



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.



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KINDRA project: aims, expectations and final results

KINDRA final conference
MAKING GROUNDWATER VISIBLE, ACCESSIBLE and TREASURED
Brussels, February 27th, 2018

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*Horizon 2020
Grant Agreement
m° 642047.*

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Member of CIS-WG Groundwater of the European Commission*

Making Groundwater visible, accessible & treasured



Water is a key-topic in modern society. **Groundwater** is the hidden but fundamental component of the water cycle, difficult to assess, evaluate and communicate.



KINDRA seeks to help achieve a better understanding of the groundwater topic by providing an overall view of the scientific knowledge that exists across Europe.



Making groundwater visible:
by dissemination activity along the project, but also raising its role on technical and decision-makers tables inside the “water” community



Making groundwater accessible:
a) by classifying groundwater issues, intersecting its themes (operational actions) in a multidisciplinary approach (research topics) with reference to societal challenges



b) By collecting existing information on groundwater research & knowledge in a public access metadata searchable tool (EIGR)



Making groundwater treasured:
By analyzing gaps&trends in groundwater research & knowledge, to define recommendations aimed at safeguarding groundwater resources in Europe

Aims of the project (2015-2017)

To create an inventory of GW knowledge and use the inventory to identify critical research challenges in line with the implementation of the WFD and new innovation areas within integrated water resources management based on the latest research.

Classification

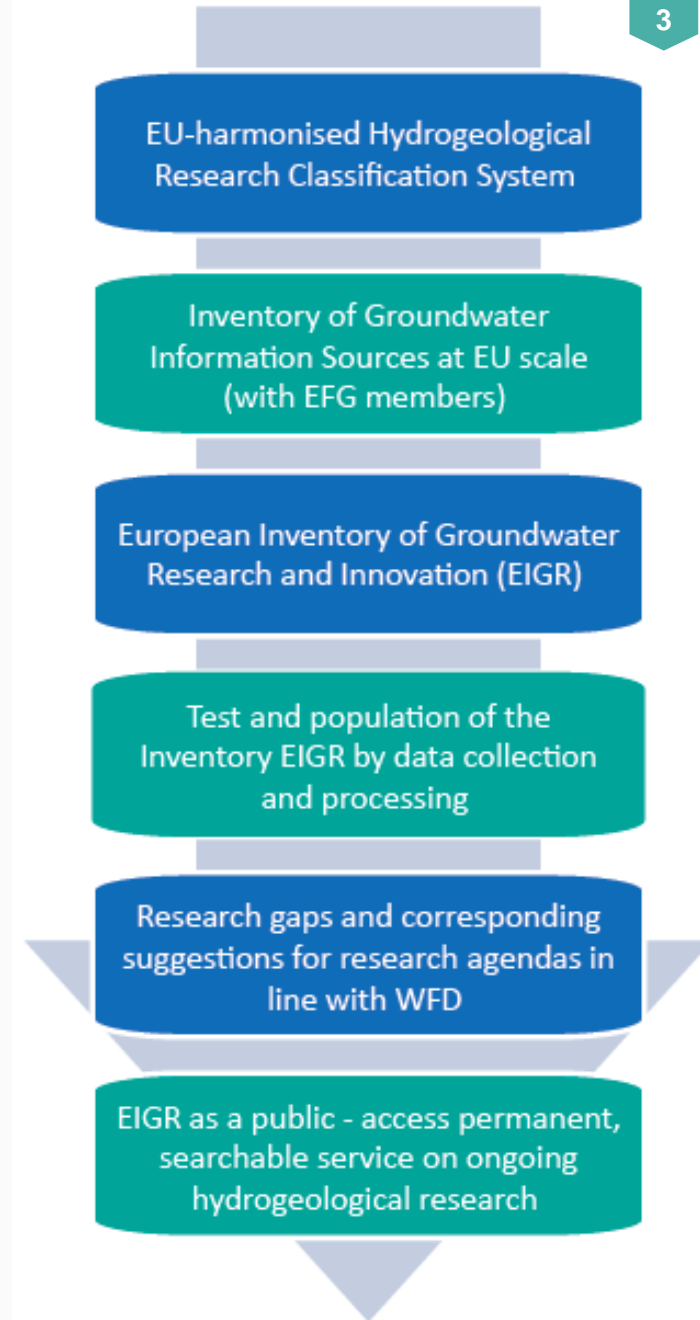
- Joint Panel of Experts (10 experts)

Inventory

- 20 third parties (national representatives of EFG network)

Dissemination

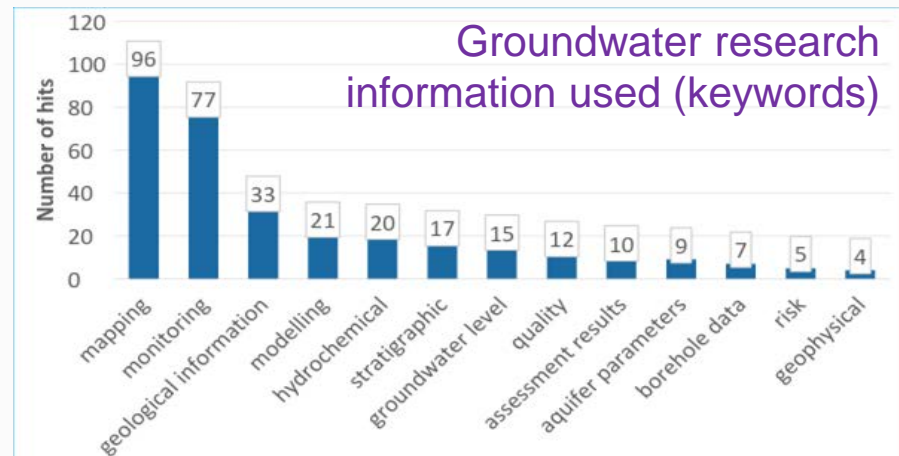
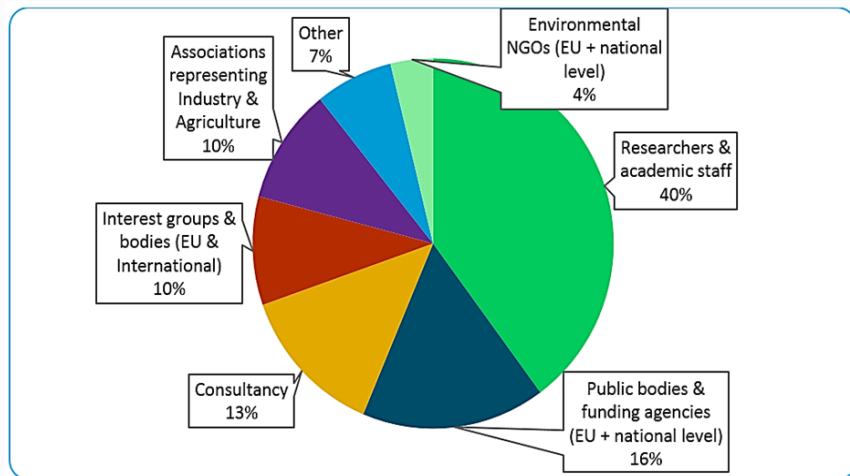
- EFG dissemination capacity
- Collaboration with JPE, CIS WG-C, IAH, WssTP, ICT4water cluster, etc.



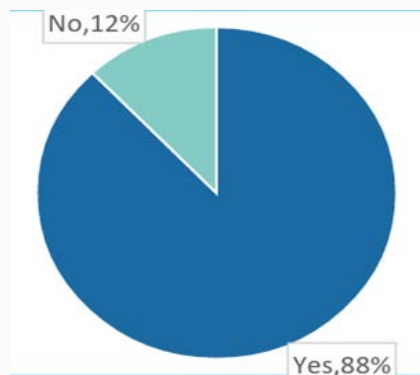
Is a GW research analysis useful/necessary?

Results from an end user survey (2015)

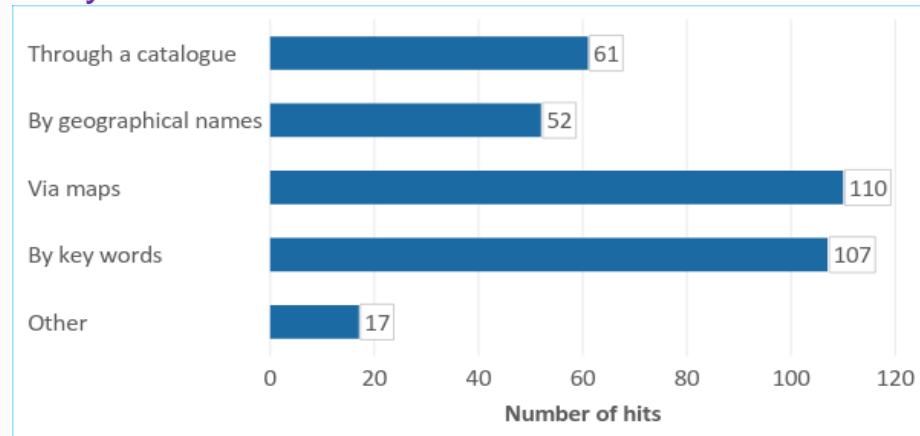
161 responses received on a online survey, including five groups of questions



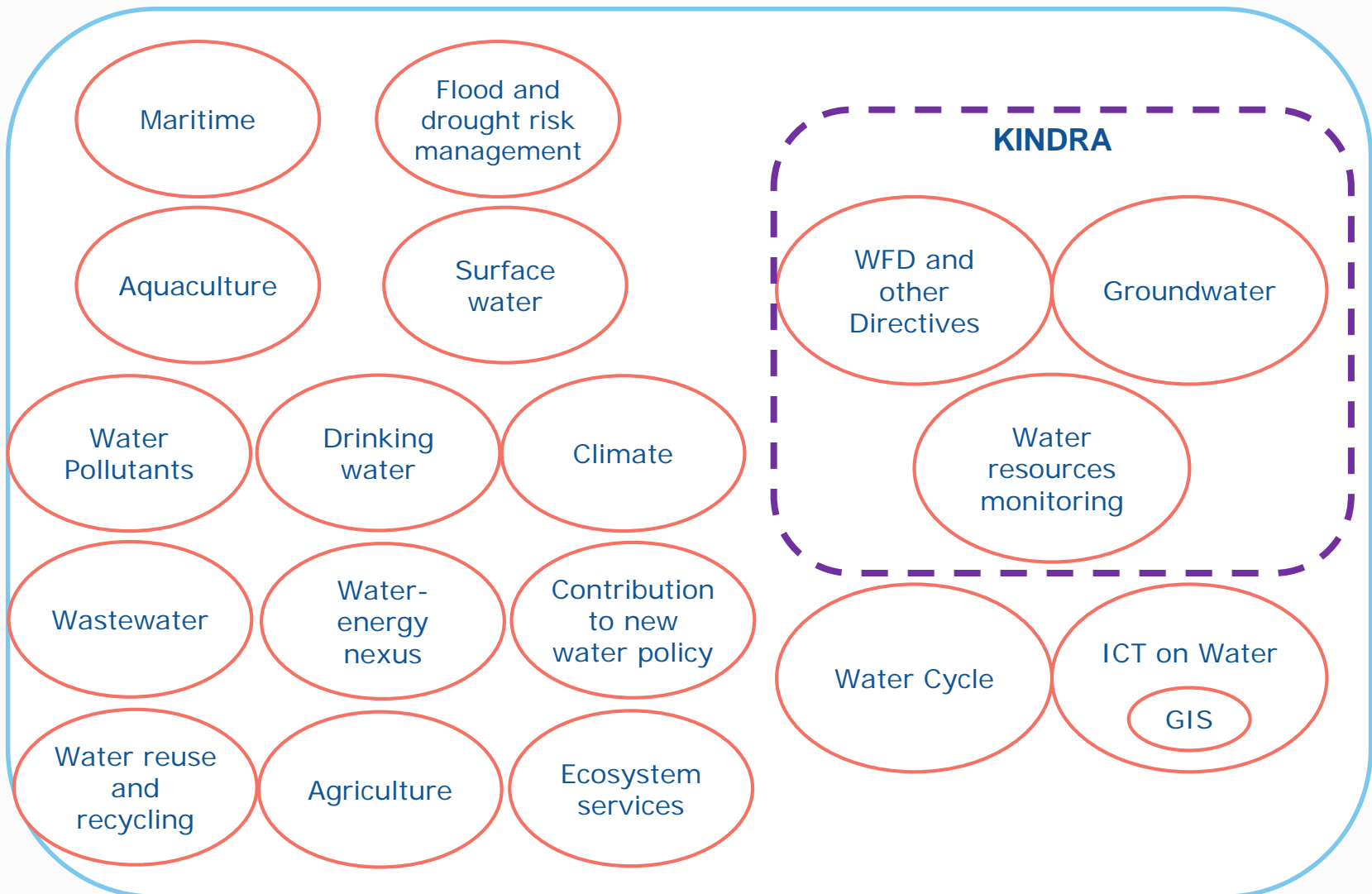
We need a GW classification system?



How you would like to access information on GW R&K?

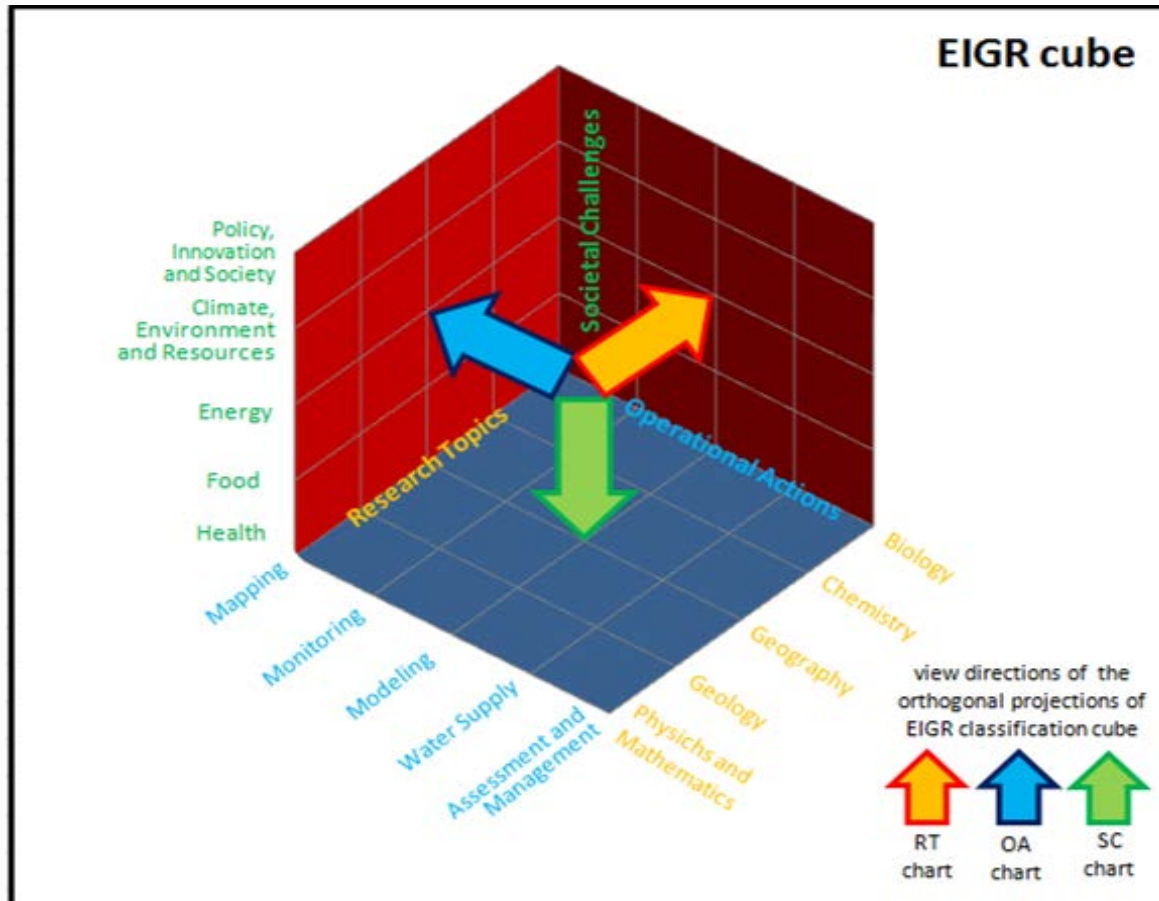


Where is KINDRA located inside water issues?



How to classify groundwater research?

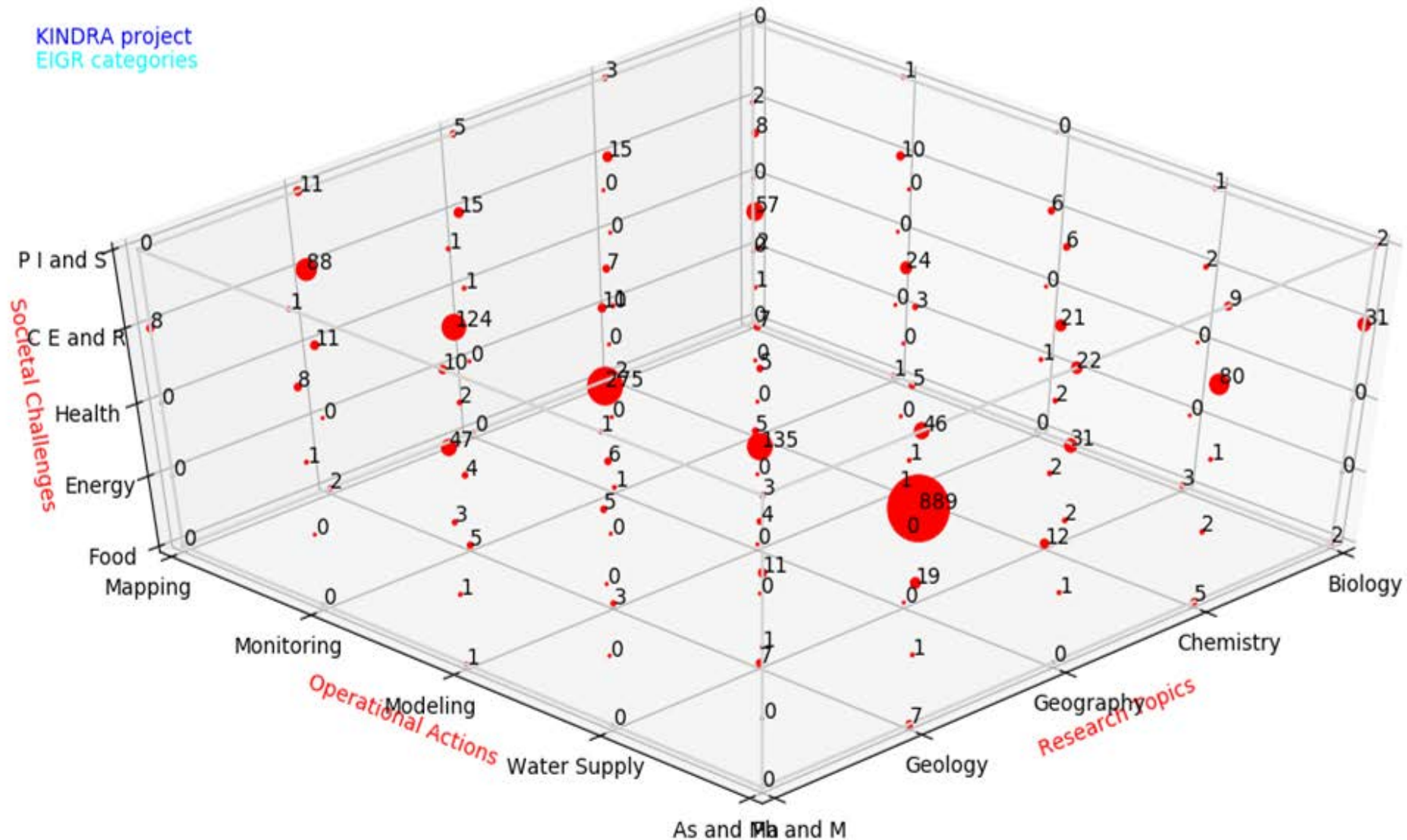
A list of about 240 keywords have been organized in a **tree hierarchy**, identifying **three main categories**: Societal Challenges (SC), Operational Actions (OA) and Research Topics (RT). In each of these three categories, **5 overarching groups** have been defined for easy overview of main research areas, representing level 1. The intersections among SC, OA and RT define the coordinates of each information groundwater related



The novelty of the classification is not semantic, but it is based on the idea to compare the technical activities (OA) by an interdisciplinary approach (RT), with the societal challenges (SC), taking into account that the “water” topic has a great importance in European society

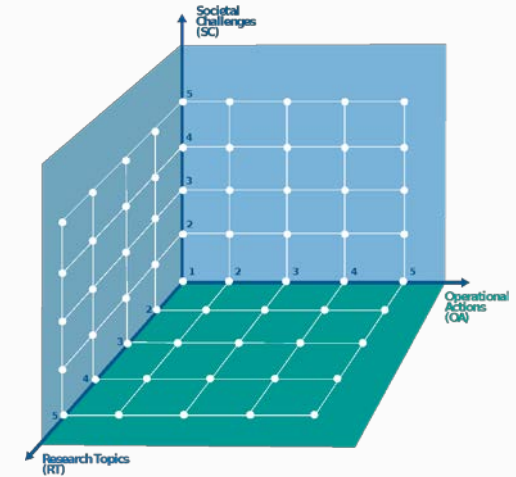
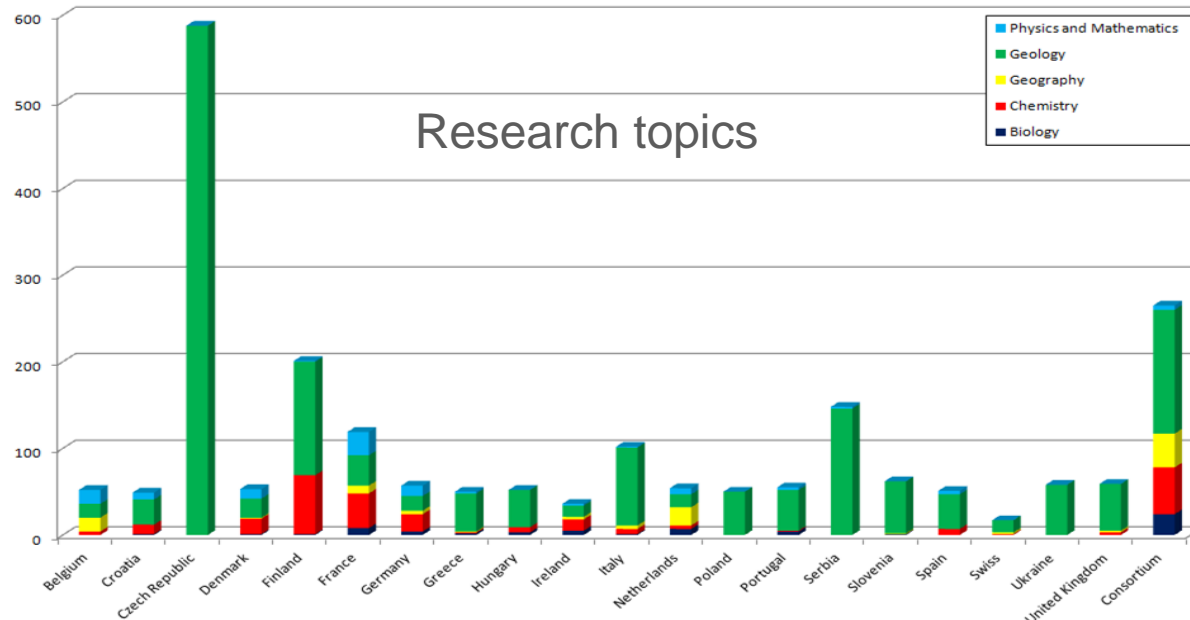
The European Inventory of Groundwater Research (EIGR): 2178 records published

KINDRA project
EIGR categories

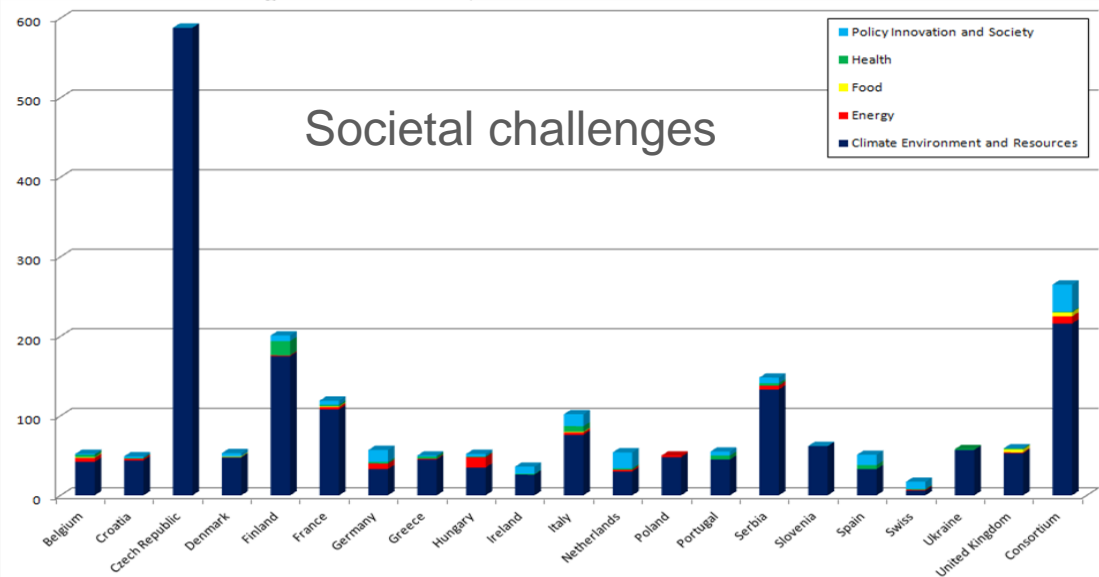


Content of EIGR : national contribution by Linked Third Parties of EFG

Research topics



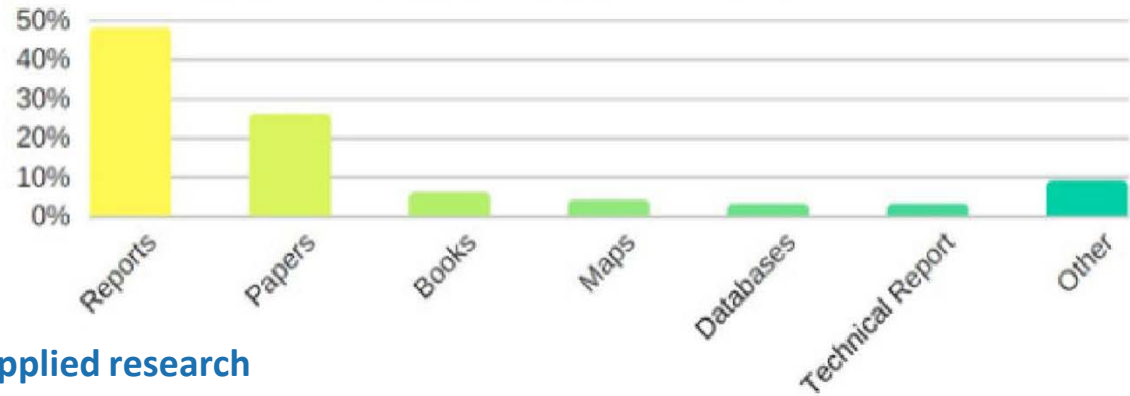
Societal challenges



Content of EIGR: not only research but also knowledge

Not only peer review papers, but mainly reports, guidelines, databases, etc.

FROM EUROPEAN RESEARCH SINCE 2000



Research and applied research projects (e.g. EU and Interreg projects)



Surveys including relevant data and maps



Consulting reports for ministries and other authorities



Peer review papers



Technical reports and guidances

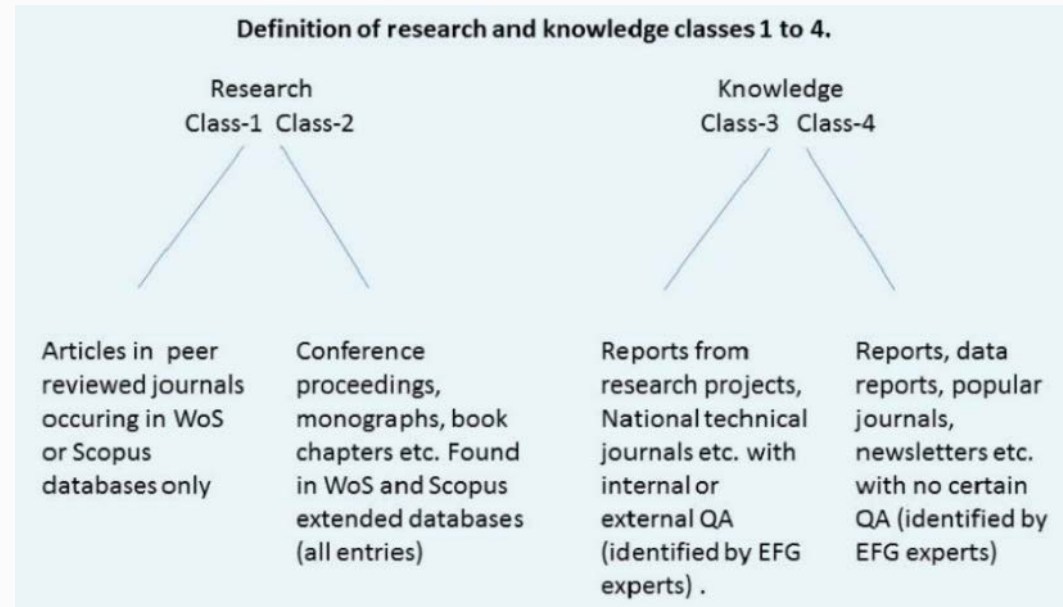
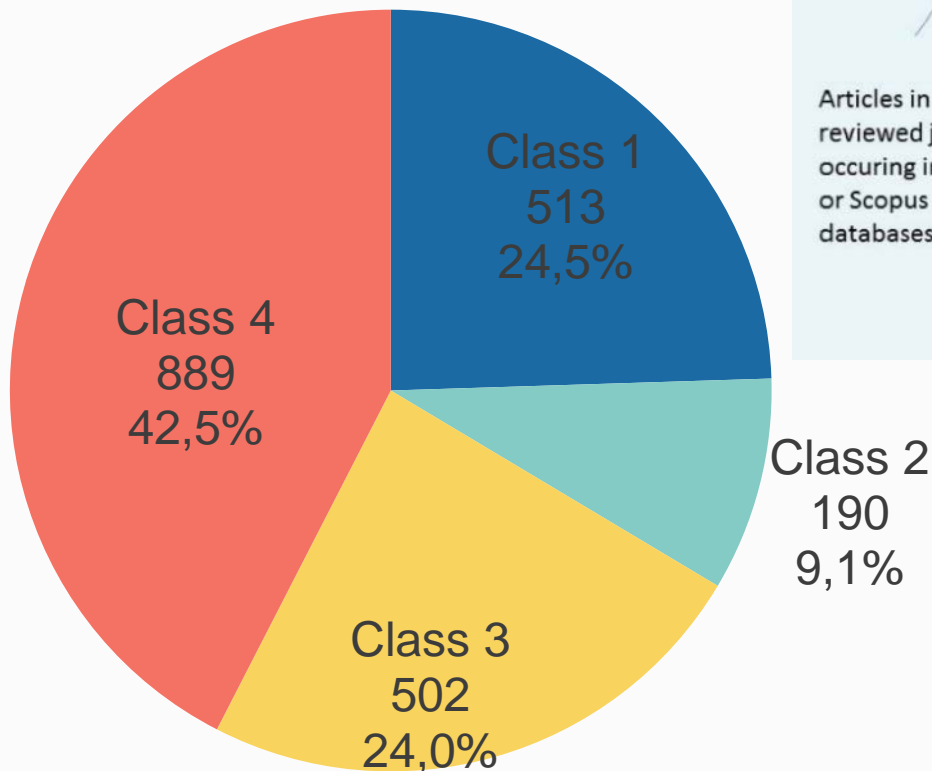


Books and book chapters, monographs, etc.



Databases

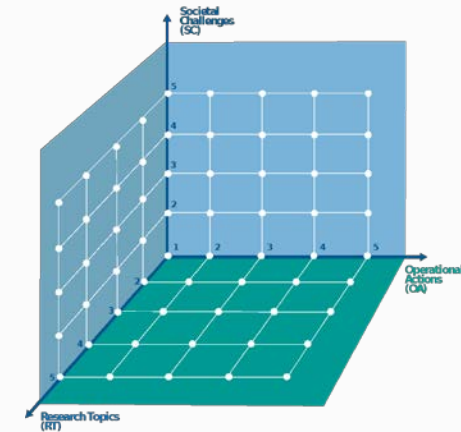
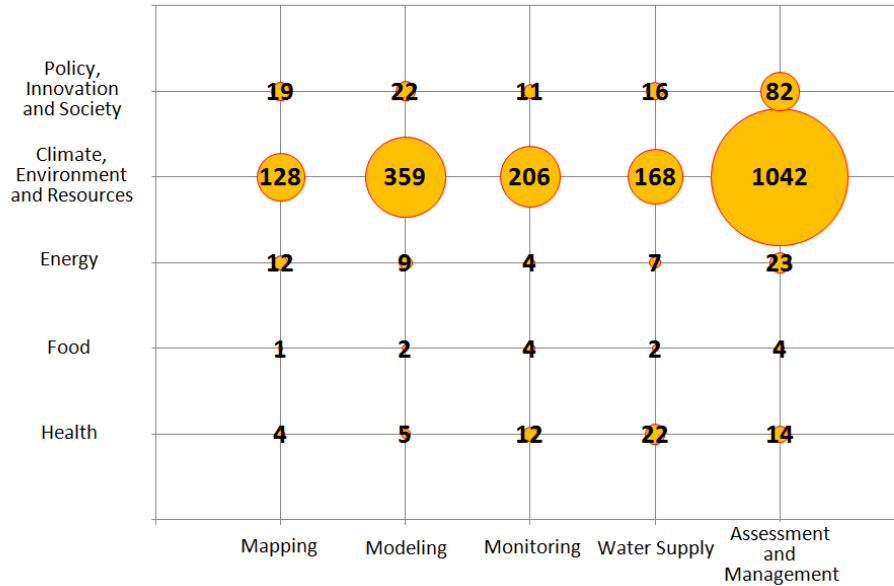
Content of EIGR: Classification of 'research' and 'knowledge'



Grey literature and national literature is included!

Content of EIGR: occurrence (and bias) in 2D diagrams

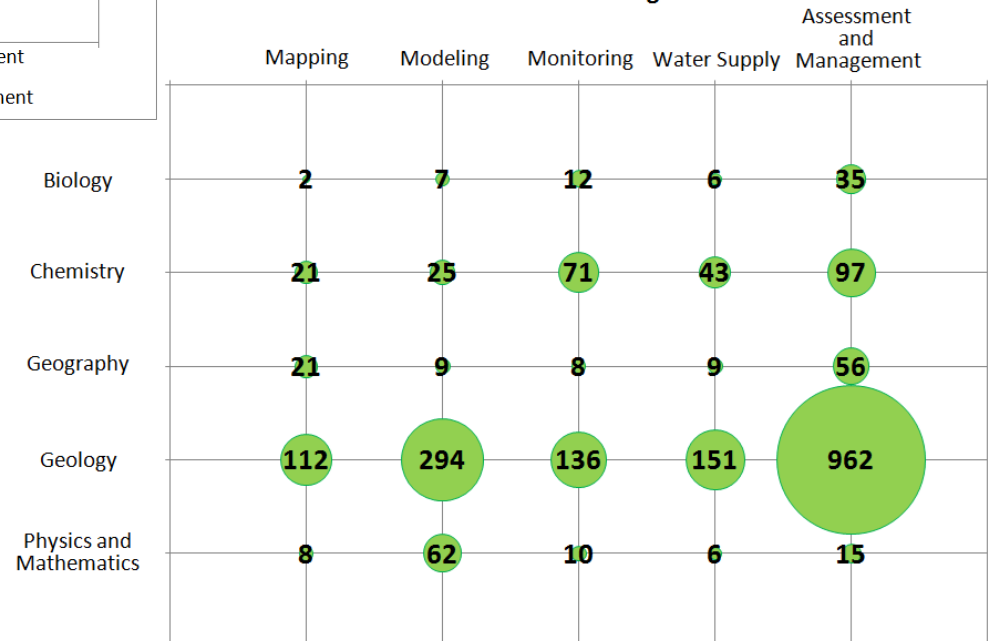
Research Topics



EIGR was compiled by geologists and Geology is the most important topic.

Among SC, Climate, Environment and Resources shows the highest number of records

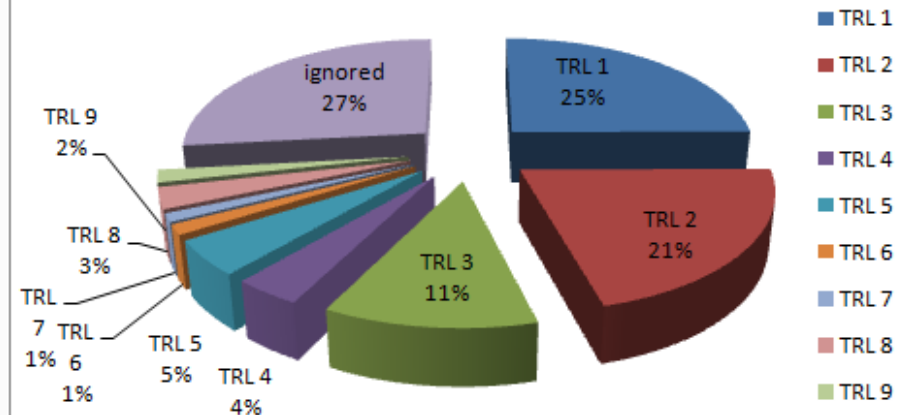
Societal Challenges



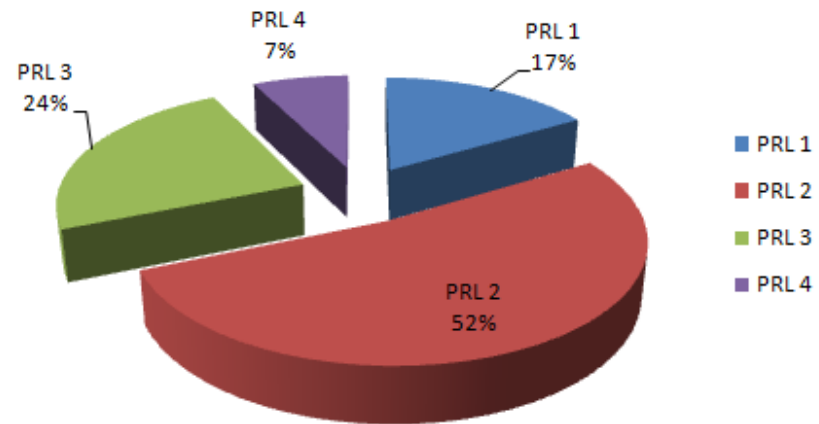
Content of EIGR:

TRL (technology readiness level) and PRL (policy readiness level) indicators

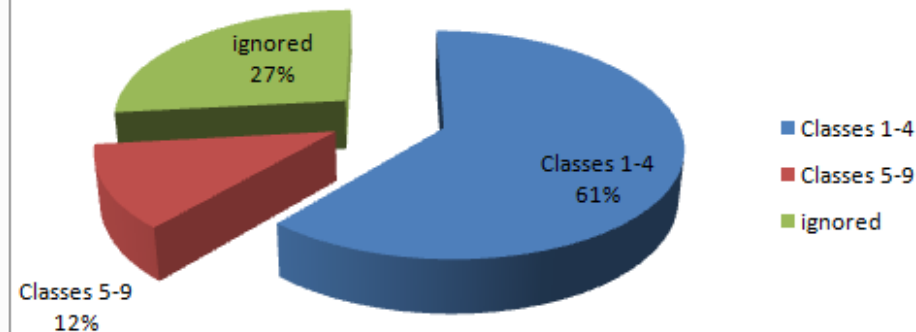
TRL



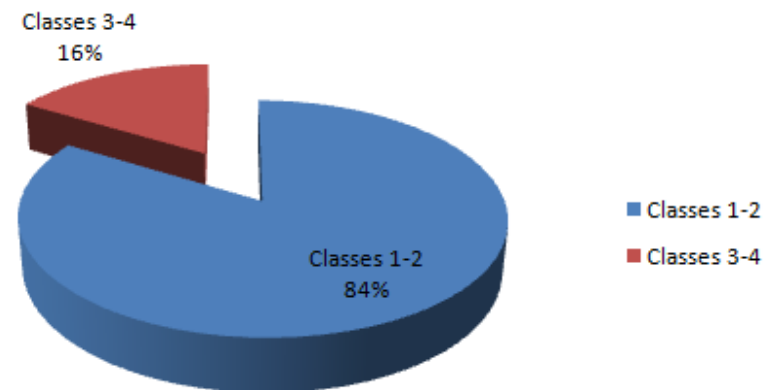
PRL



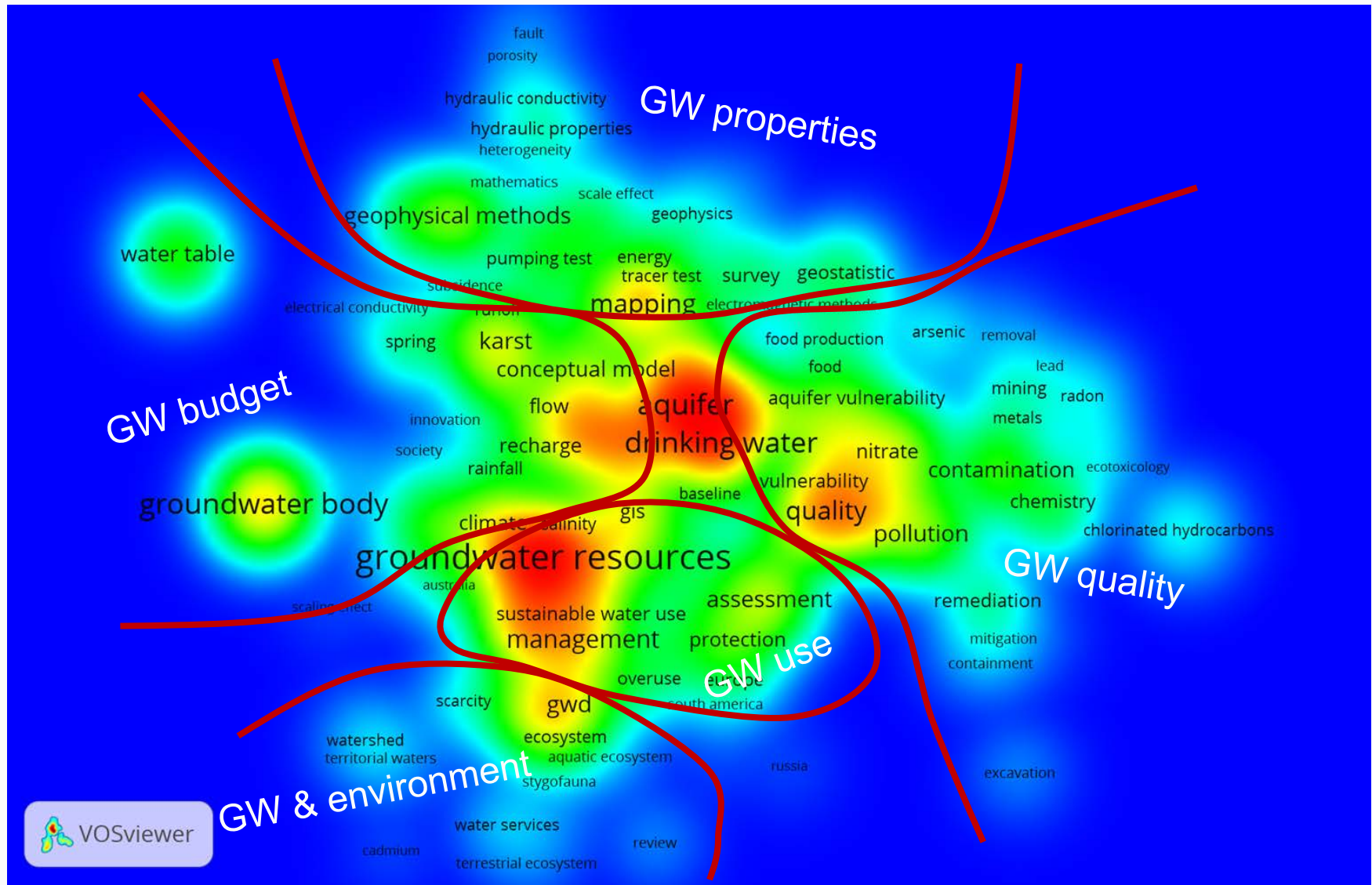
TRL index



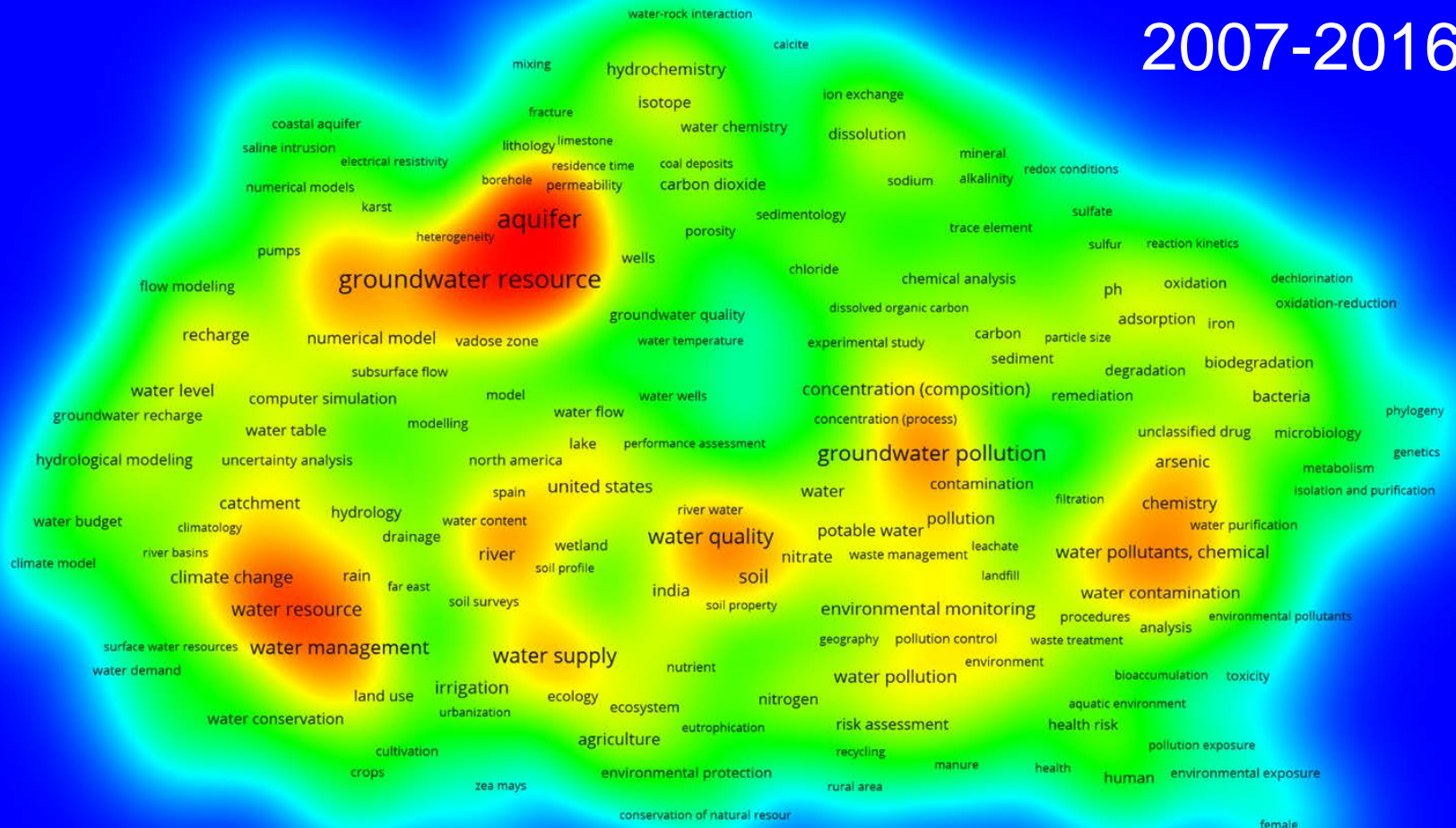
PRL index



Are the EIGR record representative, due the limited number of metadata (and linked bias)?
Hydrogeological significance (“quality assurance”)



2007-2016



Challenges of the project (to be tackled in the future)



Bias in RT Geology and in SC
Climate, Environment, Resources
need to be solved by
interdisciplinary approach



How to manage the EIGR after the
end of the project: role of other
projects, international
associations or entities



Sufficient number of inserted
records, allowing the analysis of
gaps&trends, to be compared with
larger research databases



Would EIGR be linked and/or
merged with other international
databases on groundwater:
technical issues (compatibility) and
real interest by future users



Looking for editors: the EIGR has to
be continuously filled with new
records, but its “attraction
capacity” is limited at the moment



Record upload in the EIGR: formal
insertion control and quality
assurance control of the records;
how to dedicate resources for this
activity



The classification system can be adopted by groundwater community after the
project? Is it reflecting the research & knowledge in hydrogeology at European scale?
Final users at national scale would have advantages in adopting this approach?

Next steps: recommendations to EC and life after the project

- ✓ From gaps & trends analysis recommendations for policy implementation need to be addressed
- ✓ Your opinion as experts, potential users, local and international organizations would be very useful (please fill the questionnaire!)
- ✓ how to increase the number of records (and the attractiveness) of the EIGR



- ✓ Synergies of KINDRA with other existing or further projects (SUBSOL, GeoERA, etc.)
- ✓ Possible adoption, merging, inclusion, of EIGR in existing groundwater databases (WINS, GGIS, GeoERA Information Platform/EGDI etc.)
- ✓ Dissemination of the KINDRA approach among associations, working groups, international EU platforms/clusters, and at national level

@kindraproject



Thanks for your attention!

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

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