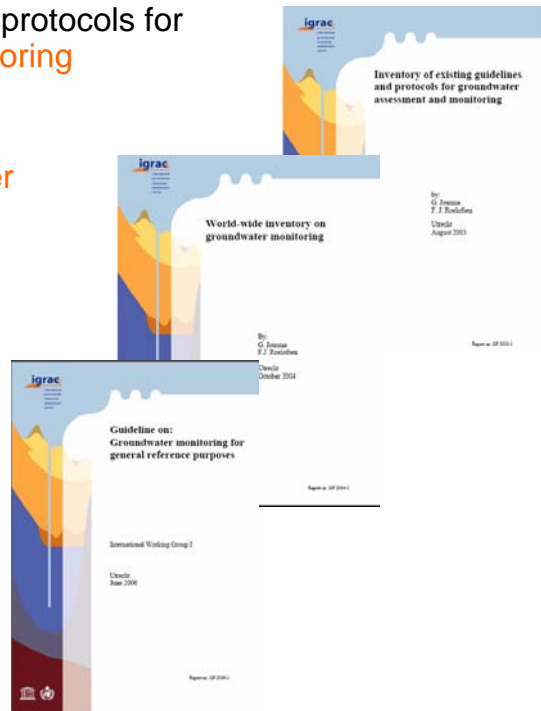
## IGRAC & Groundwater Monitoring

- IGRAC - International Groundwater Resource Assessment Centre is an UNESCO and WMO groundwater centre
- IGRAC facilitates and promotes **global sharing of information and knowledge** required for sustainable groundwater resources development and management
- Focused on information and knowledge management, transboundary aquifer assessment and **groundwater monitoring**
- IGRAC supports groundwater monitoring through two activities:
  - Information exchange on (and development of) **Monitoring Guidelines & Protocols**
  - Development of a **Global Groundwater Monitoring Network (GGMN)**




# Monitoring Guidelines & Protocols

- Inventory of existing guidelines and protocols for **groundwater assessment and monitoring**
- World-wide inventory of **groundwater monitoring**
- Development of guidelines on **groundwater monitoring for general reference purposes** (by an international Working Group led by IGRAC)
- Contribution to a WMO/UNESCO manual on **water resources assessment**



# Guidelines & Protocols Database


**Guidelines and protocols**
Online database

Detail

Text search (case sensitive)

Target group/Inter

Type

Nature

Bibliographic info	
Title	Application of drilling, coring and sampling techniques to testholes and wells
Author(s)	Shuter, E. and W.E. Teasdale
Year of publishing	1989
Published by	USGS
References	Techniques of Water-Resources Investigations of the USGS, Book 2, Section F, Chapter F 1
Internet link document	<a href="http://water.usgs.gov/pubs/twri/twri2.f1/">http://water.usgs.gov/pubs/twri/twri2.f1/</a>
Remarks	
Brief review	
Purpose	
Scope	
Enforcement status	
Summary of contents	
Target group/intended user	
IGRAC classification	
Type	Handbook
Categories/Subcategories	<ul style="list-style-type: none"> <li>• Drilling &amp; well construction                             <ul style="list-style-type: none"> <li>◦ Drilling methods</li> </ul> </li> <li>• Field measurement &amp; sampling                             <ul style="list-style-type: none"> <li>◦ Soil and rock sampling</li> </ul> </li> </ul>
Level of detail	
Nature	
Availability	
Selling condition(s)	
IGRAC code	1,0002
IGRAC evaluation	
Usefulness & Limitations	
Document value compared to alternatives	

(c) 2003 IGRAC
Guidelines & Protocols
To IGRAC site

## Why a Global Groundwater Network?

No systematic monitoring and assessment of groundwater **change** on **global scale**.

IGRAC is setting up a sustainable **Global Groundwater Monitoring Network (GGMN)** for a periodic assessment of the **global change** of groundwater resources

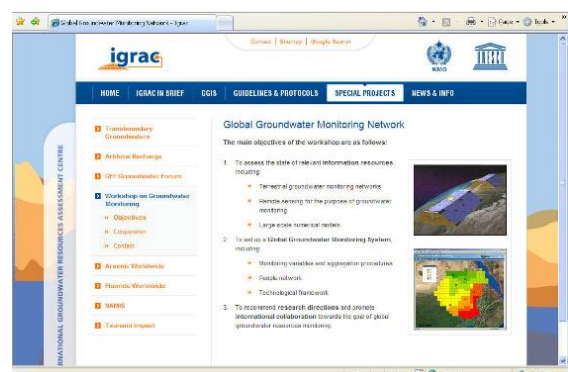
- GGMN postulates:

- A **network of networks** (using/extending existing networks)
- **Aggregated** groundwater information carried out by **regional** specialists, involving point measurements and proxy values
- **Web-based** collection, analysis and dissemination of information



## GGMN postulates elaborated

- Why not a new network?
  - Extremely **difficult to set up and sustain** (incentives and mandate),
  - **Favorable position** of IGRAC as UNESCO/WMO centre.
- Why aggregated information?
  - **Limited representativeness** of point measurements (aggregation using the expert knowledge and proxy values)
  - Obstacles related to **international exchange of data** (aggregated value is derived information).
- Why web-based system?
  - **Easy** reporting and analysis tool (only a browser required),
  - A **control over information** provided,
  - **Involvement** and **recognition**.



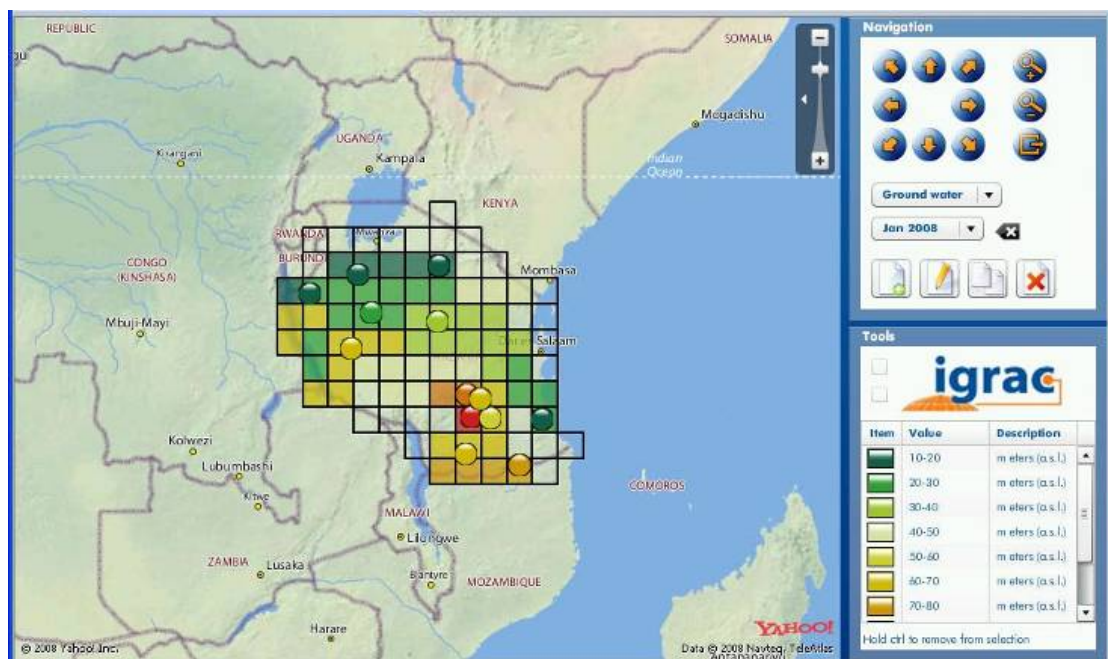
## GGMN – current status

- **Done:**
  - **Inventory** on networks/programmes (including the users)
  - **Embedding** in **GTN-H** network of WMO, **IGWCO** network and **GEO** task on groundwater, **Graphic** of UNESCO, **AEGOS** (EU-African project), **WWAP**...
  - **Dissemination** at IAH/IAHS conferences, Kampala conference on gw and climate, WWF5, IGWCO & GTH-N meetings, articles, update website,...
  - Development and release of a first version of **online application**
- **Should also have been done:**
  - Formalise a development of the GGMN as a long term programme, led by IGRAC and supported by WMO, UNESCO, GEO, IAH, etc.
  - Developing of the “**people network**” of skilled country representatives
  - Processing accessible data (in Europe and USA) and fill in the GGMN database
  - Further development of the GGMN software

(lack of) funding is a problem  
(but one cannot blame it for everything)



## GGMN – current status



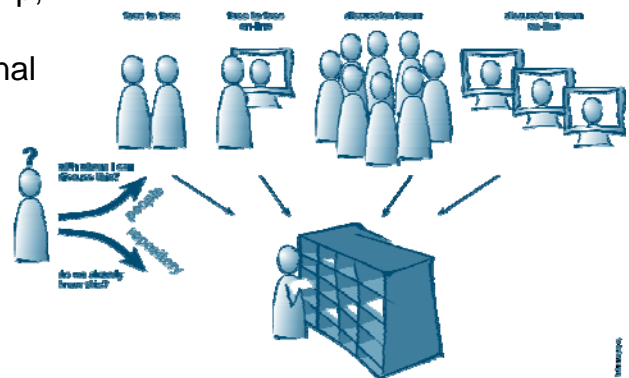
## GGMN – activities 2011-2015

- Embedding the **GGMN programme** in the new IGRAC strategic (2011-2015) and operational (2011) planning.
- Start realisation of ‘**should also have been done**’ according to the new operational plan:
  - **Formalisation** of the programme
  - Emphasize on ‘**people network**’ – a workshop with at least one region in Africa.
  - **Processing** accessible data (link to USGS and EEA)
  - Further development of the **GGMN software**.
- Looking for **extra funding** for overall support of GGMN (a GEO proposal for GMN – Africa submitted)
- Further linkage with Whymap’s groundwater resources maps and GPCC output (gridded precipitation maps)
- Enclosure of the GGMN in **WWAP**
- Update the site/promotion material



## GGMN - activities 2011-2015

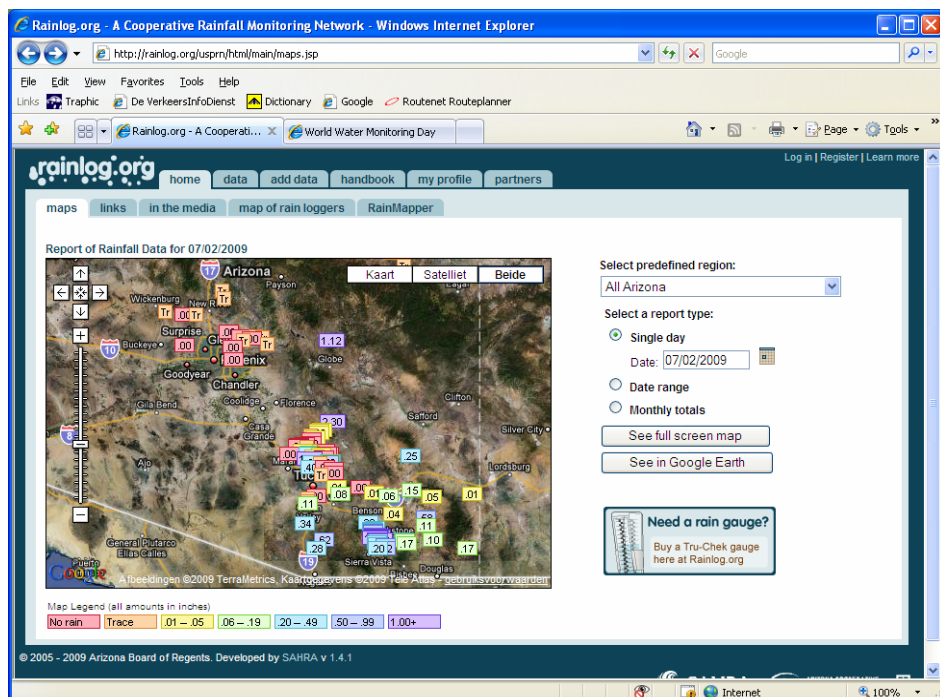
- GGMN as a **participative network**
- Incentives: Involvement, ownership, recognition, accessibility
- Approach: long lasting international non-profit programme
- Main Activities:
  - Setting up regional communities (workshops!)
  - Supply of monitoring kits & apps for mobile phones
  - On-line and in-situ support
  - Linking with similar initiatives (IWA, NGWA, etc - see e.g. on next pages)
  - Linking to EU FP7 ENV.2012.6.5-1 Developing community-based environmental monitoring and information systems using innovative and novel earth bserveation applications (GEOSS!)



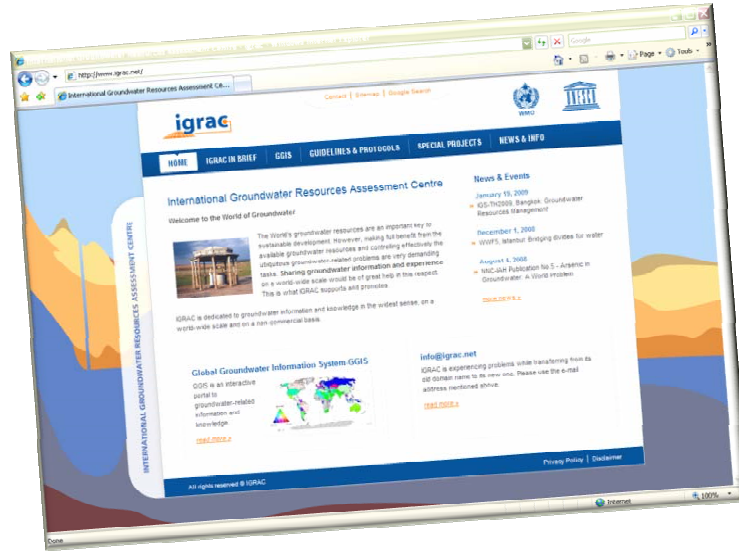
## An example of a participative network



## An example of a participative network



Thank you for your attention



World Meteorological  
Organization



Government of  
The Netherlands