KINDRA

Knowledge Inventory for hydrogeology research

KINDRA

Knowledge Inventory for hydrogeology research

The KINDRA H2020 project: a knowledge inventory for hydrogeology research

EGU meeting, Vienna, April 16, 2015
HS8.2.1 - Groundwater resources in a changing environment

SAPIENZA
UNIVERSITÀ DI ROMA

Marco Petitta, Balazs Bodo, Mariachiara Caschetto, Victor Correia, Adrienn Cseko, Maria Di Cairano, Isabel Fernandez, Eva Hartai, Klaus Hinsby , Tamas Madarasz, Mikita Viktória, Mercedes Garcia Padilla, Peter Szucs, Peter van der Keur

Project partners

including:
- A Joint Panel of Experts (10 members)
- 20 third parties (associations acting as national members of EFG network)

Aims of the project (2015-2017)

To create an inventory of GW knowledge-base and then 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.

✓ Create a uniform EU-harmonised categorisation approach / terminology for reporting groundwater research (a Hydrogeological Research Classification System – HRC-SYS).

✓ Carry out EU-wide assessment of existing practical and scientific knowledge (using the developed HRC-SYS) focusing on EU, national, regional, international and EU-third party scientific activities

✓ Create a European Inventory of Groundwater Research and Innovation (EIGR). This register will be supported by a web-service that will be searchable by selected key-words and will support users with query functions for statistics, diagrams, and others concise data elaboration.

✓ Use the data in the register and the developed analytical tools (qualitative/quantitative) to assess the performance of key ongoing EU, national, regional, international and EU-third party hydrogeological scientific and innovation activities and results.

✓ Compare the results with existing recommendations and position papers, outcomes of past Projects workshops, recommendations by the EIP on Water /WssTP

✓ Define research gaps and corresponding suggestions for research agendas in line with WFD

✓ Deploy the Register as a public-access service, to be used as a permanent, searchable service on ongoing hydrogeological research and innovation

Project structure

WP4 - Dissemination and communication (LPRC)

Dissemination and management
Dissemination and support services
Leveraging dissemination and dialogue

WP1 - Methodology framework development (SAPIENZA)

harmonised framework for reporting hydrogeology-related research and innovation (programmes, projects, results, agendas, etc) in Europe:
-Hydrogeological Research Classification System – HRC – SYS
-European Inventory of Groundwater Research- EIGR

WP2 - Data collection and processing (EFG)

EU- wide assessment of existing practical and scientific knowledge on hydrogeology-related research and innovation in Europe:
-   National workshops on Hydrogeology
-    Data collection and processing
-     country reports

WP3 - Research gaps and recommendations (GEUS)

Identify research gaps in hydrogeology research that have relevance for the implementation of the Water Framework and Groundwater Directives (WFD and GWD)
-Hydrogeology research evaluated
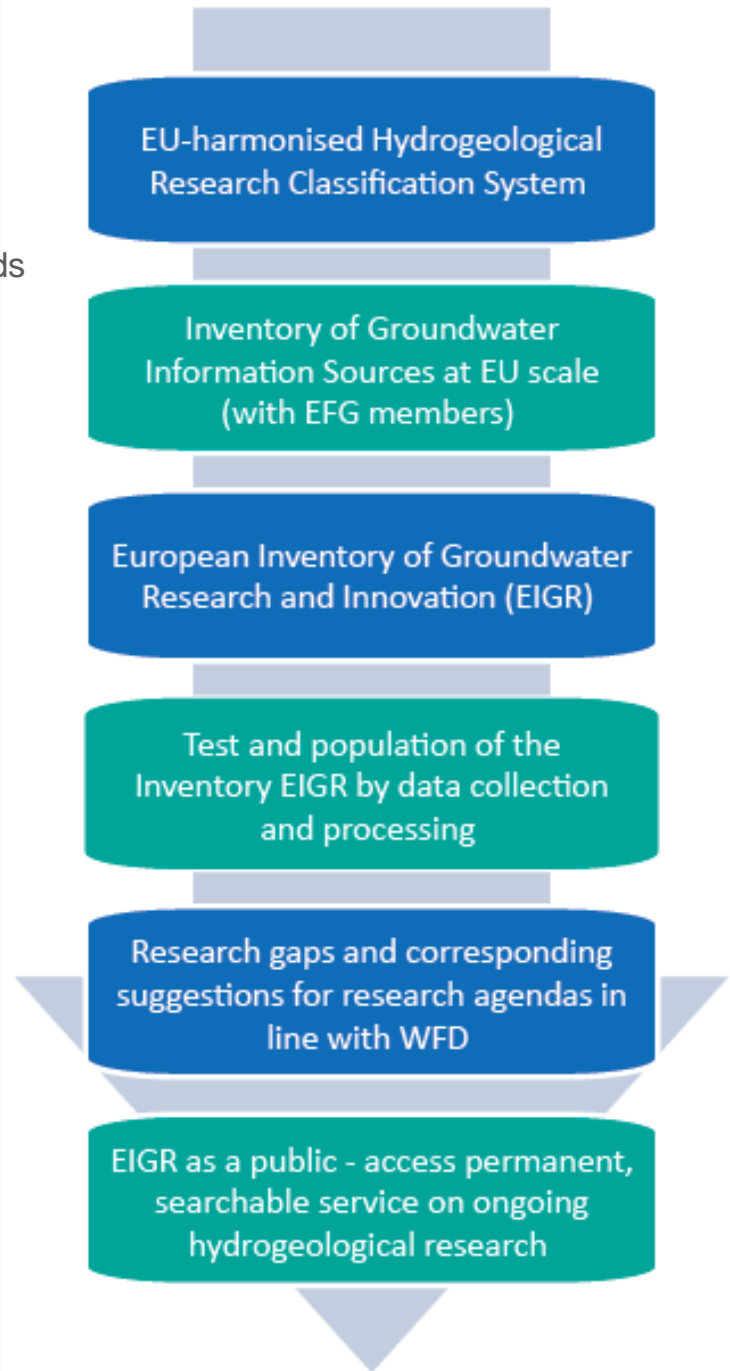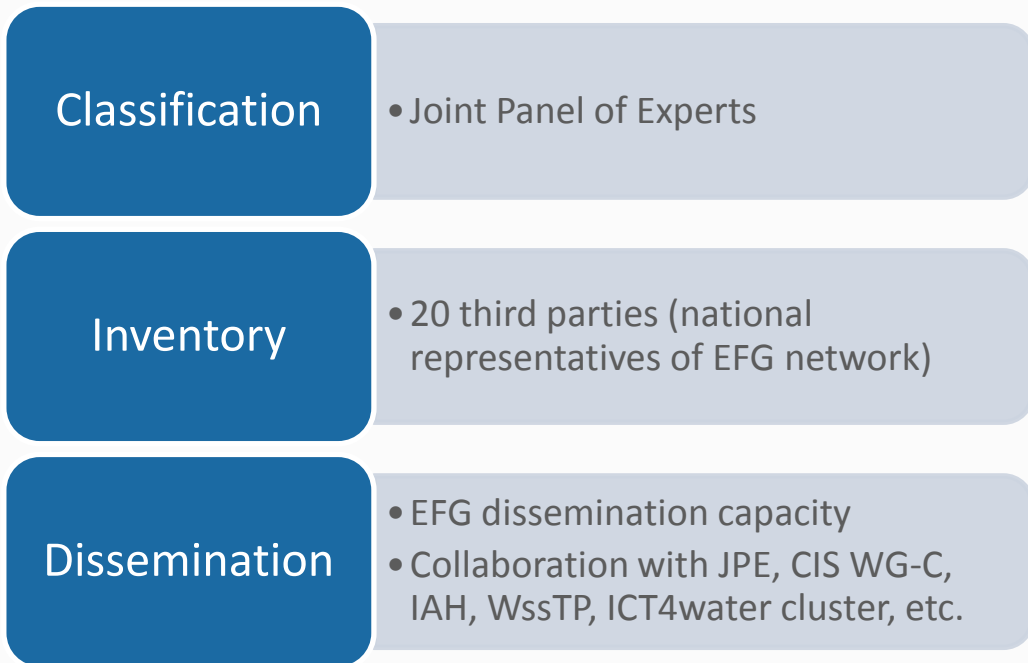-Research gaps identified
-Recommendations formulated

WP5 - Project management (SAPIENZA)

Quality Assurance and Risk Management
Project Coordination
Project management
Exploitation of results and IPR

Vision of the project

- From the state of the art to research and knowledge gaps and trends
- Our inventory will include research RESULTS, not a research list
- Keywords and a classification system have to be selected
- Obtained data in the register can be analyzed and evaluated using developed analytical tools

Who can help us?

Classification	• Joint Panel of 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.

EU-harmonised Hydrogeological Research Classification System

Inventory of Groundwater Information Sources at EU scale (with EFG members)

European Inventory of Groundwater Research and Innovation (EIGR)

Test and population of the Inventory EIGR by data collection and processing

Research gaps and corresponding suggestions for research agendas in line with WFD

EIGR as a public - access permanent, searchable service on ongoing hydrogeological research

WP1 - Methodology framework development (classification), based on three main categories

RESEARCH TOPICS

BASIC KNOWLEDGE

THEORETICAL ADVANCEMENTS

INSTRUMENTS AND TOOLS

POLLUTION AND REMEDIATION

VULNERABILITY/PROTECTION

THRESHOLDS & BACKGROUNDS

E-FLOWS AND GDE

SW-GW INTERACTIONS

WATER SCARCITY AND DROUGHT

Etc.

Corresponding to branches (main keywords) of hydrogeology research

SOCIETAL & ENVIRONMENTAL CHALLENGES

FOOD

HEALTH

INDUSTRY

ENERGY

CLIMATE

AGRICOLTURE

ENVIRONMENT

ECOSYSTEMS & ECOSERVICES

URBAN AREAS & SMART CITIES

Etc.

Themes expressing pressures and needs

ACTIVITIES & ACTIONS

GW BODIES CHARACTERIZATION

GW BUDGETS

MONITORING

GUIDELINES & BEST PRACTICES

QUALITY ASSESSMENT

MODELING

POLICY AND GOVERNANCE

REGIONAL STUDIES

CONCEPTUAL MODELS

Etc.

Corresponding to technical evaluations and decisions

Methodology for classification

- **Identification of relevant keywords from WFD, GWD and Blueprint documents**
- **Research of keywords using Web of Sciences (including search statistics):**

TS=Groundwater

TS=Groundwater AND keyword = AD: Country of author affiliation

TS=Groundwater AND keyword = TEXT: country for which keyword appears

Search for keywords in 'abstract' and 'keywords indication'

- **Research of keywords using Google Scholar** (including reports, book chapters etc)**:**

Bibliography of the 5 most cited papers with "AD" and the 5 most cited papers in "text"

Time period 2006-2015 (to be extended to 2000)

Note: TS=Searc Term, AD=Affiliation address of authors; time period=2006-2015

- **Analyses of the number of hits found with the searches:**

Sorting of keywords by: *Total number of papers, Total citations, average citations, H-index, Highest citations*

- **Results:**

Graphical display in diagrams and organization of keywords in the main three categories

RESEARCH TOPICS

SOC & ENV CHALLENGES

ACTIVITIES & ACTIONS
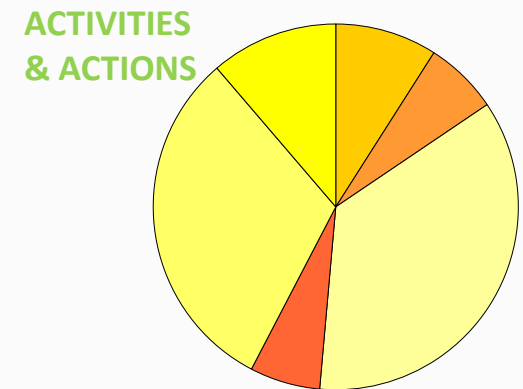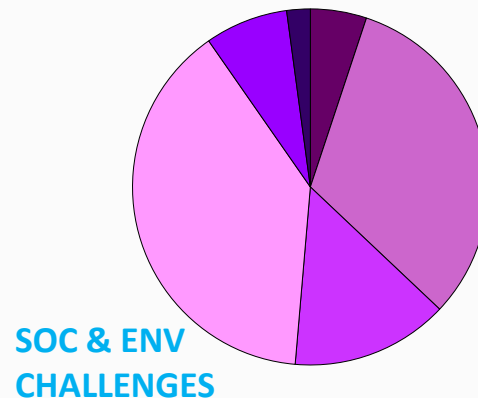
How to combine the main three categories (taxonomy and ontology)?

a) Matrices

PROBABILITY LEVEL	SEVERITY CATEGORY			
	I CATASTROPHIC	II CRITICAL	III MARGINAL	IV NEGLIGIBLE
(A) Frequent	1 (IA)	3 (IIA)	7 (IIIA)	13 (IVA)
(B) Probable	2 (IB)	5 (IIB)	9 (IIIB)	16 (IVB)
(C) Occasional	4 (IC)	6 (IIC)	11 (IIIC)	18 (IVC)
(D) Remote	8 (ID)	10 (IID)	14 (IIID)	19 (IVD)
(E) Improbable	12 (IE)	15 (IIE)	17 (IIIE)	20 (IVE)

b) tree-organized groups
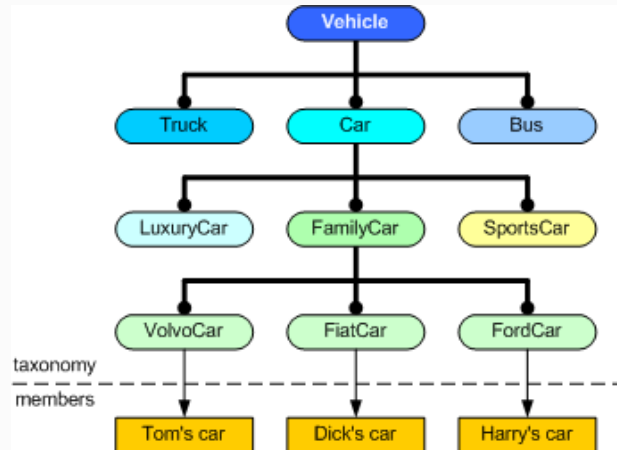
c) 3D organization
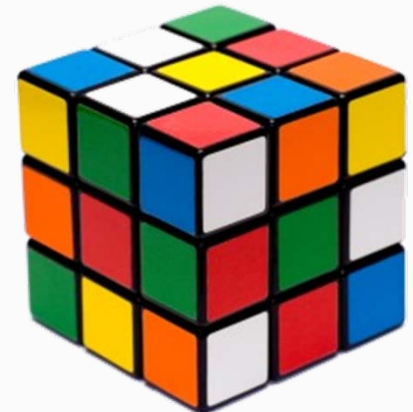
WP4 - Dissemination synergies and strategies

✓ Our network is available for interacting with other groups, for dissemination and common initiatives (joint workshops, shared non-technical documents, etc.)

✓ EC requires coordination among all Water4a projects (WIDEST, WaterInnEU, FREEWAT and BlueSCities); and with 10 previous « water » FP7 projects federated in the ICT4water cluster

✓ We are interested to have contacts with stakeholders, EIP water action groups, SPI researches, JRC water, water JPI, scientific associations (IAH, EGU), water networks (as WssTP and others), SMEs, etc.

✓ Knowing the results of past and on-going project on groundwater is necessary for us to build a successfull project

✓ We are looking for information to help us to build and populate our inventory: archives, monitoring databases, guidance and best practice documents, etc.

✓ We are performing a preliminary inventory of information sources (by EFG members) and a stakeholder analysis by a survey to provide a continuous assessment monitoring of end-user interest

✓ We activated accounts on main social media networks

✓ The EFG and IAH communities are reached by their newsletters

Thanks for coming

Have a nice day!