

# KINDRA final conference

Brussels, February 27th 2018



## MAKING GROUNDWATER VISIBLE, ACCESSIBLE and TREASURED



Knowledge Inventory for hydrogeology research



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 642047.



Environmental and Water Agency of Andalusia  
REGIONAL MINISTRY OF ENVIRONMENT  
AND SPATIAL PLANNING

Rediam ●●●

Environmental Information Network of Andalusia

European Inventory on  
Groundwater Research

“EIGR”



## Geonetwork Open Source Platform (<http://geonetwork-opensource.org/>)



a Geographical Information Catalogue that provides services for enquiring, locating and downloading Geographical Information

Its main advantage is its simplicity: an easy to use interface, based on OGC open standards which allows for information to be easily transferred.

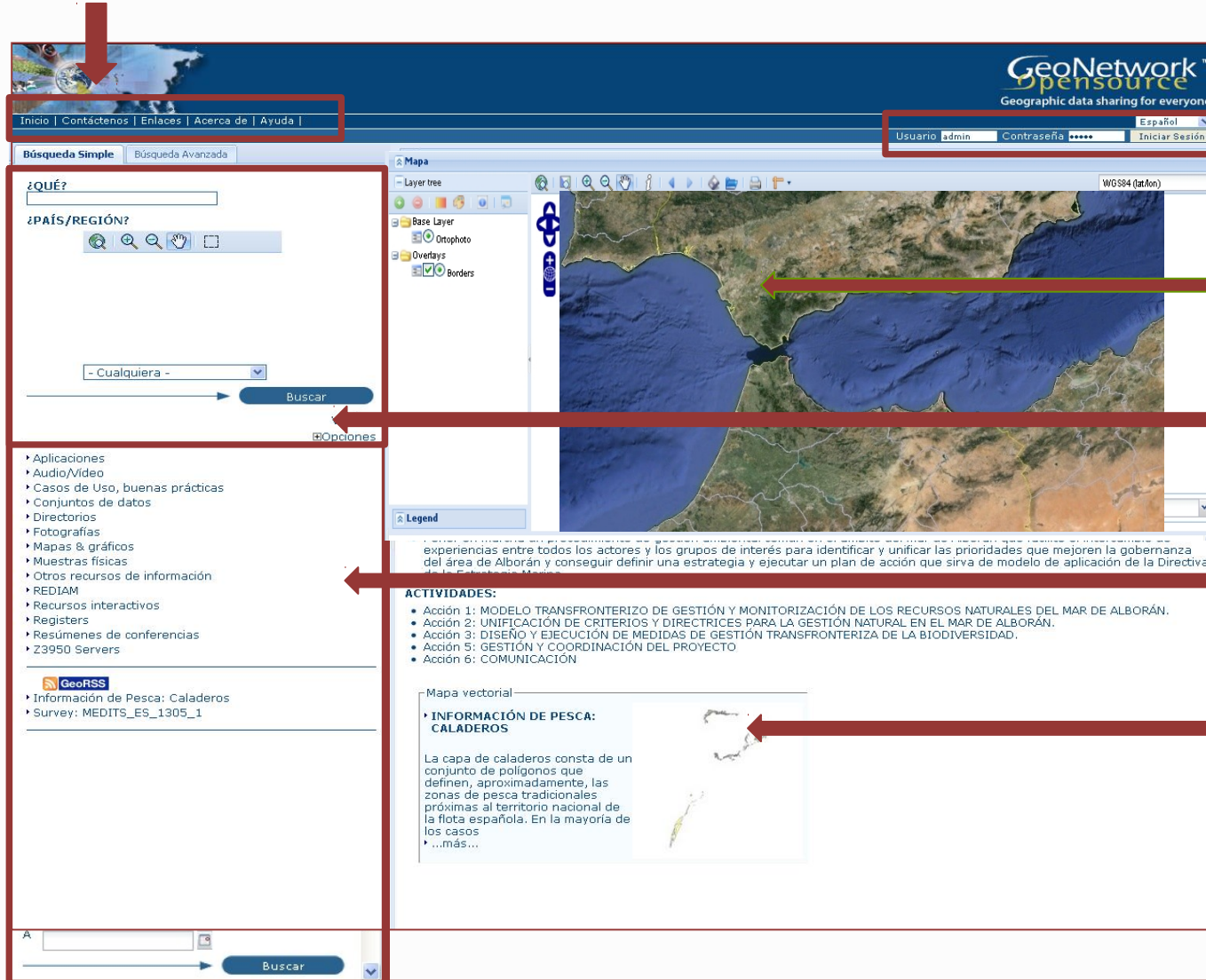
And it makes working with catalogues from different administrations and countries a plausible option.



Geonetwork Opensource is a project created and funded by the United Nations' Food and Agriculture Organization - FAO.

## Menu bar

## A quick overview of Geonetwork



The screenshot shows the GeoNetwork OpenSource web interface. Red arrows point to the following elements:

- Menu bar:** Located at the top left, containing links like Inicio, Contáctenos, Enlaces, Acerca de, and Ayuda.
- User login and administrative location:** Located at the top right, featuring a login form with fields for Usuario (admin), Contraseña, and a language dropdown (Español).
- Location Map:** The central map area showing a geographical view of the Alborán region.
- Simple Information Search Tool:** The left sidebar containing search filters like ?QUÉ?, ?PAÍS/REGIÓN?, and a search button.
- Advanced Information Search Tool:** The bottom left sidebar listing various applications and resources.
- Results Window:** The bottom right section displaying search results, including a list of activities and a detailed map vector for fishing grounds.

User login  
and administrative  
location Map

Simple  
Information  
Search Tool

Advanced  
Information  
Search Tool

Results  
Window

# Basic concepts for the KINDRA Inventory

Repository for Research and Knowledge linked to Groundwater Research across Europe since 2000.

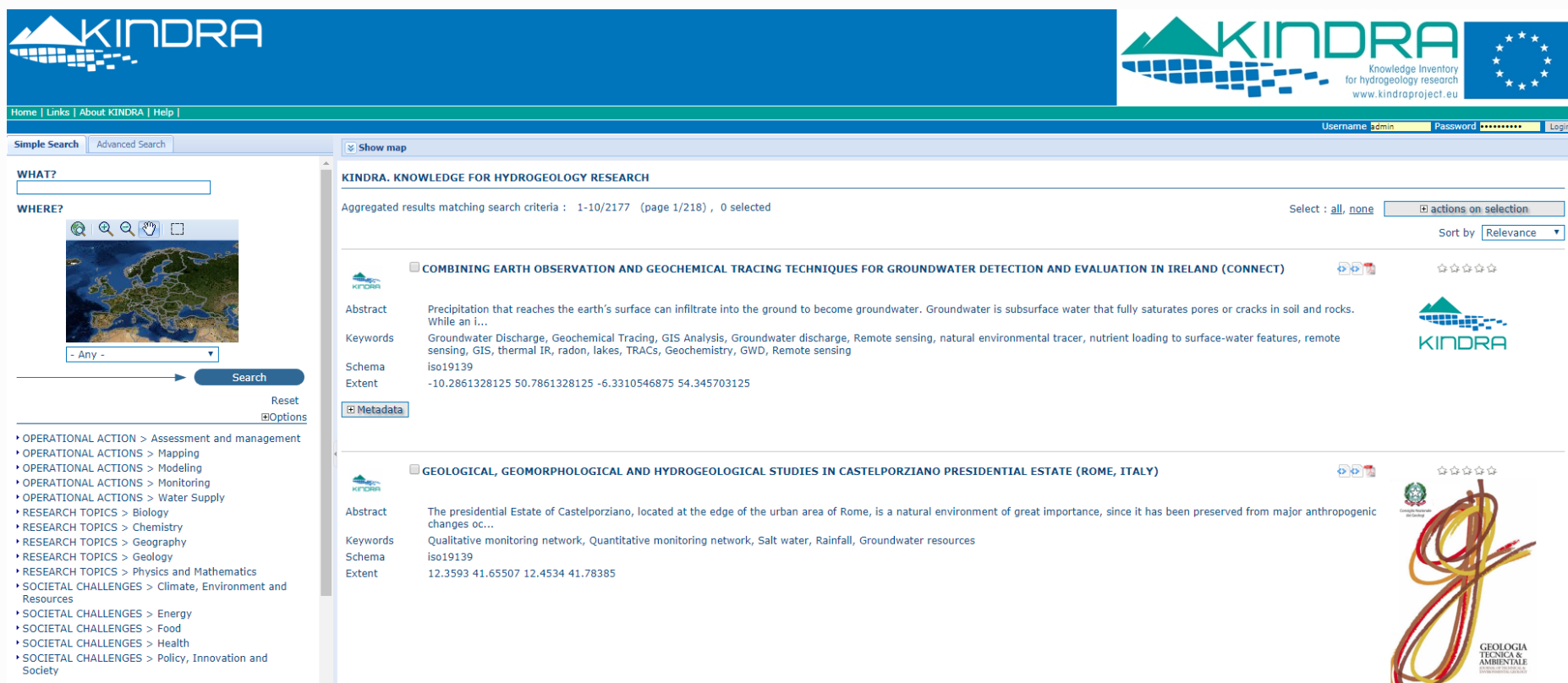
Information stored according to ISO 19139 Metadata schema, adjusted to the specifications of the HRC-SYS.

Metadata describes contents, quality and many other characteristics allowing users to properly identify the information and services available as well as how to locate a resource by answering Who, What, When, Where, Why and How.

It is one of the most extended formats on an international level and complies with INSPIRE Directive specifications.

# European Inventory on Groundwater Research: EI GR

<http://kindra.kindraproject.eu/geonetwork/srv/eng/main.home>



The screenshot displays the KINDRA web application interface. The header features the KINDRA logo and the European Union flag. The main navigation bar includes links for Home, Links, About KINDRA, and Help. The interface is divided into several sections:

- Search Section:** Includes a search bar with "WHAT?" and "WHERE?" labels, a map of Europe, and a "Search" button. Below the search bar are links for "Reset" and "Options".
- Left Sidebar:** Contains a list of categories and sub-categories:
  - OPERATIONAL ACTION > Assessment and management
  - OPERATIONAL ACTIONS > Mapping
  - OPERATIONAL ACTIONS > Modeling
  - OPERATIONAL ACTIONS > Monitoring
  - OPERATIONAL ACTIONS > Water Supply
  - RESEARCH TOPICS > Biology
  - RESEARCH TOPICS > Chemistry
  - RESEARCH TOPICS > Geography
  - RESEARCH TOPICS > Geology
  - RESEARCH TOPICS > Physics and Mathematics
  - SOCIETAL CHALLENGES > Climate, Environment and Resources
  - SOCIETAL CHALLENGES > Energy
  - SOCIETAL CHALLENGES > Food
  - SOCIETAL CHALLENGES > Health
  - SOCIETAL CHALLENGES > Policy, Innovation and Society
- Main Content Area:**
  - KINDRA. KNOWLEDGE FOR HYDROGEOLOGY RESEARCH**
  - Aggregated results matching search criteria : 1-10/2177 (page 1/218) , 0 selected
  - Buttons for "Show map", "actions on selection", and "Sort by" (set to "Relevance").
  - COMBINING EARTH OBSERVATION AND GEOCHEMICAL TRACING TECHNIQUES FOR GROUNDWATER DETECTION AND EVALUATION IN IRELAND (CONNECT)**
    - Abstract:** Precipitation that reaches the earth's surface can infiltrate into the ground to become groundwater. Groundwater is subsurface water that fully saturates pores or cracks in soil and rocks. While an i...
    - Keywords:** Groundwater Discharge, Geochemical Tracing, GIS Analysis, Groundwater discharge, Remote sensing, natural environmental tracer, nutrient loading to surface-water features, remote sensing, GIS, thermal IR, radon, lakes, TRACs, Geochemistry, GWD, Remote sensing
    - Schema:** iso19139
    - Extent:** -10.2861328125 50.7861328125 -6.3310546875 54.345703125
    - Metadata:** (button)
  - GEOLOGICAL, GEOMORPHOLOGICAL AND HYDROGEOLOGICAL STUDIES IN CASTELPORZIANO PRESIDENTIAL ESTATE (ROME, ITALY)**
    - Abstract:** The presidential Estate of Castelporziano, located at the edge of the urban area of Rome, is a natural environment of great importance, since it has been preserved from major anthropogenic changes oc...
    - Keywords:** Qualitative monitoring network, Quantitative monitoring network, Salt water, Rainfall, Groundwater resources
    - Schema:** iso19139
    - Extent:** 12.3593 41.65507 12.4534 41.78385
- Right Sidebar:** Features the KINDRA logo and a logo for "GEOLOGIA TECNICA & AMBIENTALE" (Geological Engineering & Environment).

# European Inventory on Groundwater Research: EI GR

The inclusion of resources is carried out by completing one of the 4 KINDRA Metadata templates:

(iso19139) KINDRA\_DATABASE\_MAPS  
(iso19139) KINDRA\_REPORTS  
(iso19139) KINDRA\_PROJECTS  
(iso19139) KINDRA\_PUBLICATIONS

The templates are divided into four Main Sections:

- RESOURCE IDENTIFICATION INFORMATION
- DISTRIBUTION INFORMATION
- DATA QUALITY INFORMATION
- METADATA INFORMATION

# EIGR: RESOURCE IDENTIFICATION INFORMATION

Title, acronym, abstract, authors and their contact details.

Collaborating organizations and/or programs, funding sources and amount.

Geographical extent as well as other relevant identification details (e.g. ISBN, ISSN, existing legal constraints, etc...).

The HRC-SYS keywords, Societal Challenges, Operational Actions and Research Topics are also defined in this section for each resource.

## EIGR: DISTRIBUTION INFORMATION

Users indicate if any online or physical delivery or distribution methods are available for the resource.

Resources may account for a Digital Object Identifier (DOI) which is assigned by the publisher of the resource as well as links to written reports, digital reports, PDF files

Other formats may also apply depending on the nature of the resource (Maps and cartography, shapefiles, images, etc.).

# EIGR: DATA QUALITY INFORMATION

Assign the corresponding **Knowledge Classes** defined by KINDRA:

- Class-1) Research: Peer-reviewed papers (in Web of Science or Scopus and High Quality Assessment)
- 
- Class-2) Research: Non-Peer-reviewed papers (Books, Proceedings and others searchable in Web of Science or Scopus and High Quality Assessment)
- 
- Class-3) Knowledge: Quality assured or reviewed papers (not included in WoS or Scopus but Quality Assessed)
- 
- Class-4) Knowledge: Non reviewed papers (Projects, Maps, others)

A **Technological Readiness Level**, an indicator to estimate the technological maturity of a resource

And the **Policy Readiness Level** to help assess the conceptual maturity of a resource and it's added value to the policies drafted by the European Commission .

## EIGR: METADATA INFORMATION

Overall information concerning user who is uploading a resource to the Inventory

The interface provides the exact same fields and tags to be completed as in the Resource Identification Information (name, organization, email, etc.).

Ready..... Set..... GO!!!!

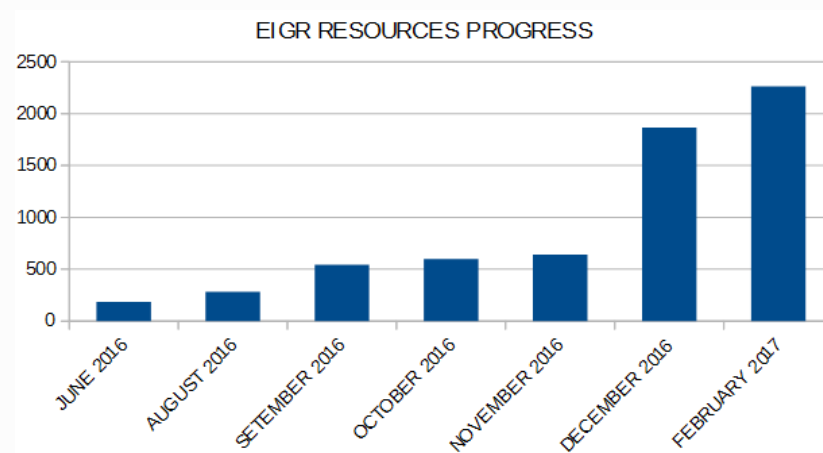
THE EIGR became operational on February 2016 and, although it was off to a rocky start with some issues that required additional fine tuning, the Linked Third Parties from across Europe started to populate the EIGR beginning April 2016.

## EIGR IN NUMBERS

A total of 20 editors from different countries across Europe cooperated in populating the EIGR

June 2016:	184 resources uploaded
August 2016:	284 resources uploaded
September 2016:	544 resources uploaded
October 2016:	599 resources uploaded
November 2016:	640 resources uploaded
December 2016:	1865 resources uploaded
February 2017:	2264 resources uploaded

(Critical Mass achieved for the GAP and TREND Analysis)

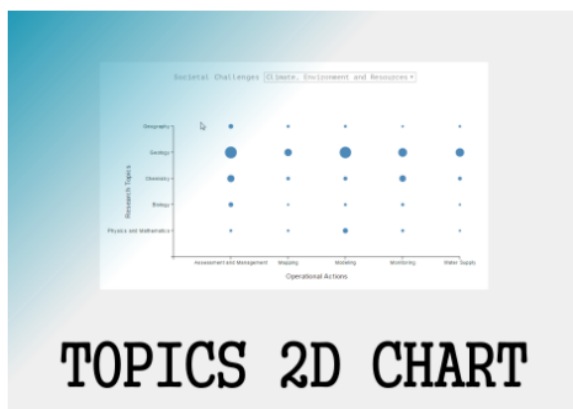
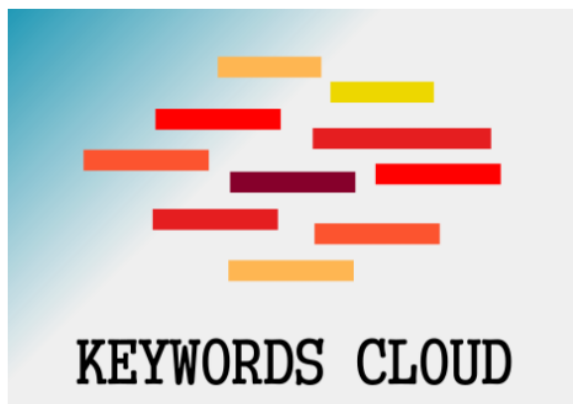


Validation process was required to make sure the uploaded resources complied with the HRC-SYS principles in order to be able to publish them and make them available to the general public.

# QUICK ASSESSMENT TOOLS: KINDRA QUERIES

A quick and practical way to assess the contents of the EIGR

<http://kindra.kindraproject.eu/kindra/>

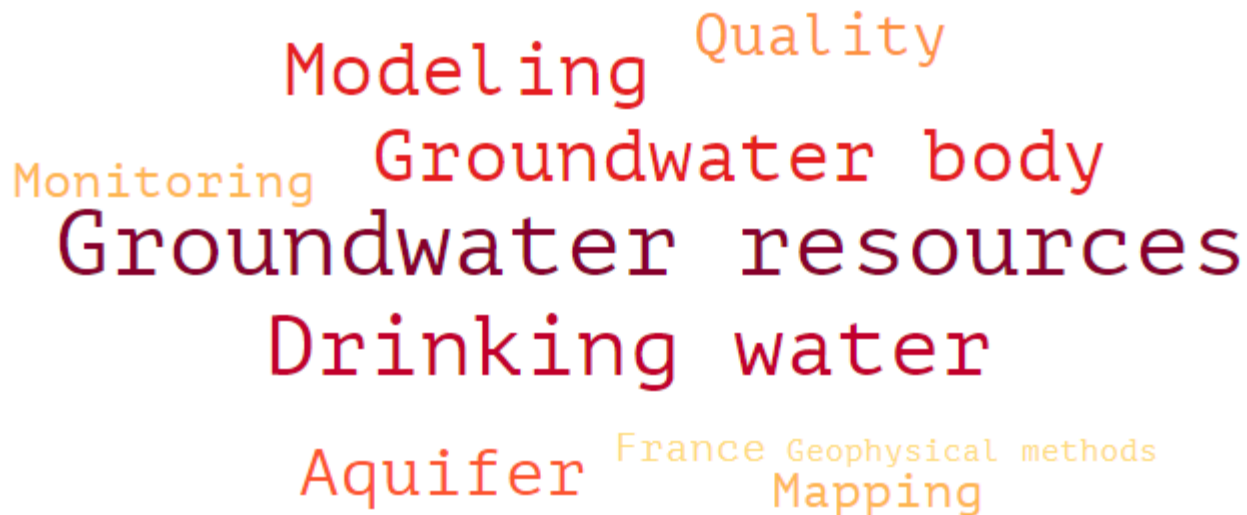


## KINDRA QUERIES: KEYWORDS CLOUD

The 10 most frequent keywords related to the resources uploaded and published through the EIGR.

The larger the font size and darker the colour, the more “popular” the keyword.

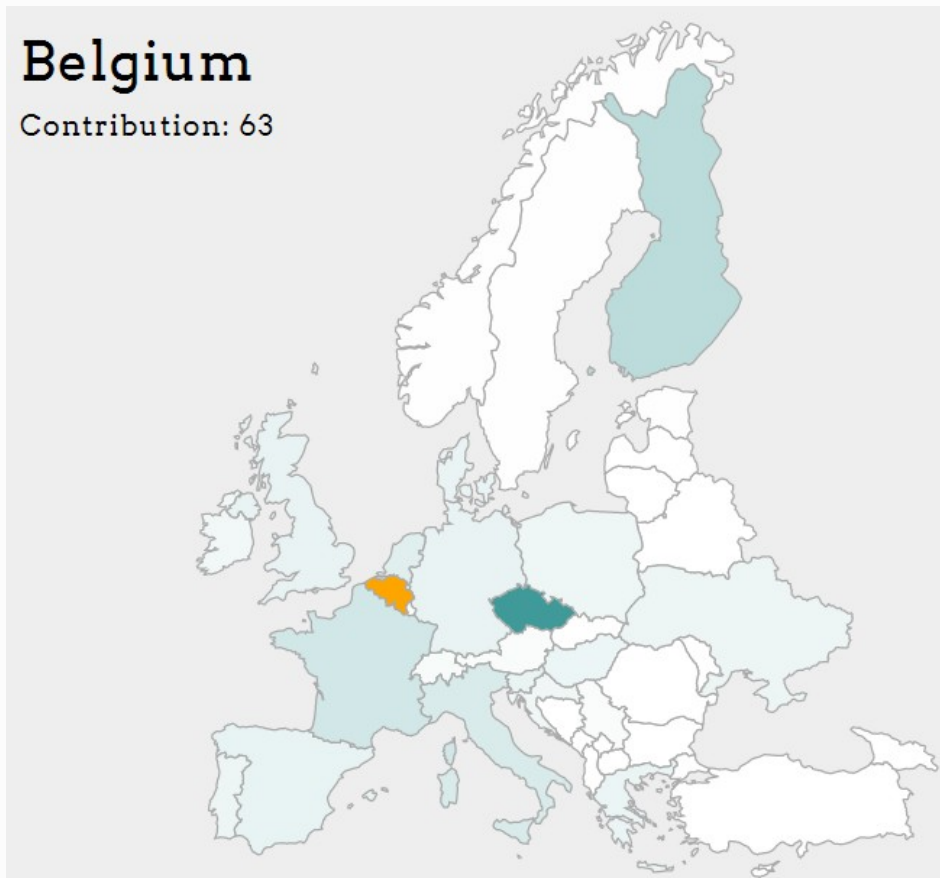
By clicking on one of the keywords, users will be taken to the EIGR and will have the complete list of resources which contain the selected term.



# KINDRA QUERIES: RESOURCE DISTRIBUTION MAP

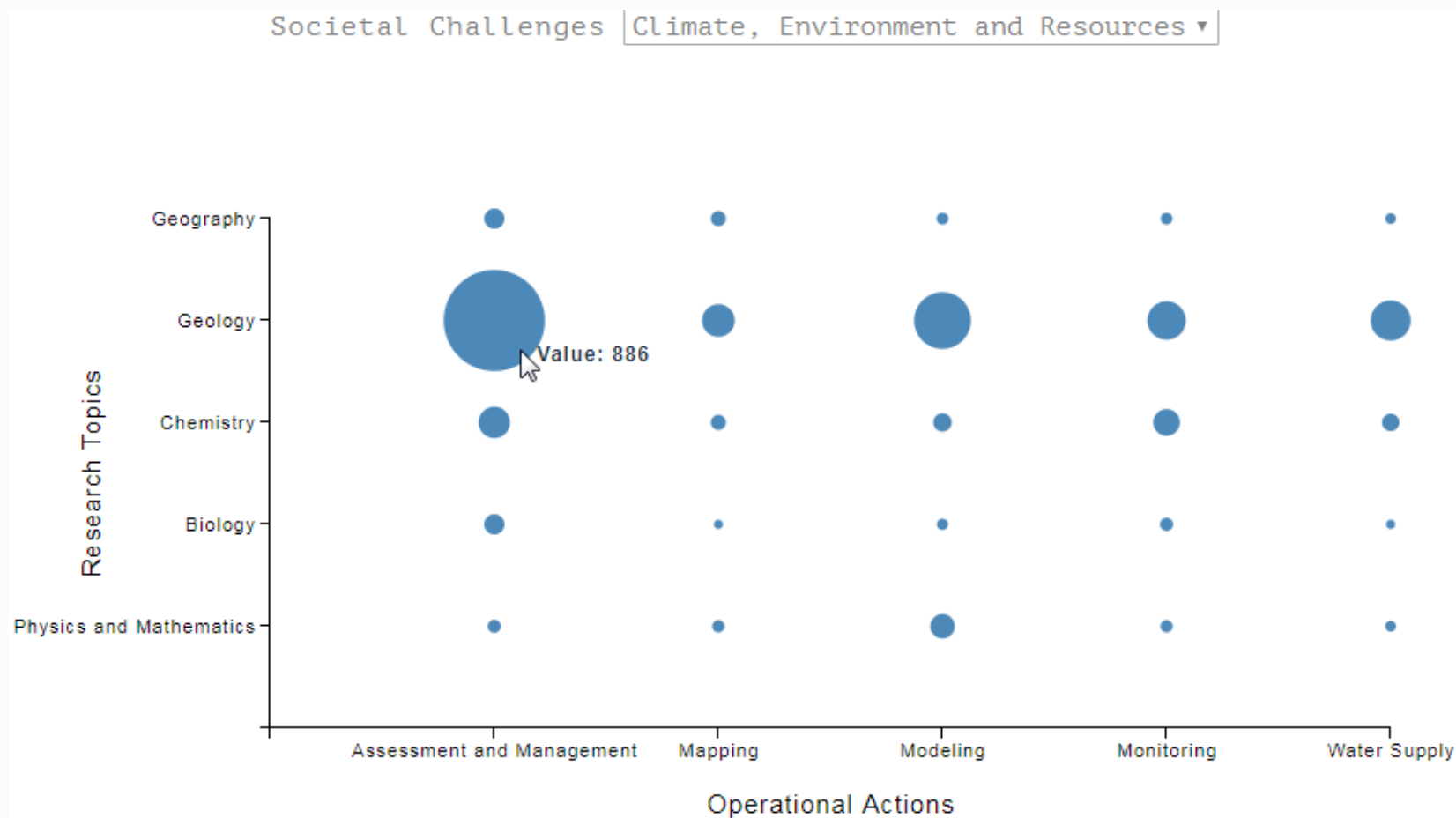
Contributions to Hydrogeology Research from a given European Member State.

Clicking on one of the countries will redirect to the EIQR and will have the complete list of resources that originate from the selected country.



## KINDRA QUERIES: TOPICS 2D CHARTS

It allows viewing the number of resources according to the main Hydrological Research Classification System (HRC-SYS) Topic Categories



# KINDRA QUERIES: CSV Data from Geonetwork

Selection of resources according to a specific term and allows users to download a CSV file containing the information related to all the published resources that comply with the specified criteria.

Export table to CSV

Search:

gmd:title	gmd:date	gmd:organisationName	gmd:role	gmd:linkage	gmd:keyword
TOPSOIL project Drenthe: Electromagnetic induction and soil exploration	2015-11-30	Provincie Drenthe		<a href="#">Link 1</a>	Monitoring Modeling Assessment France Vertical groundwater fluxes
Determination of upward/downward groundwater fluxes using transient variations of soil profile temperature: test of the method with Voyons (Aube, France) experimental data	2005-11-14 2005-08-01	UMR 7619 Sisyphe, Laboratoire de Géologie Appliquée, Université Pierre et Marie Curie (Paris 6)		<a href="#">Link 1</a> <a href="#">Link 2</a>	Soil temperature profile conductive and convective heat transfer Aube

Showing 1 to 10 of 191 entries (filtered from 2,177 total entries)

Previous 1 2 3 4 5 ... 20 Next

## EIGR CHALLENGES AND CONSTRAINTS

The Validation process needed to cover aspects concerning the quality of the resources uploaded

- Accuracy: Is the resource related to the purpose of the EIGR (related to Hydrogeology Research across Europe)?
- Completeness: Is the mandatory, necessary information properly filled out in the metadata template?

Issues appeared during the harvest of information/resources from LTP organizations due to the “compatibility” of their catalogues with the EIGR.

Caused by the customization of the KINDRA metadata schema.

Resulting in many incomplete records being included in the EIGR as they were missing HRC-SYS descriptive terms.

## EIGR CHALLENGES AND CONSTRAINTS

The EIGR is running on Geonetworks 2.10.4, the most stable version that existed at the beginning of the KINDRA Project.

Since then many improvements have been implemented to Geonetworks, being the latest stable version 3.X, which would bring EIGR functionalities to another level concerning information management as well as a more “practical” interface that would allow users to work in a more comfortable fashion concerning uploading and browsing contents as well.

Interoperability issues are not linked to the software. Tailoring the metadata schema to adapt it to the HRC-SYS and to allow for a GAP and TREND Analysis has caused for the harvesting options to “miss” vital information.

This can be solved by implementing a thorough validation process for resources proposed before approving them and proceeding to publish them.

# Thank you very much!

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