



The KINDRA - Groundwater Research Classification System (HRC-SYS)

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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.

Making groundwater visible, accessible and treasured

By:

- developing a groundwater research **classification** system and providing easy access to groundwater research and knowledge classified based on the Horizon 2020 grand societal challenges
- Providing easy access to research and knowledge information available in papers, reports and other resources classified according to the developed classification system in a **European Inventory of Groundwater Research (EIGR)** using the "FAIR" principles¹ and compiling information not available elsewhere
- Identifying groundwater research **trends and gaps**

¹Wilkinson, et al. 2016. Principles for scientific data management and stewardship. Scientific Data 3, sdata201618. doi:10.1038/sdata.2016.18. www.nature.com/scientificdata.

How to classify European groundwater research and knowledge?

Keywords

(nitrate, quality, quantity etc.)

Societal Challenges

(health, climate change etc.)

Operational Actions

(mapping, monitoring, modelling etc.)



Research Topics

(geology, geography, chemistry etc.)

Type of resource / degree of quality assurance

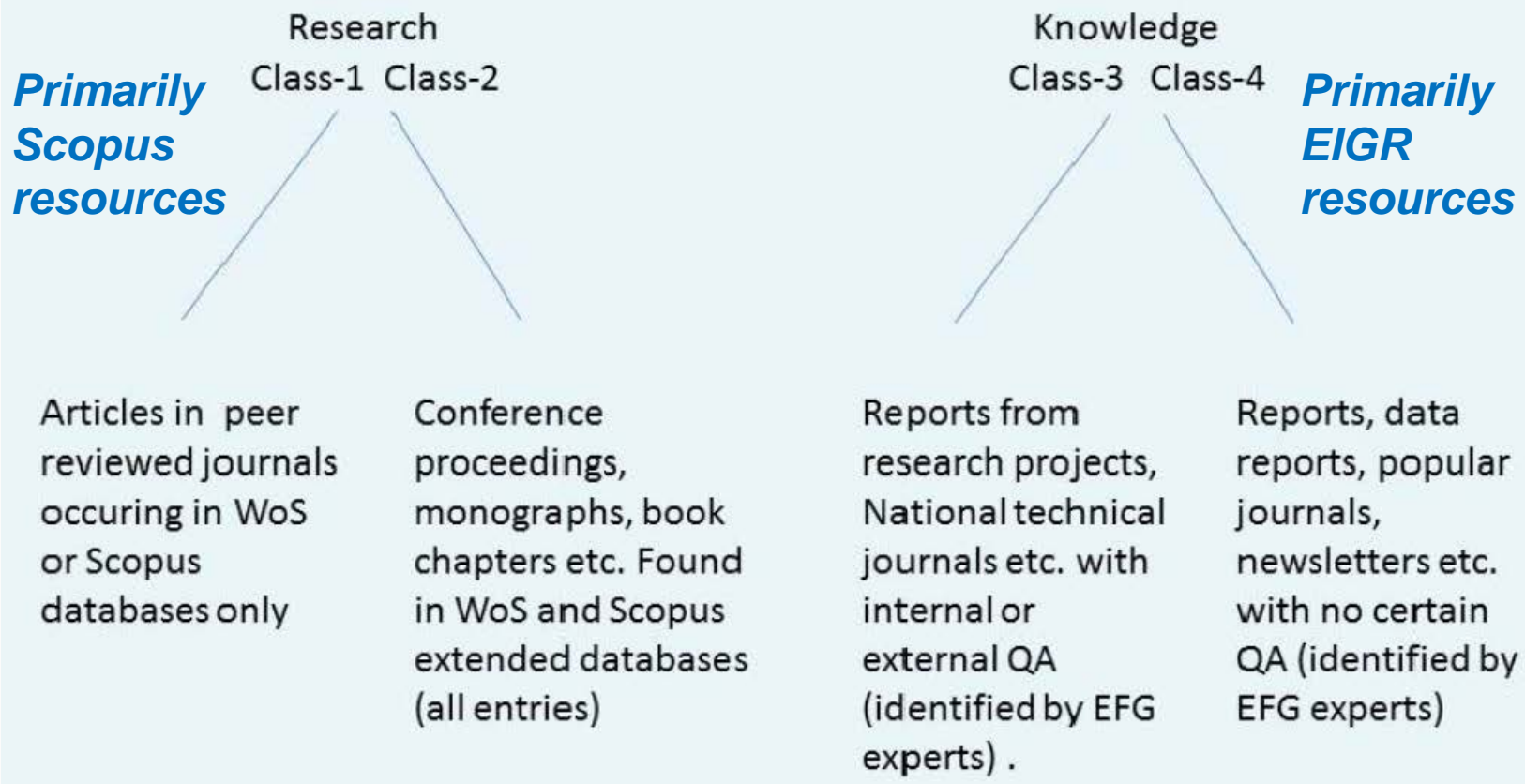
(articles, proceedings, reports etc.)

EU policies

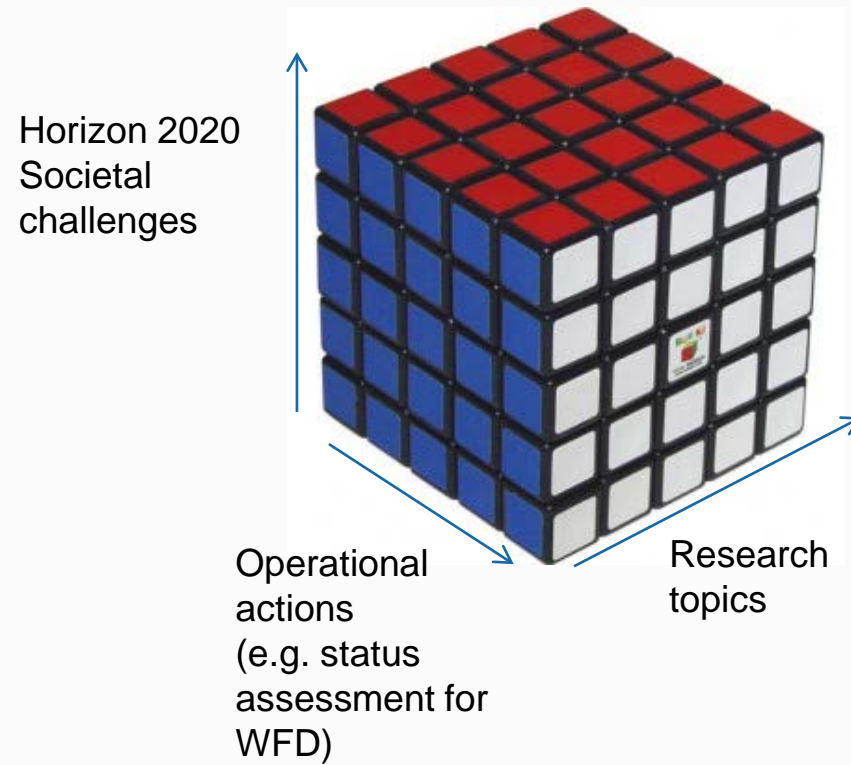
(water Framework and groundwater directives etc.)

Available resources to be classified - grouped in 'research' and 'knowledge' categories based on the degree of Quality Assurance (QA)

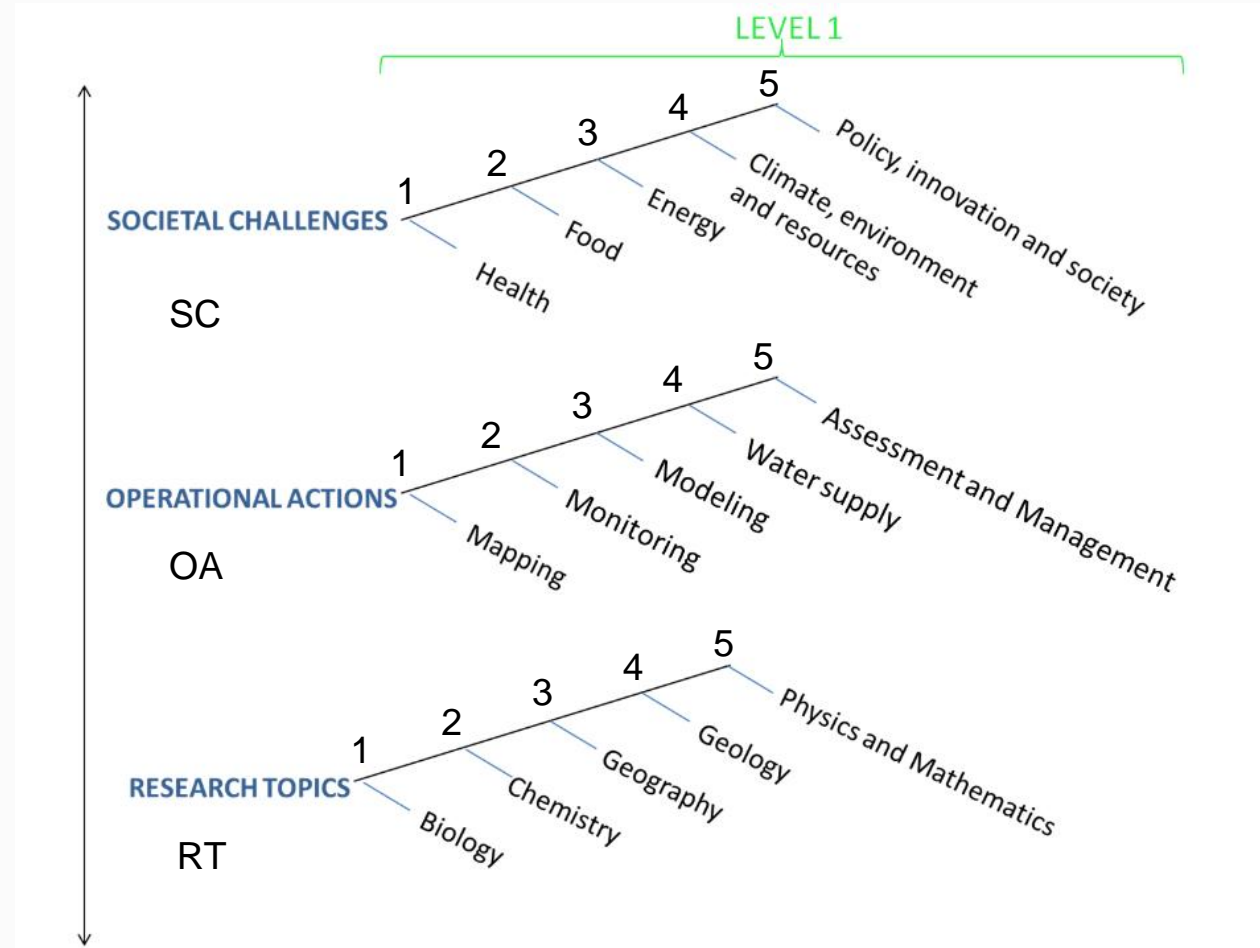
Definition of research and knowledge classes 1 to 4.



How to define and relate the research categories (in Europe)?

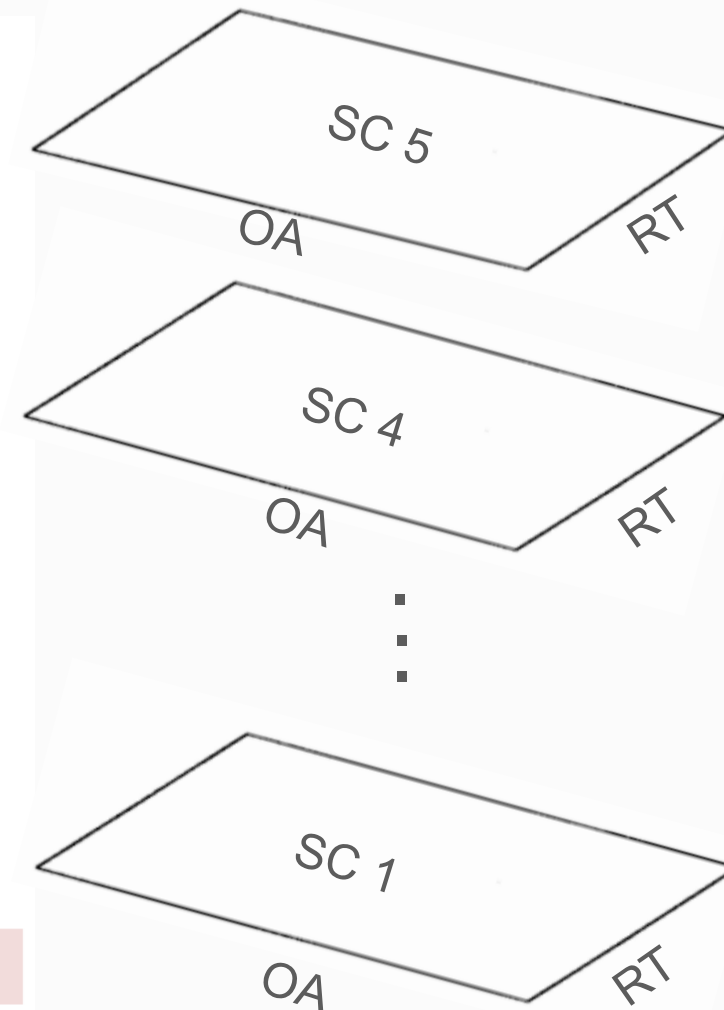
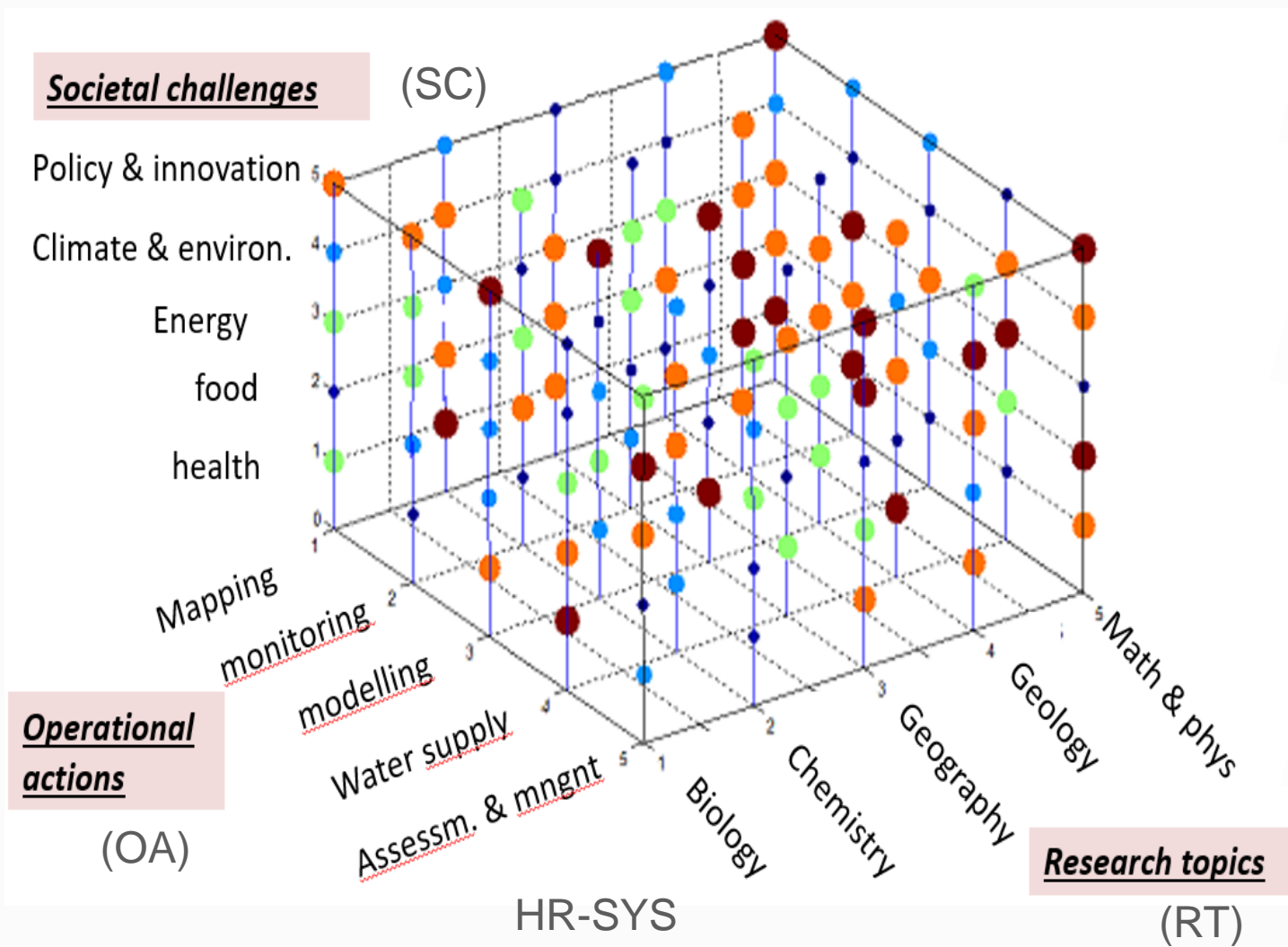


Defined main categories for groundwater research classification:



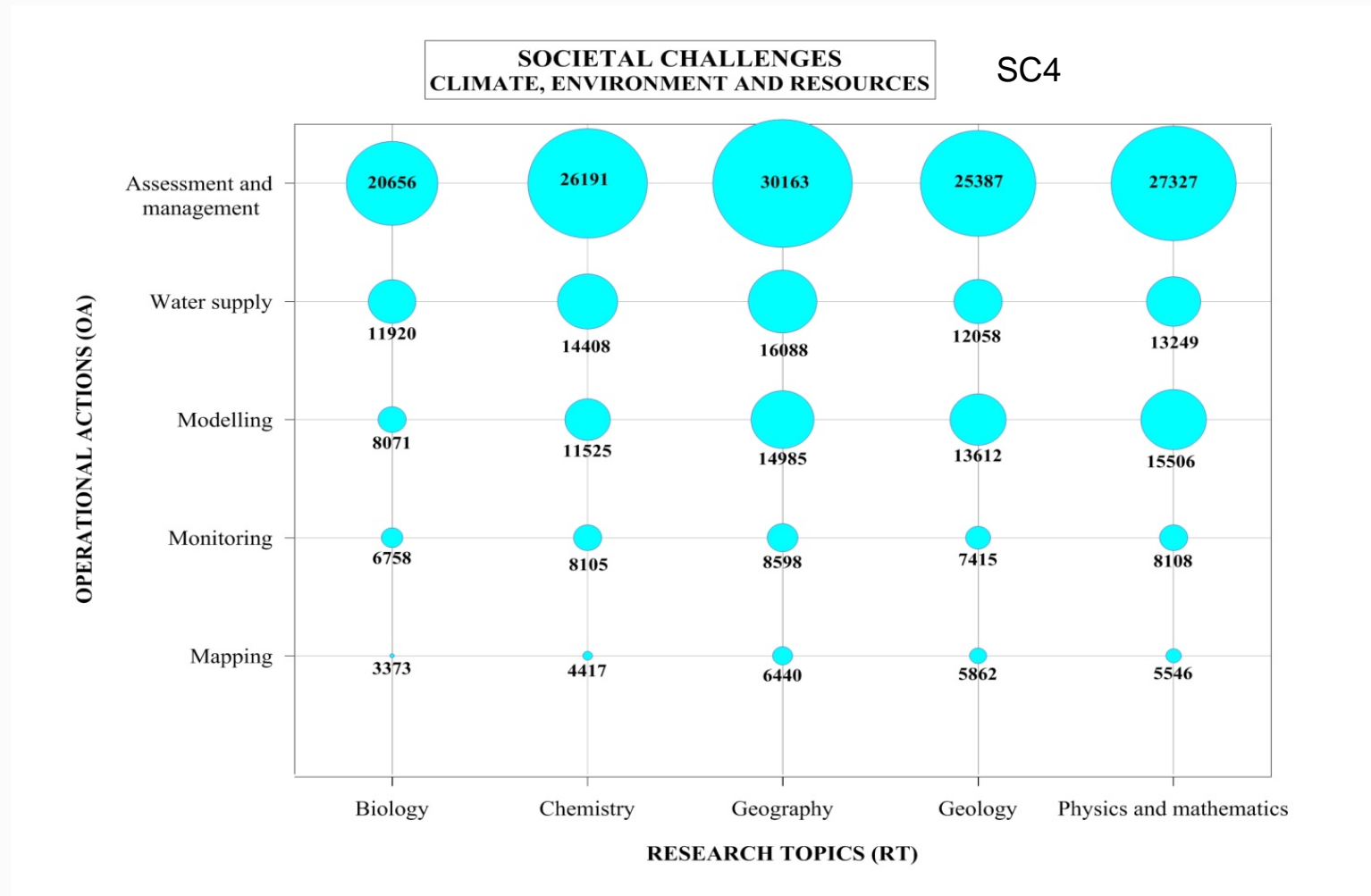
Each category has associated keywords used to identify the research papers and reports etc. At all 125 SC, OA and RT intersections in the Rubiks cube.

3D conceptual illustration of main categories of the HRC-SYS groundwater research classification system (125 research combinations defined at the intersections – size of circles indicate amount of publications / the scientific output)



2D slice of cube at SC4: Climate, environment and resources, 1997-2016

Scopus: # of class 1 and 2 publications: 63.248

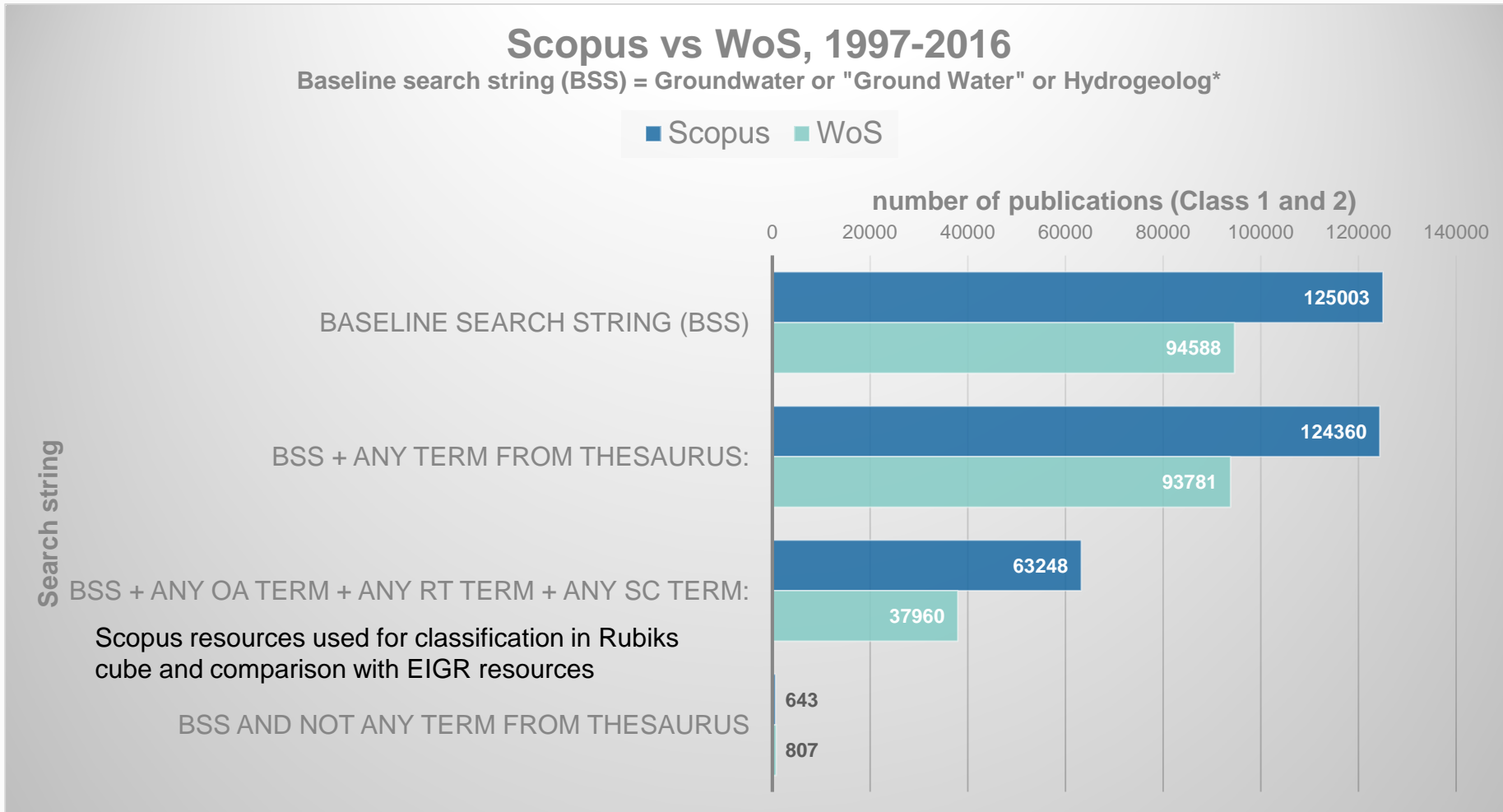


More than 200 main keywords were selected from:

- 20 leading groundwater science journals
- Scopus / Web of Science / Google Scholar
- EU policy documents (Water Framework and Groundwater directives, Blueprint to Safeguard Europe's Water Resources)

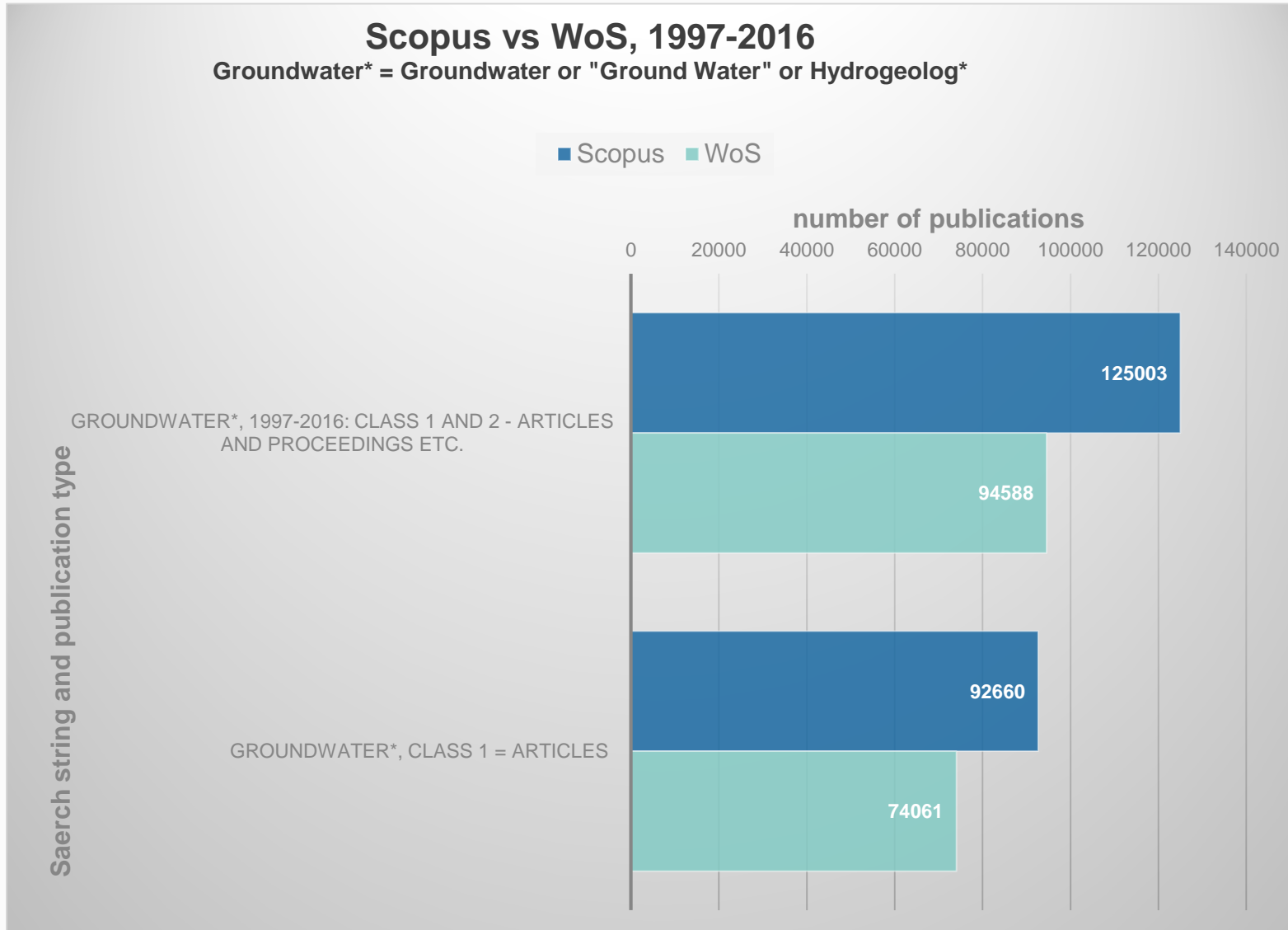
NOTE! For upload of resources information to EIGR the reporters have to select the most relevant SC, RT and OAs and additional keywords from the EIGR thesaurus list - in case of missing keywords they may suggest new ones to be later approved by the KINDRA project.

Coverage/completeness of keywords: groundwater publications in Scopus and WoS: 1997 – 2016, (e.g. identified by using keywords of KINDRA/EIGR thesaurus).



Groundwater class 1 and 1+2 publications in Scopus and WoS, 1997 – 2016:

Test



Thank You 😊

more information available at

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