OPEN-SOURCE WEB GIS COOPERATIVE INFORMATION SYSTEMS FOR TRANSBOUNDARY GROUNDWATER MANAGEMENT

by

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United Nations Educational, Scientific and Cultural Organization

UNESCO Chair International Network of Water-Environment Centres for the Balkans

Aristotle University of Thessaloniki

UN WATER World Water Day 2013 International Year of Water Cooperation

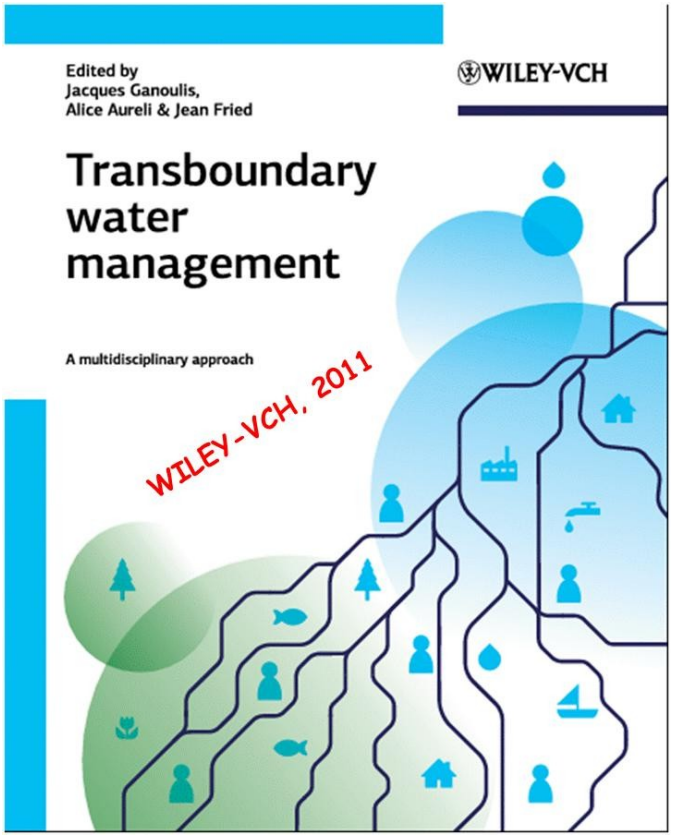
UN WATER

Παγκόσμια Ημέρα Νερού

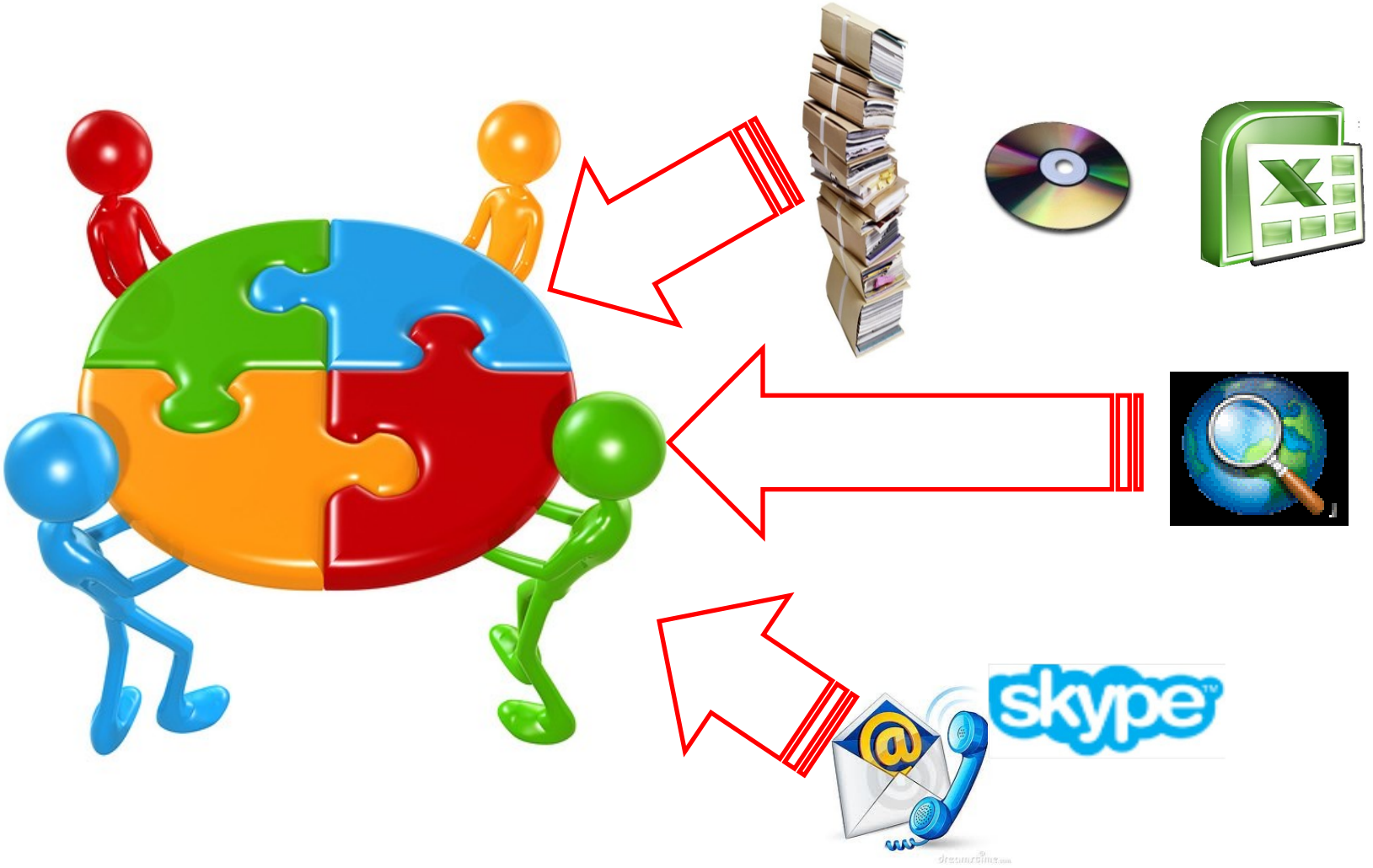
Διεθνές Έτος Συνεργασίας για το Νερό

HOW COOPERATION CAN BE EFFECTIVE ????

THE CASE OF TRANSBOUNDARY GROUNDWATERS: DATA-MODELING-MANAGEMENT

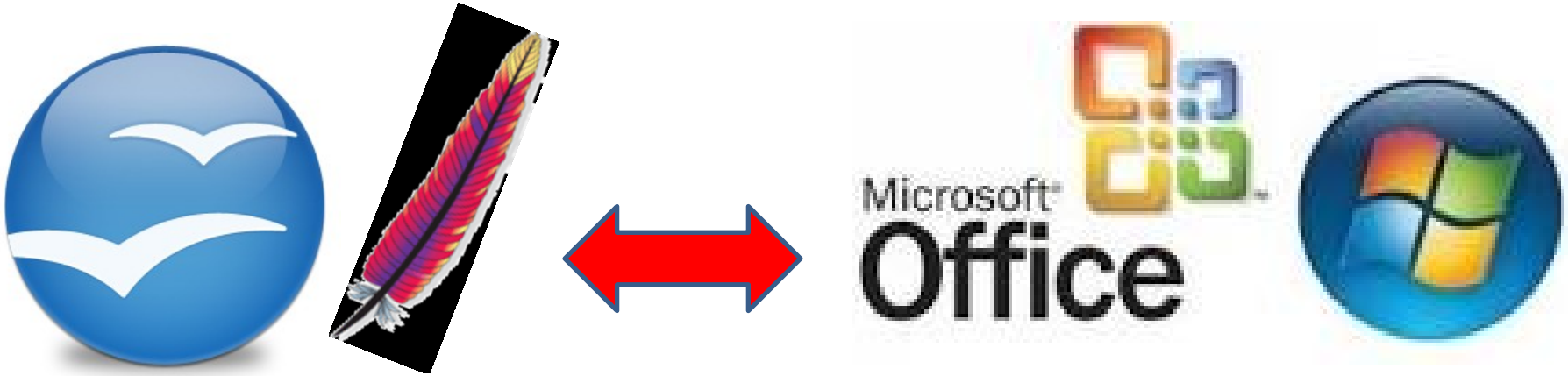


ENHANCING COOPERATION



HOW TO DEAL WITH
THE COMPLEX REAL WORLD OF
"COOPERATION"
Or how to resolve the Greek Debt
ANSF TACTICAL
OUTSIDE SUPPORT TO INSURGENT FACTIONS
COALITION CAPACITY & PRIORITIES
CENTRAL GOV'T
OVERALL GOVERNMENT CAPACITY
POPULATION CONDITIONS & BELIEFS
POPULAR SUPPORT
NARCOTICS
COALITION DOMESTIC SUPPORT
GOVERNANCE
INFRASTRUCTURE, SERVICES & ECONOMY

WHY OPEN-SOURCE SOFTWARE ??



- 1 Open Software can be downloaded and used entirely free of any license fees
- 2 Open development process means that anyone can enhance the software, report bugs, request new features
- 3 Open Software is easy to learn, available and supported in your own language

esri

erdas
The Earth to Business Company

COMMERCIAL WEB-MS PRODUCTS

Bentley
Sustaining Infrastructure

GeoWebPublisher

OPEN SOURCE Web map SERVICES

Open Layers

Google maps

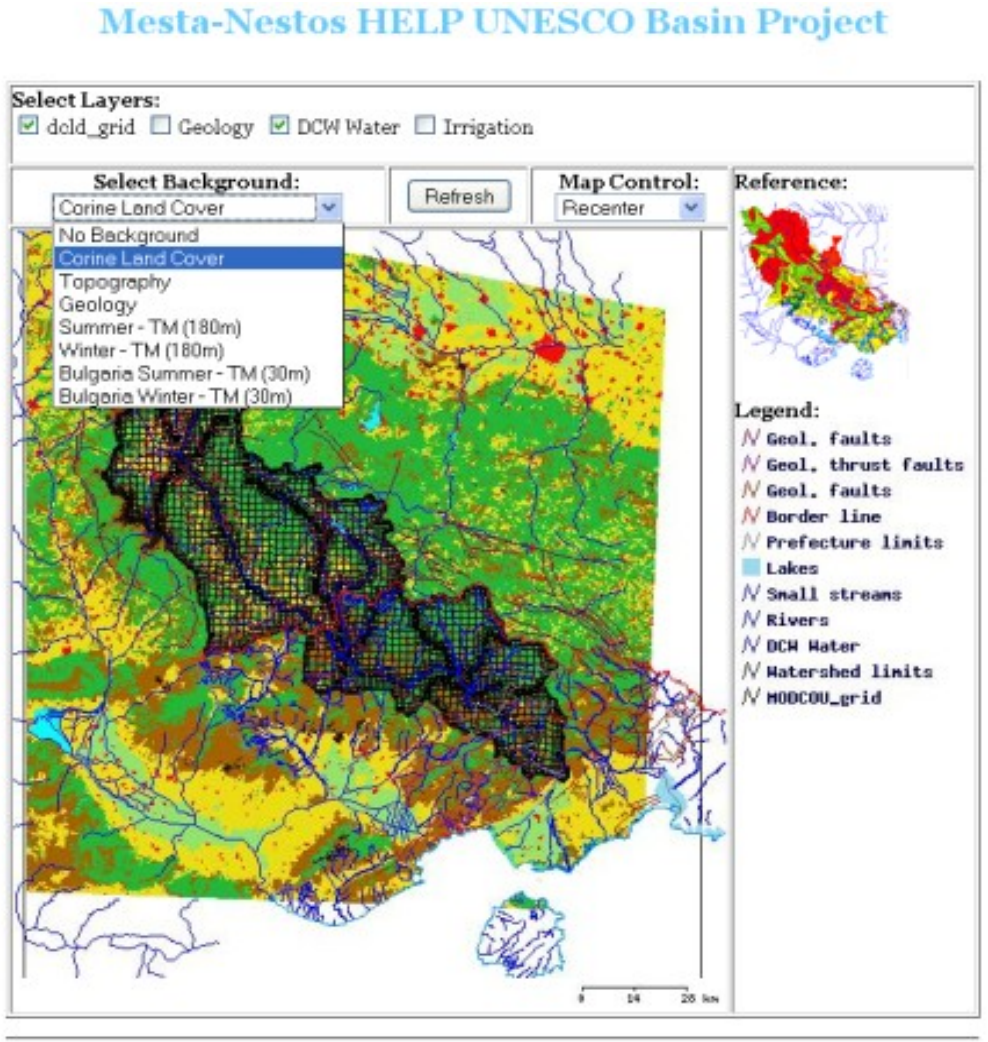
MapServer

JavaScript

php

INWEB's experience on map serving technologies

- **2002:** Extensible Markup Language (XML) for managing and publishing geographic data on the Internet.
- **2004:** Mapserver CGI program for interactive mapping applications on the Web. Creation of dynamic maps.



Fusion tables technology for the coastal aquifers in the Mediterranean

The proposed technology aims at combining databases, GIS and collaborative tools

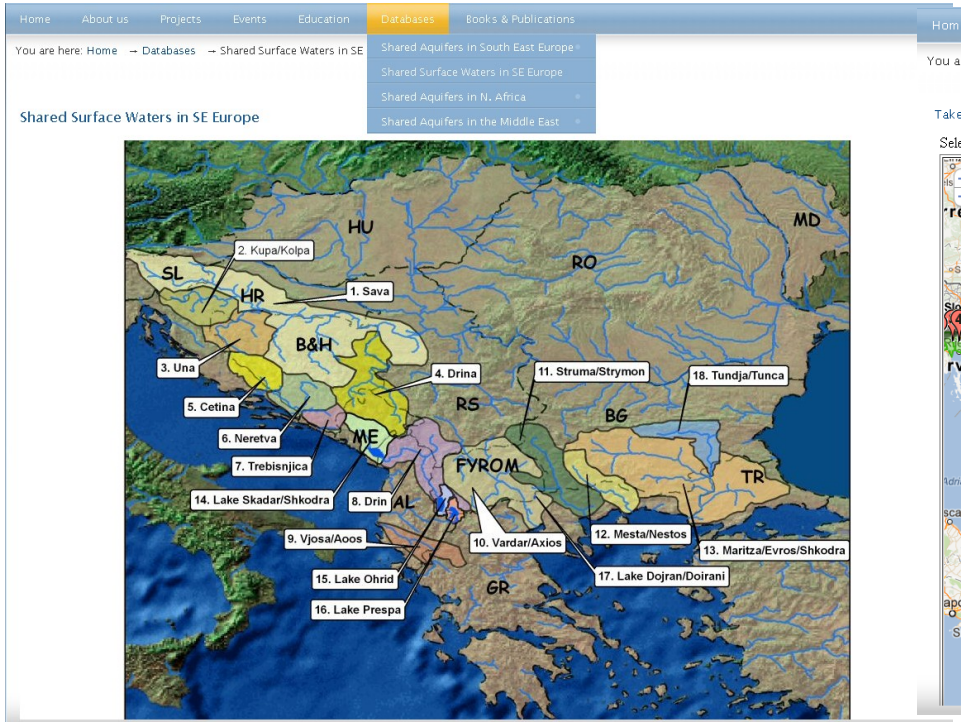
Based on the open source concept:

- WEB mapping technologies (Google maps)
- Collaborative WEB services (Google fusion tables)
- WEB programming languages (HTML 5, JavaScript)

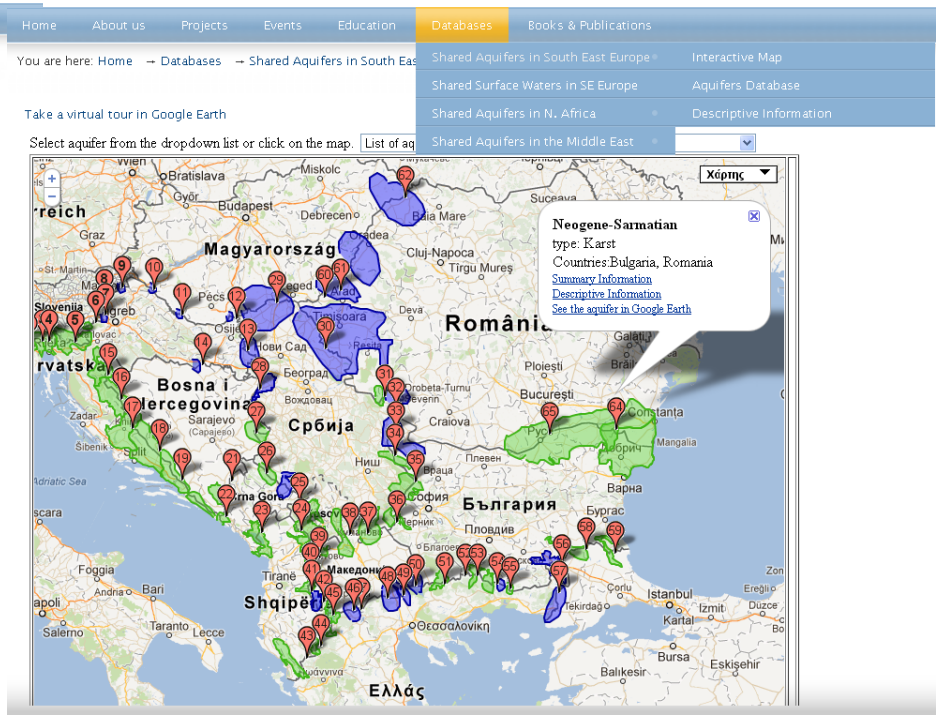
Creation of interactive mapping applications on the Web

INWEB's Spatial Databases in SE Europe

Shared Surface Waters

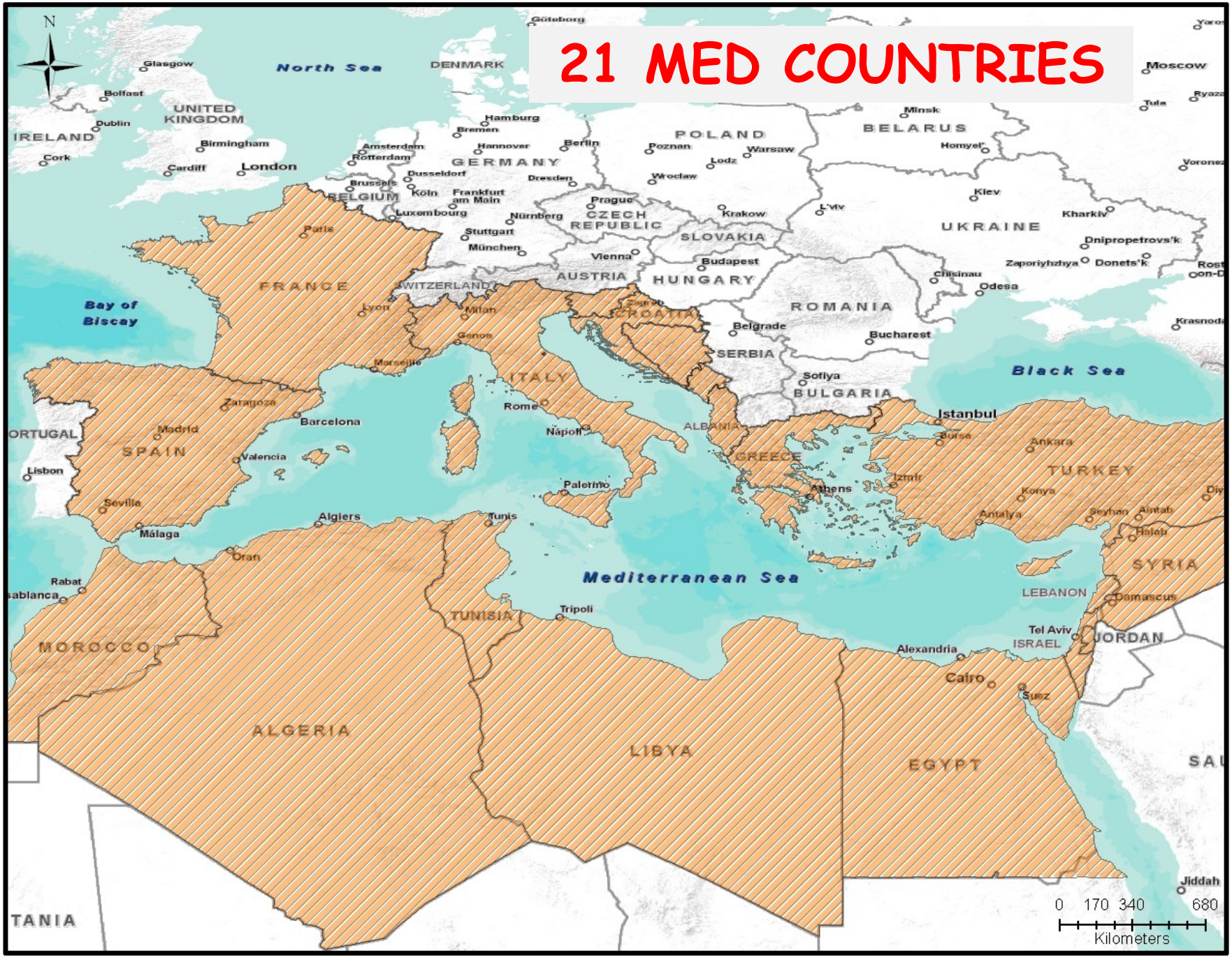


Shared Aquifers



Strategic Partnership for the Mediterranean Sea Large Marine Ecosystem
MedPartnership

Management of Coastal Aquifers and Groundwater


21 MED COUNTRIES
N
North Sea
DENMARK
Göteborg
Glasgow
Belfast
Dublin
IRELAND
UNITED KINGDOM
Birmingham
Cork
Cardiff
London
Amsterdam
Rotterdam
Hamburg
Bremen
Hannover
Berlin
GERMANY
Dusseldorf
Brussels
BELGIUM
Köln
Frankfurt am Main
Luxembourg
Nürnberg
Stuttgart
München
Dresden
Prague
CZECH REPUBLIC
Wroclaw
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POLAND
Minsk
BELARUS
Moscow
Tula
Homyel'
Kiev
L'viv
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SLOVAKIA
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Kharkiv
Dnipropetrovs'k
Zaporiyzhzhya
Donets'k
Chisinau
Odesa
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SPAIN
Valencia
Lisbon
PORTUGAL
Sevilla
Málaga
Rabat
MOROCCO
ALGERIA
LIBYA
Jiddah
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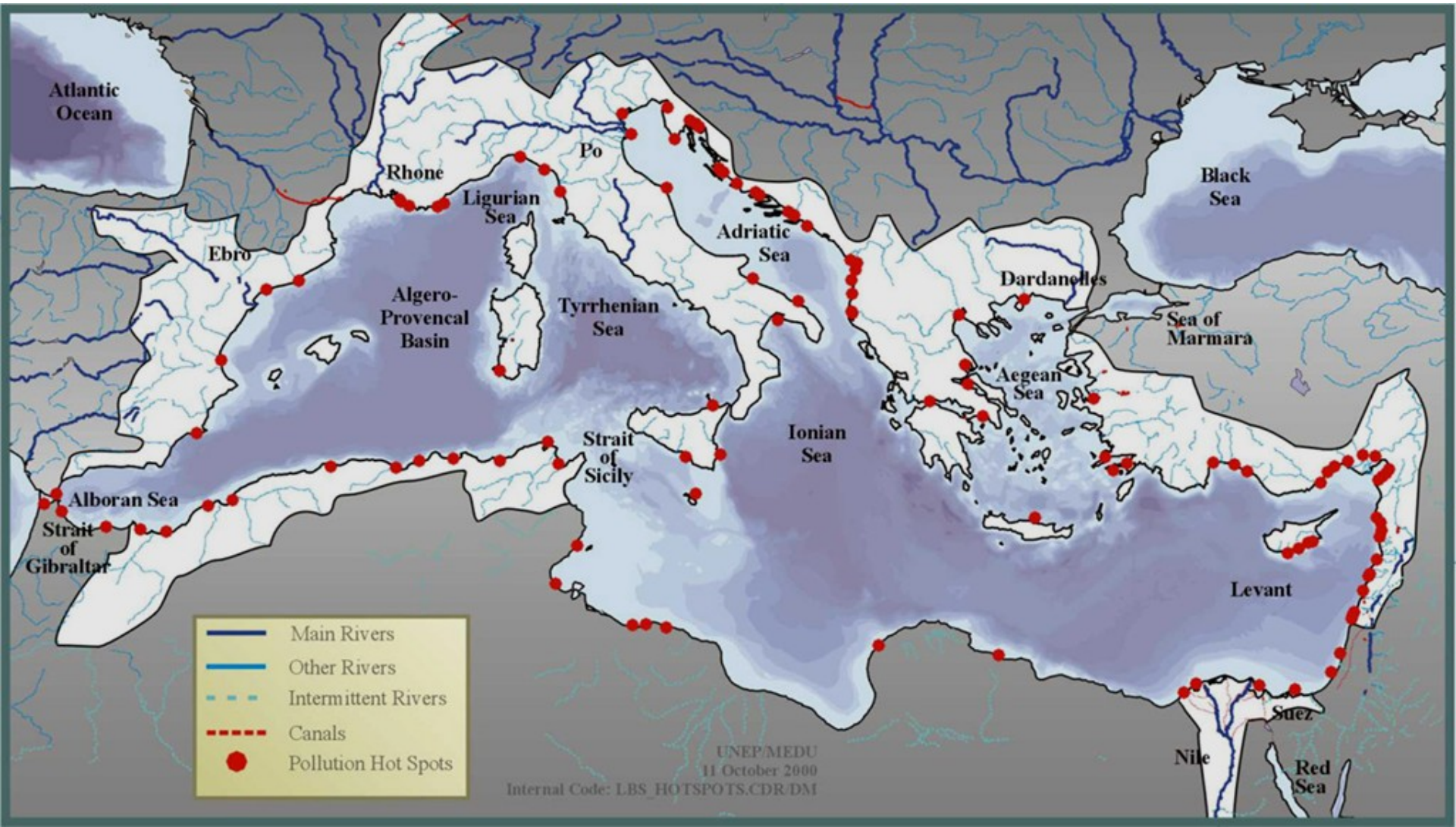
Kilometers

LAND-BASED ACTIVITIES AND THREATS TO WATER AND ECOSYSTEMS



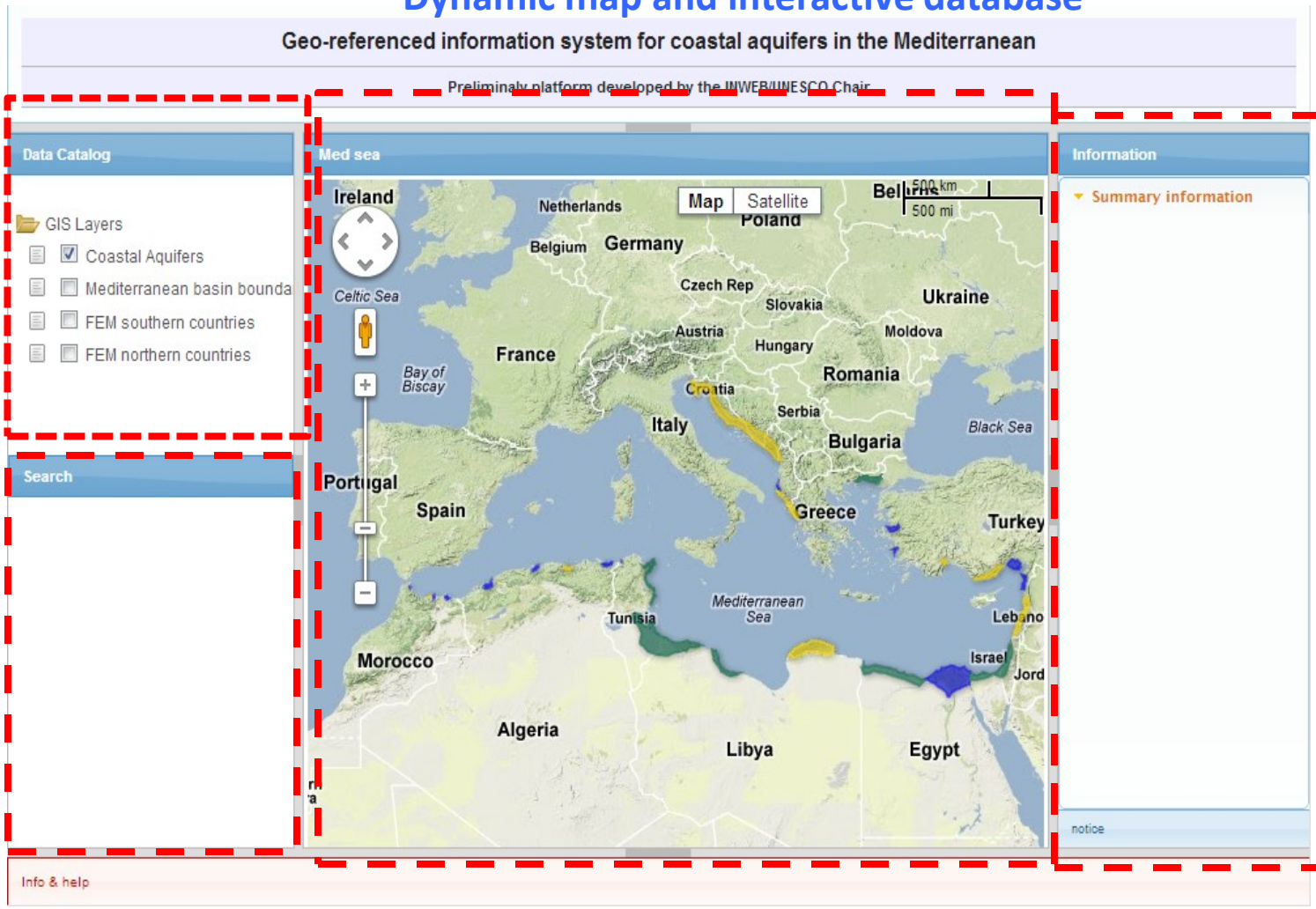
COASTAL AQUIFER OVEREXPLOITED

© Blue Plan 2003

Source: RIVM RIZA 1991. National sources compiled by Blue Plan

Application in coastal aquifers in the Mediterranean

Dynamic map and interactive database



1. Data catalog
2. View window
3. Information window
4. Search tool

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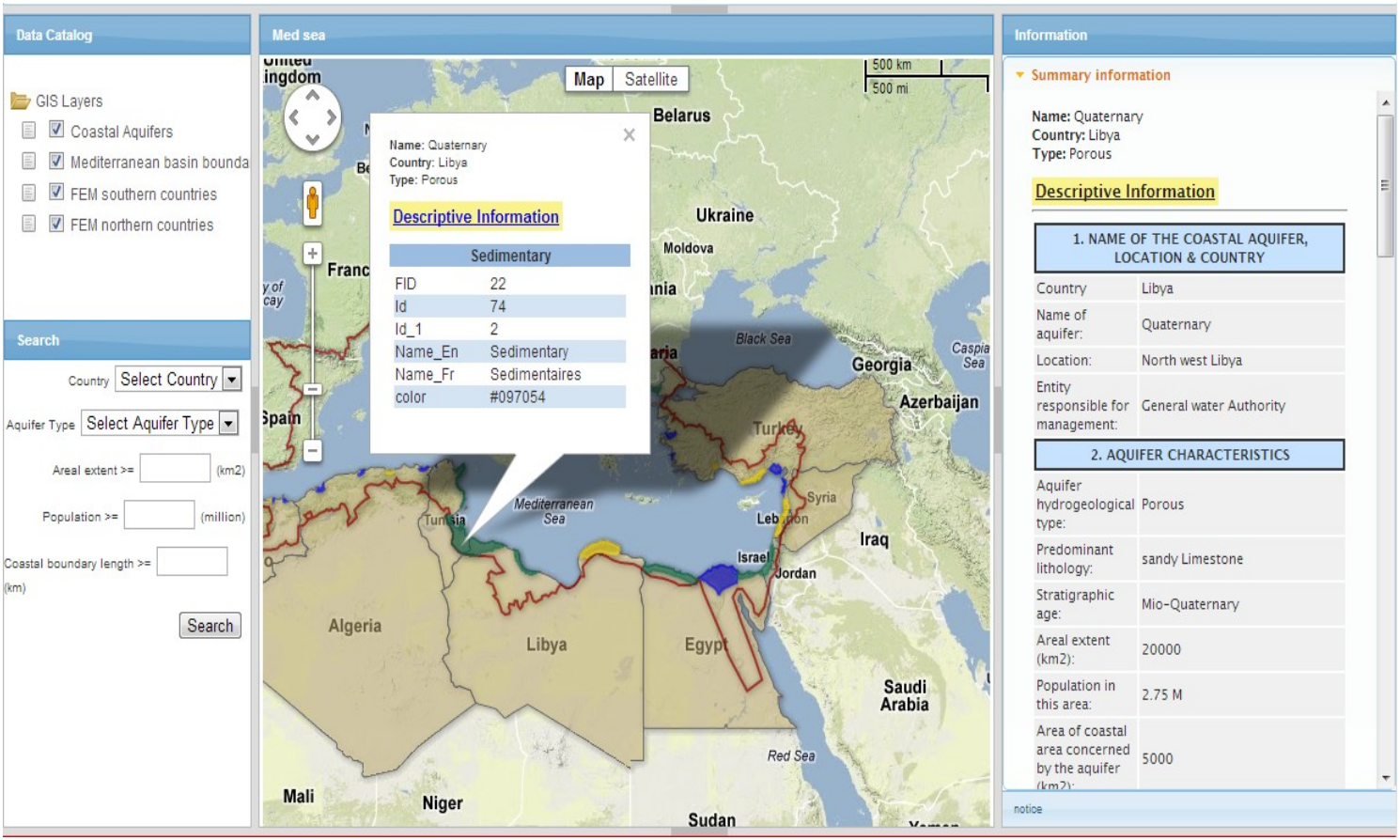
Management of Coastal Aquifers and Groundwater

Application in coastal aquifers in the Mediterranean



Information windows:

- Displays summary results and descriptive information for each aquifer
- Dynamic update of the values by the author!

Application in coastal aquifers in the Mediterranean

View of Metadata of Aquifer 27 example case study

File Edit Tools Help | Rows 1 | Cards 1

Filter | No filters applied

1-42 of 42

Aq...	Category	Field	Value
27	1. NAME OF THE COASTAL AQUIFER, LOCATION & COUNTRY	Country	
27	1. NAME OF THE COASTAL AQUIFER, LOCATION & COUNTRY	Name of aquifer:	
27	1. NAME OF THE COASTAL AQUIFER, LOCATION & COUNTRY	Location:	
27	1. NAME OF THE COASTAL AQUIFER, LOCATION & COUNTRY	Entity responsible for management:	
27	2. AQUIFER CHARACTERISTICS	Aquifer hydrogeologic type:	
27	2. AQUIFER CHARACTERISTICS	Predominant lithology:	
27	2. AQUIFER CHARACTERISTICS	Stratigraphic age:	
27	2. AQUIFER CHARACTERISTICS	Areal extent (km2):	
27	2. AQUIFER CHARACTERISTICS	Population in this area:	
		Area of coastal area	

Dynamic update:

- **Editing possibilities to the authors in order to enhance or renew the data which are presented in the "Information Window"**
- **Each partner will have access to a specific data set and any potential changes are automatically being transferred to the platform**

COOPERATION FOR WATER: A VERY OLD STORY

COLLABORATIVE SCIENCE/KNOWLEDGE FOR GOOD GOVERNANCE

Danke schön!
Ευχαριστώ !