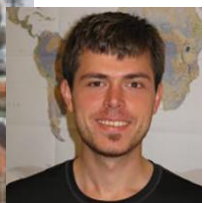




*Hydrogeological processes and Geological settings **over** Europe controlling dissolved geogenic and anthropogenic elements in groundwater of relevance to human health and the status of dependent ecosystems*



Laurence Gourcy (BRGM) – Project coordinator



Klaus Hinsby (GEUS) WP2 and WP6



Daniel Elster (GBA) WP3



Jens Aamand (GEUS) WP4



Matthew Ascott (BGS) WP5



Stefan Broda (BGR) WP7



Benjamin Lopez (BRGM) WP8



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HOVER





Challenges

- Heterogeneity of knowledge and GW quality data over Europe
- Developing products of interest at different scales combining precise local data (even with depth related variability) to scarce, one shot, incomplete dataset, long-term regular monitoring
- Having the 29 EGS learning from each other, sharing their vision on hydrogeology and having different working methods





HOVER – a diversified project

- In numbers of countries involved (from 2 to 17) in WP
- In the way to upscale point information – from statistics, country side, based on lithological classes, simplified transfer models, GW bodies....
- In the tools used for presenting the results; 1 D maps, time scale maps, interactive maps, pilot sites description, scientific and technical reports, guidelines....
- In targets and topics considered: health, ecology, diffuse pollution, urban and agriculture pressure, global change



WP3 – elements of natural origin



Customize your web map by filtering contents.
Please read the manual for this web map:
[document](#)

Classification of sources:
All type of sources

Name of source:

Country: All countrys

Water temperature at the outlet: All temperature classes

Use: All type of uses

Type of water source: All types

Yield class: All yield classes

Groundwater age: All groundwater ages

Dissolved total solid (TDS) classes: All classes

Aquifer media type according to INSPIRE: All types

Aquifer type according to INSPIRE: All types

Lithology of the aquifer according to INSPIRE: All lithologies

Lower geochronologic era of the aquifer material according to INSPIRE: All ages

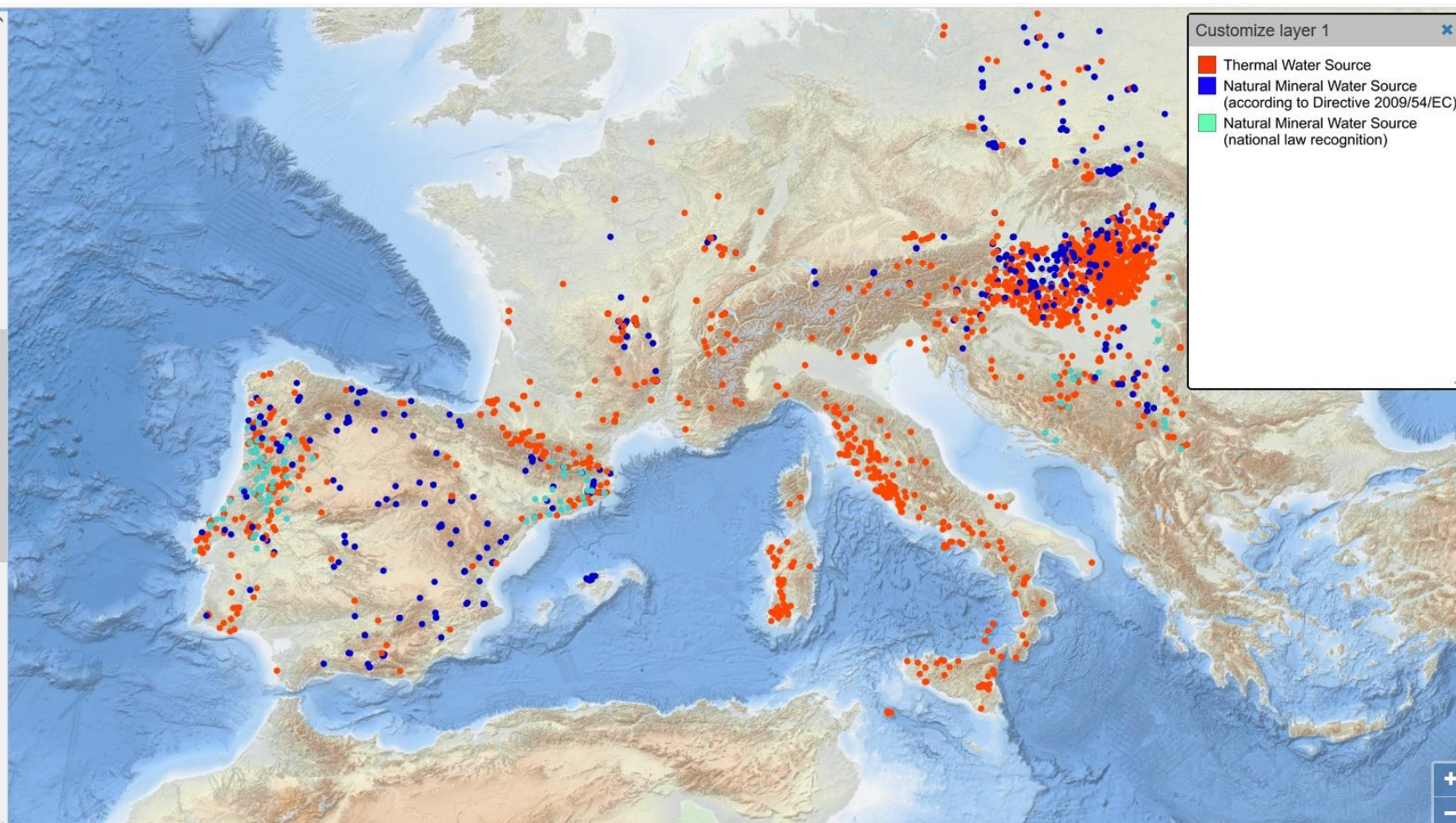
Upper geochronologic era of the aquifer material according to INSPIRE: All ages

pH: -

Sodium (mg/l): -

Potassium (mg/l): -

Calcium (mg/l): -

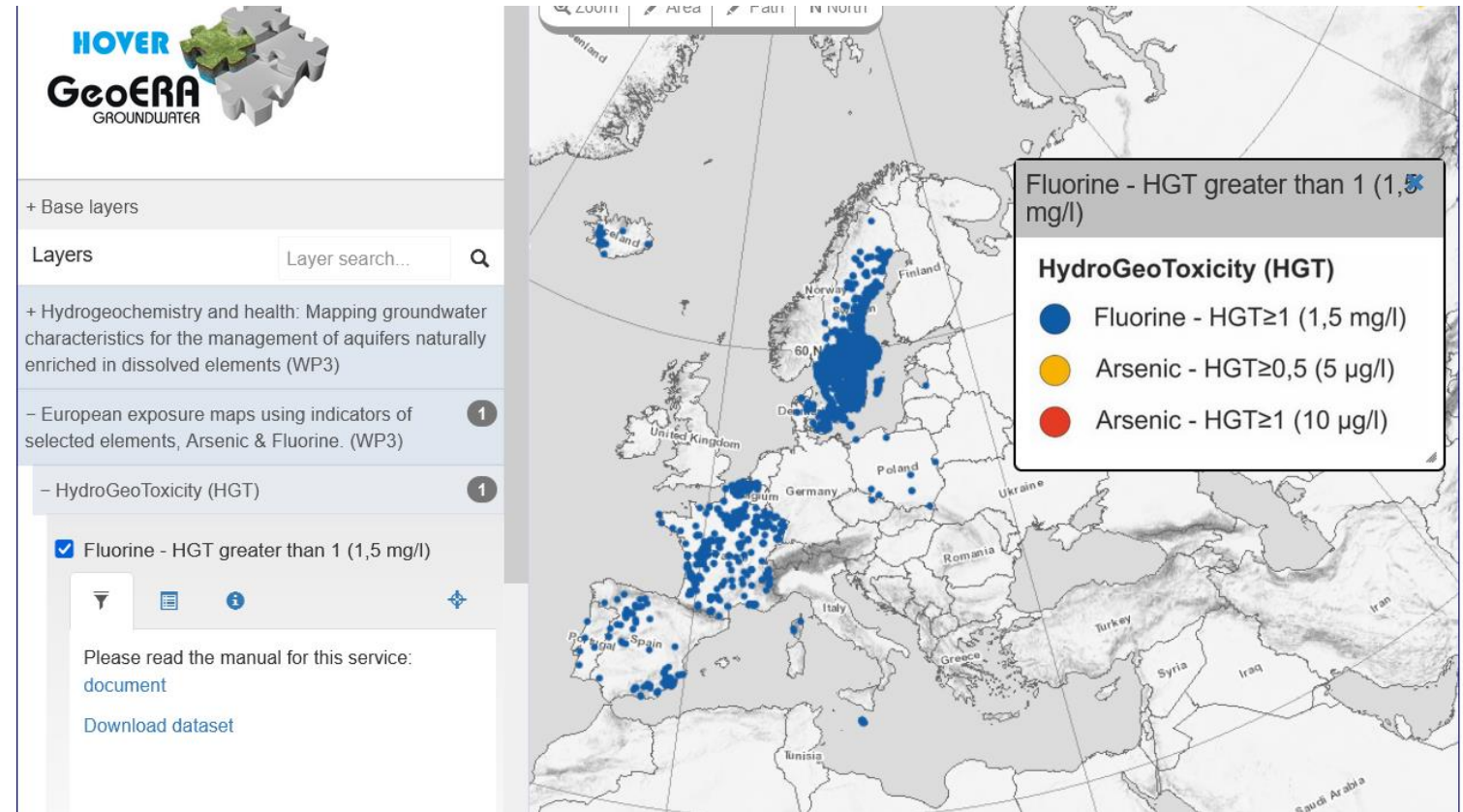


Service of thermal and natural mineral waters in Europe



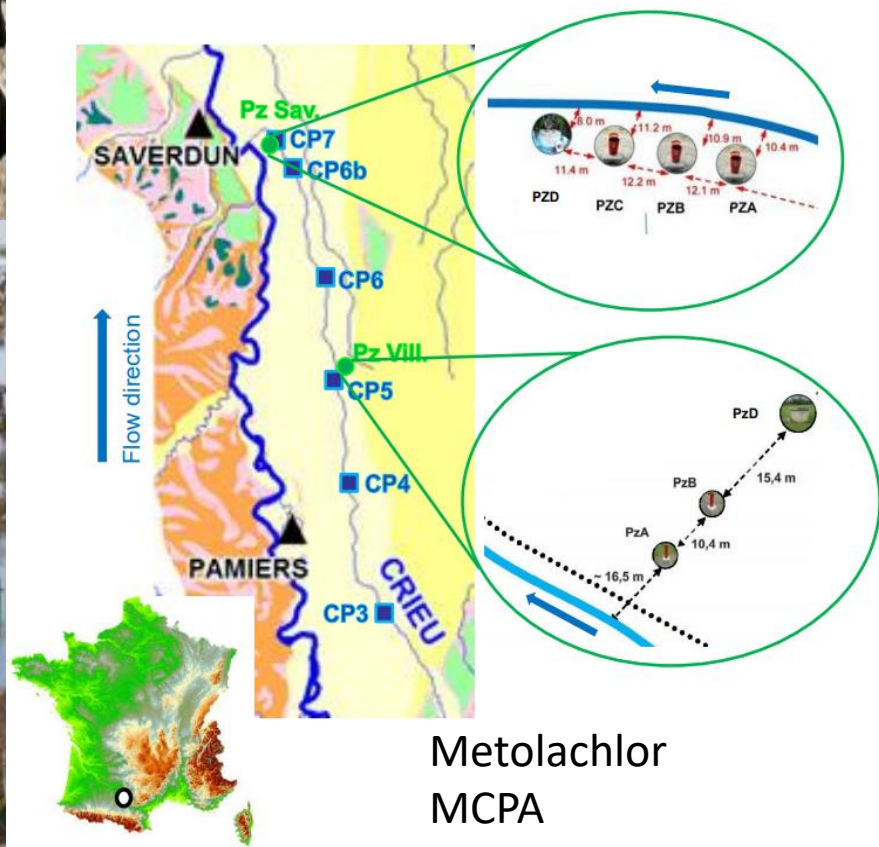
WP3 – elements of natural origin

Hydrogeotoxicity for As and F

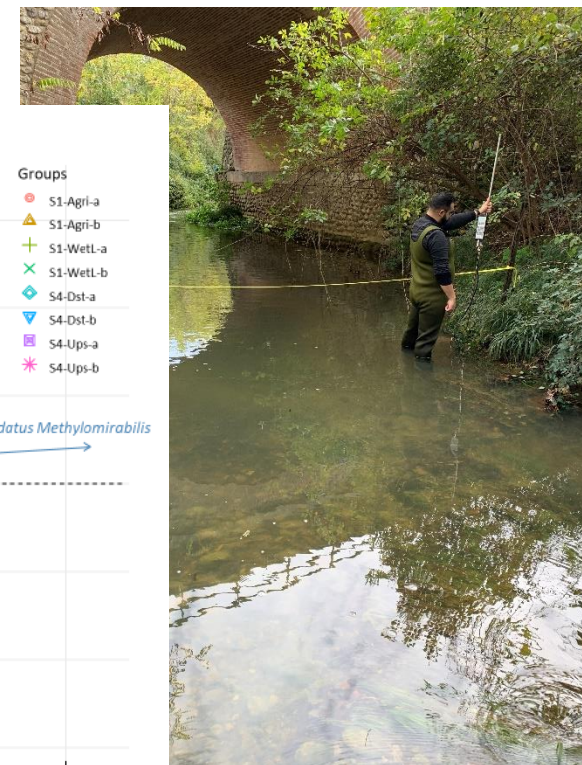
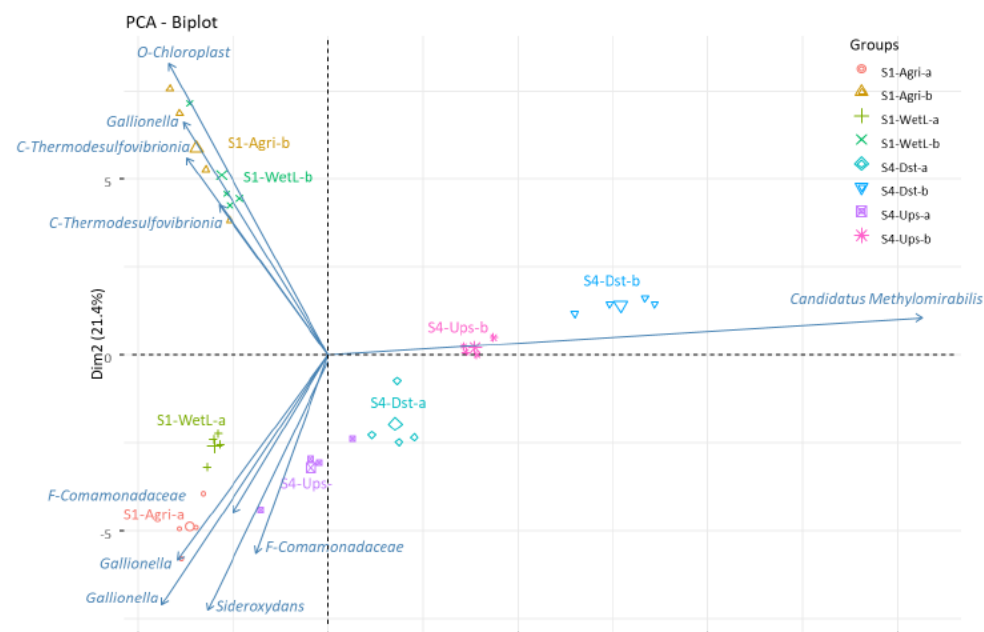


Natural background level – improving the BRIDGE method

WP4 – Biodegradation of contaminant in the hyporheic zone



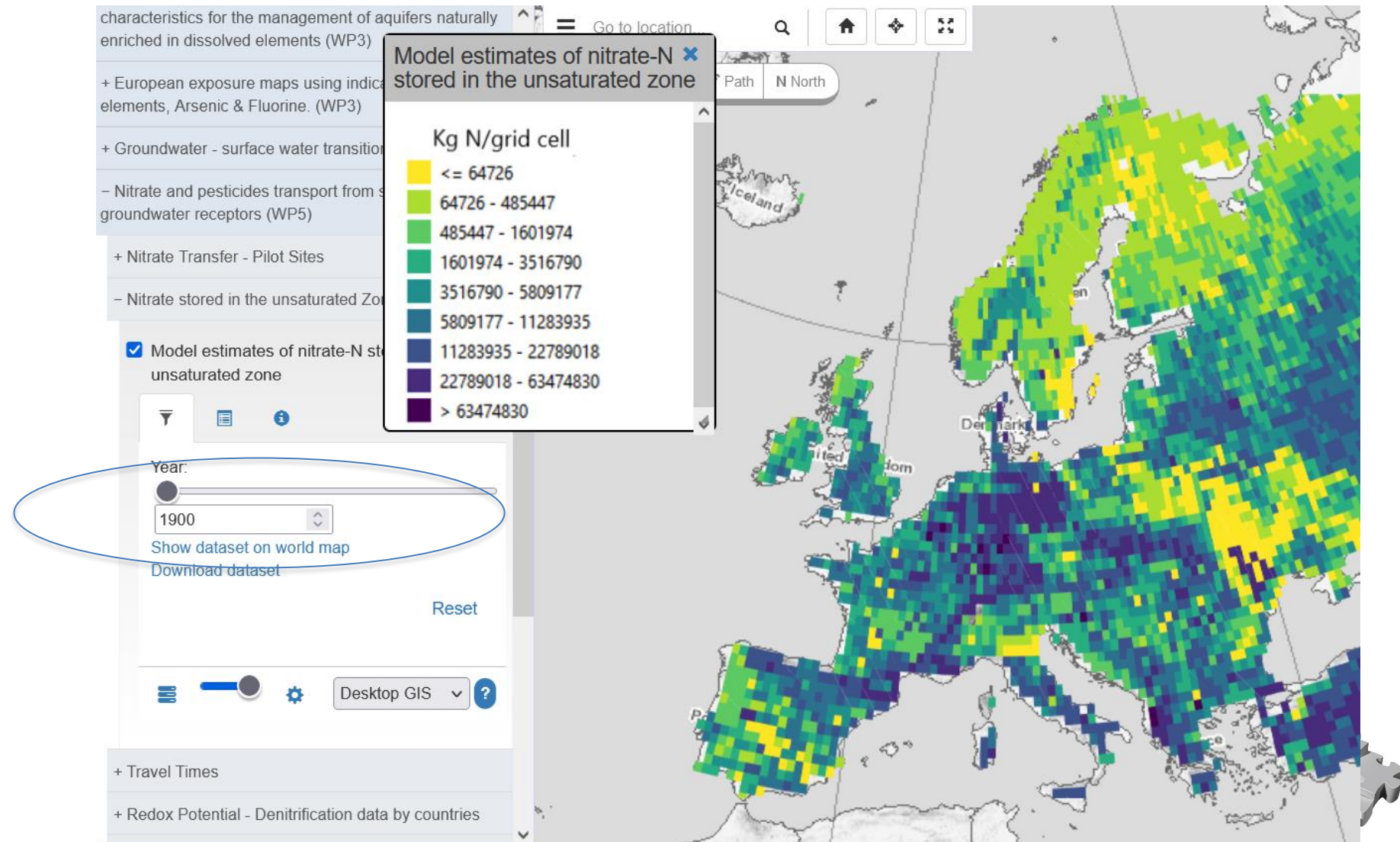
Metolachlor
MCPA
Propiconazole
Sulfadiazine
Sulfamethoxazole



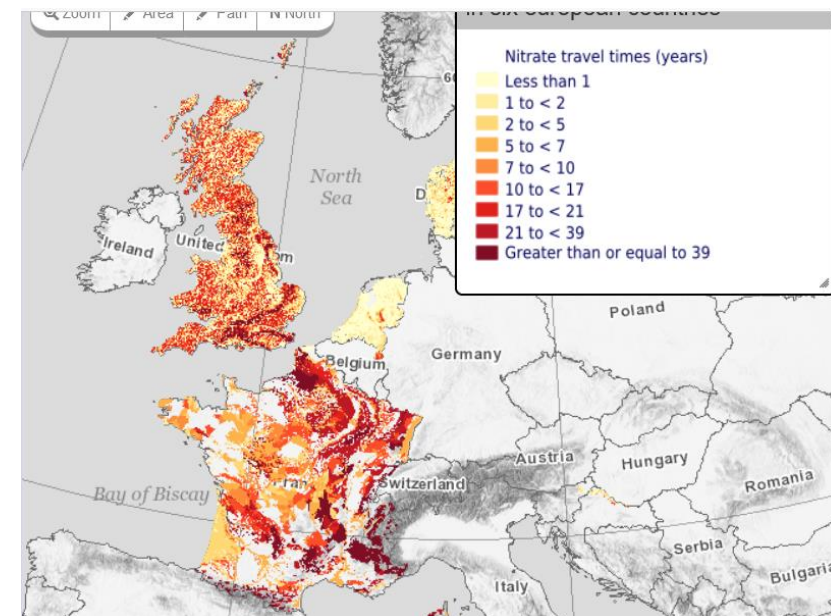
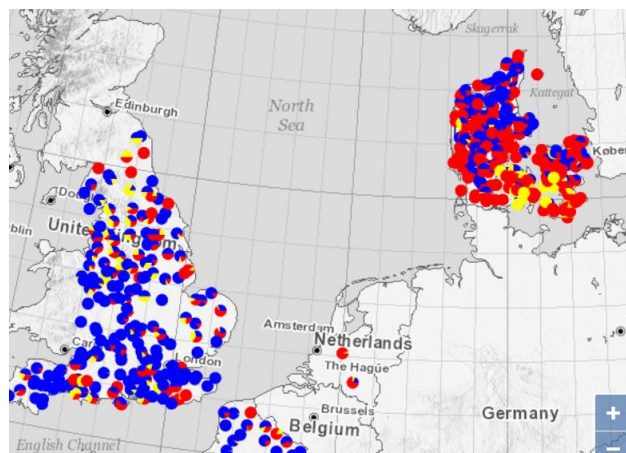
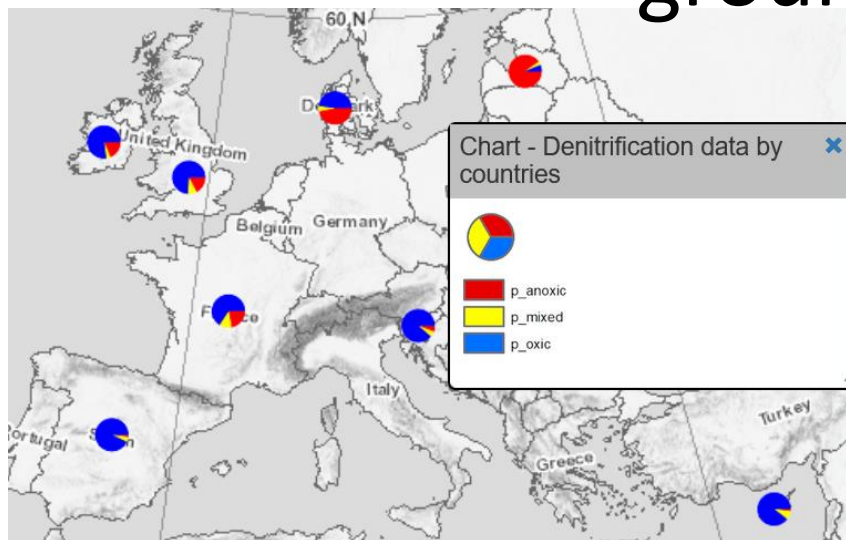
WP5 – Nitrate and pesticides transport from soil to GW



Year can be changed
(up to 2000)



WP5 – Nitrate and pesticides transport from soil to groundwater





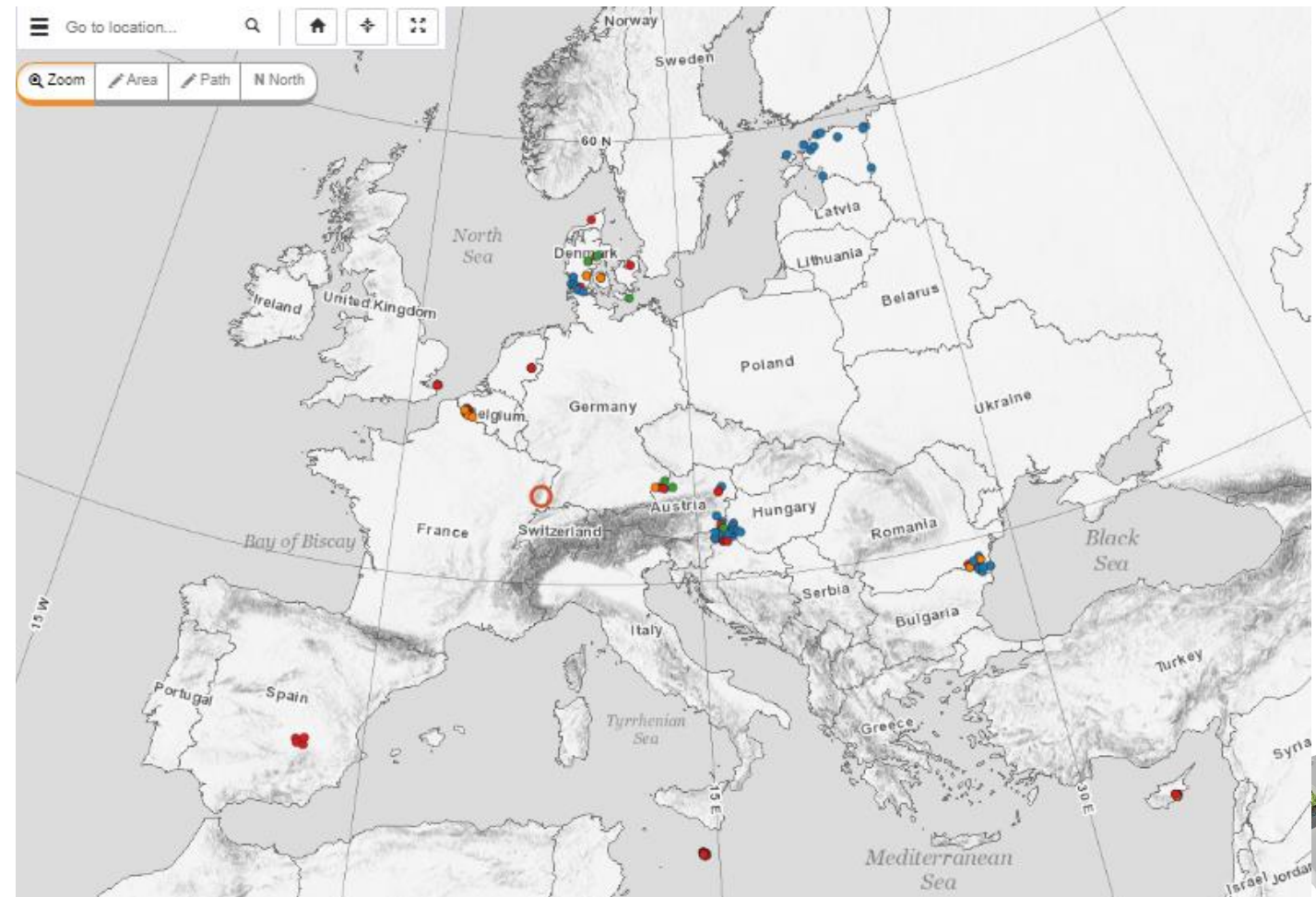
WP6 – Groundwater age range at pilot sites



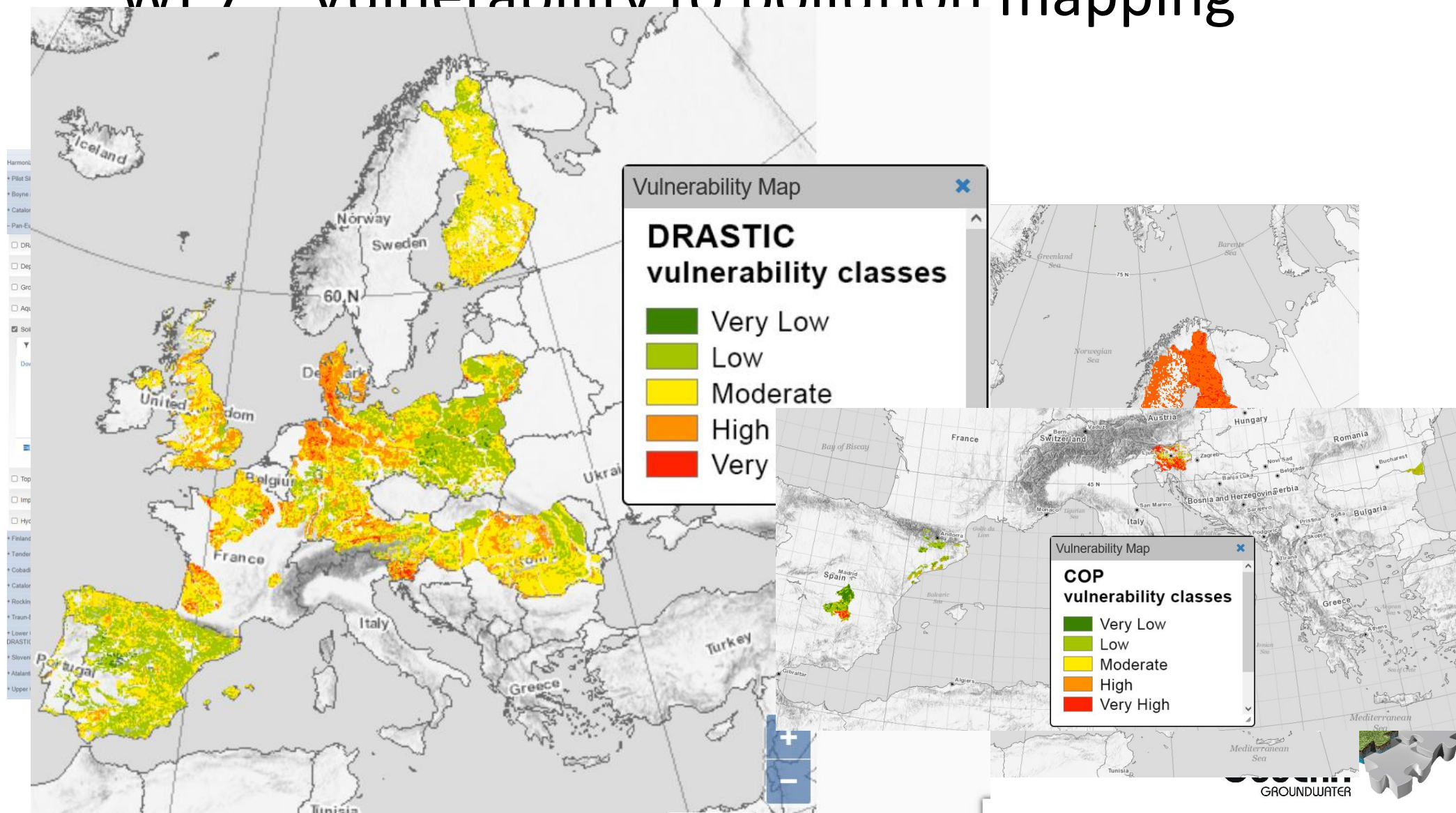
| Colour | Tracer concentration: | Comment |
|--------|--|--|
| Red | $3H \geq 1 \text{ TU}$ | High fraction of young (< 70 yr) potentially contaminated groundwater that infiltrated later |
| Orange | $3H < 1 \text{ TU}$ | Small fraction of young potentially contaminated groundwater |
| Green | $3H < 0.1$ and/ or $1 > 39Ar < 100 \text{ pmAr}$ and/or $14C > 10 \text{ pmc}$ | Groundwater in the age range 70 - 10.000 yr |
| Blue | $14C < 10 \text{ pmc}$ (paleowater) | Paleowater (> 10.000 yr) |
| Purple | $81Kr < 75 \text{ (pmKr)}$ | > 100.000 yr |

Database construction
Guidelines on the best practices of the tools, and correct way to use the « age » information

More than 20 pilote sites

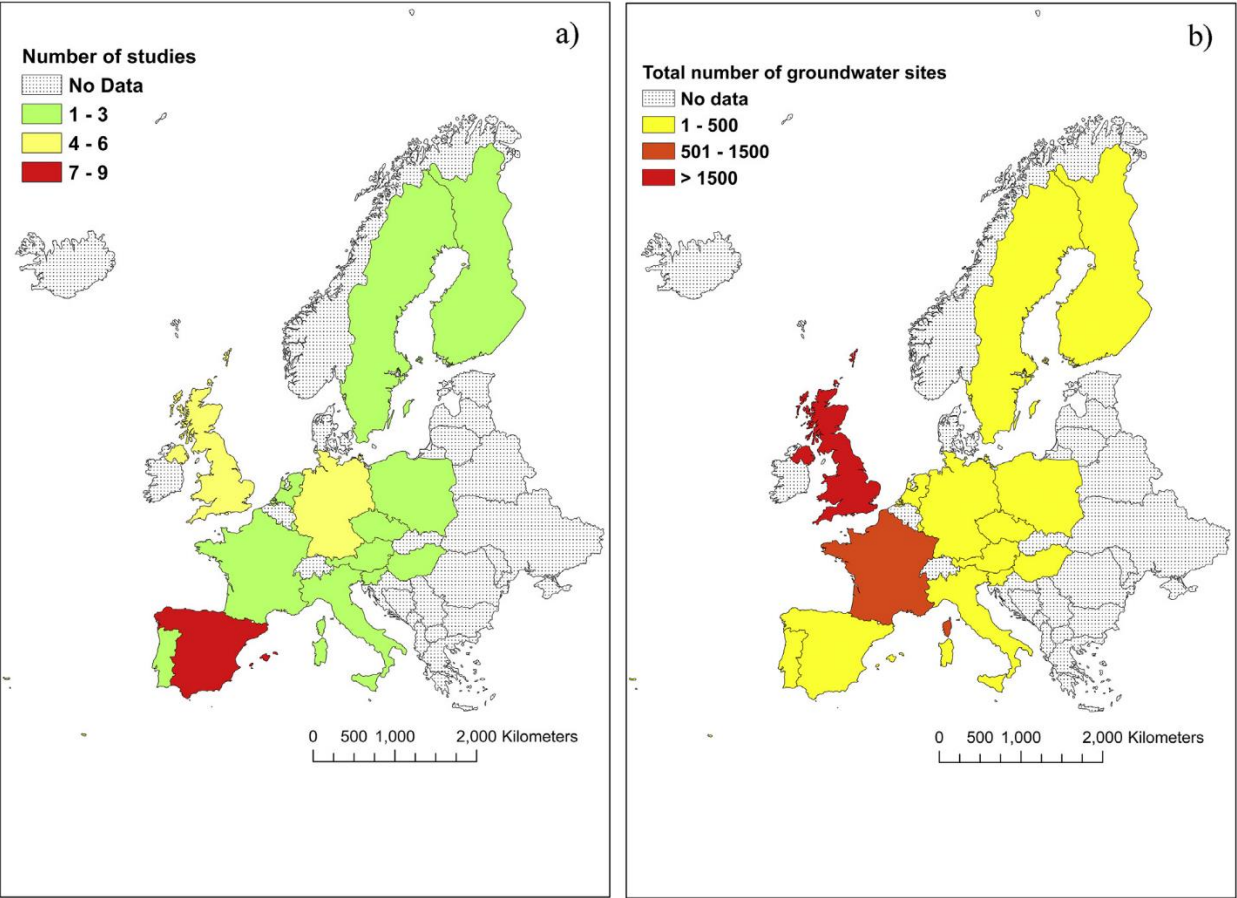


WP7 – Vulnerability to pollution mapping



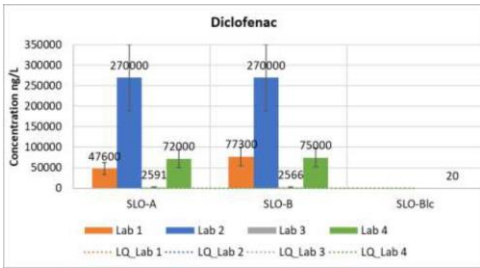


WP8 – Organic contaminant of emerging interest



| CAS number | Compound | Number of studies reporting detection |
|------------|-------------------------|---------------------------------------|
| 298465 | Carbamazepine | 22 |
| 52082 | Caffeine | 15 |
| 723466 | Sulfamethoxazole | 13 |
| 80057 | Bisphenol A | 13 |
| 15687271 | Ibuprofen | 12 |
| 103902 | Acetaminophen | 9 |
| 134623 | N,N-diethyl-m-toluamide | 8 |
| 15307865 | Diclofenac | 8 |
| 108907 | Chlorobenzene | 8 |
| 41859670 | Bezafibrate | 7 |

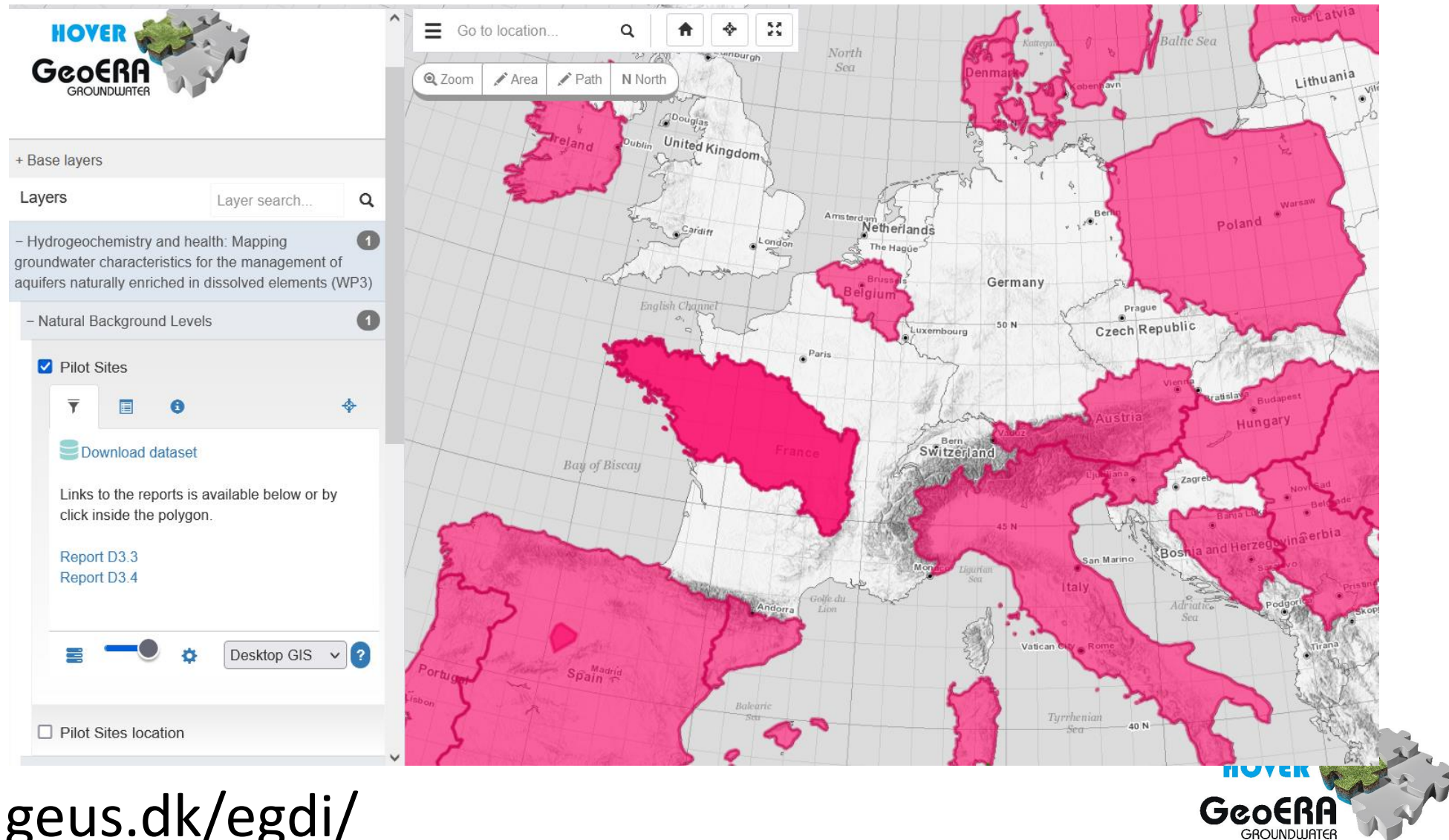
Sampling and analytical comparison exercise



EOC results for groundwater studies in Europe: (a): number of studies used in this review from each country. (b) total number of groundwater sites from the selected review studies



HOVER products on EGDI



[Data.geus.dk/egdi/](https://data.geus.dk/egdi/)





HOVER is also

- Publications – 7 in international journals (5 in preparation)
- Conferences – 9 majors scientific events (EGU, IAEA, AIH, LuQW), 5 policy conferences, webinars
- Newsletters
- Interactions with other organisms - USGS, IAEA, JRC, EEA, CIS/WGGW
- General public communication– Facebook blogs, LinkedIn post, WordPress blog, twitter post, webpage

