

CDGP data center, a gateway to cutting-edge deep geothermal data

Salsabyl Benlalam (2), Benoit Derode (1), Fabien Engels (1), Jean Schmittbuhl (2) and Aude Chambodut (1)

(1) Université de Strasbourg, CNRS, EOST UAR 830, F 67000 Strasbourg, France

(2) Université de Strasbourg, CNRS, ITES UMR 7063, F 67000 Strasbourg, France

Centre de Données de Géothermie Profonde (CDGP)- Deep geothermal data center



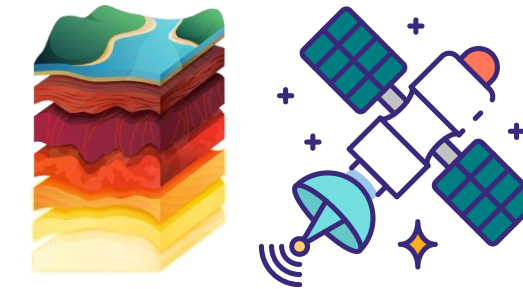
2016

Integration of data from Soultz-sous-Forêts and Rittershoffen



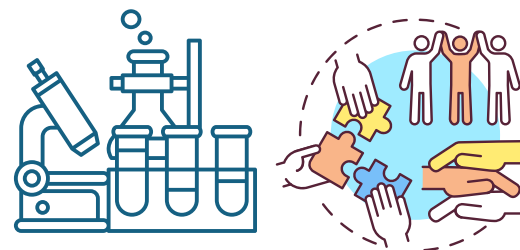
2019-2020

Integration EPOS-Antropogenic Hazards



2022-2023

Extension to multidisciplinary datasets



2024-2025

Creation of the data center



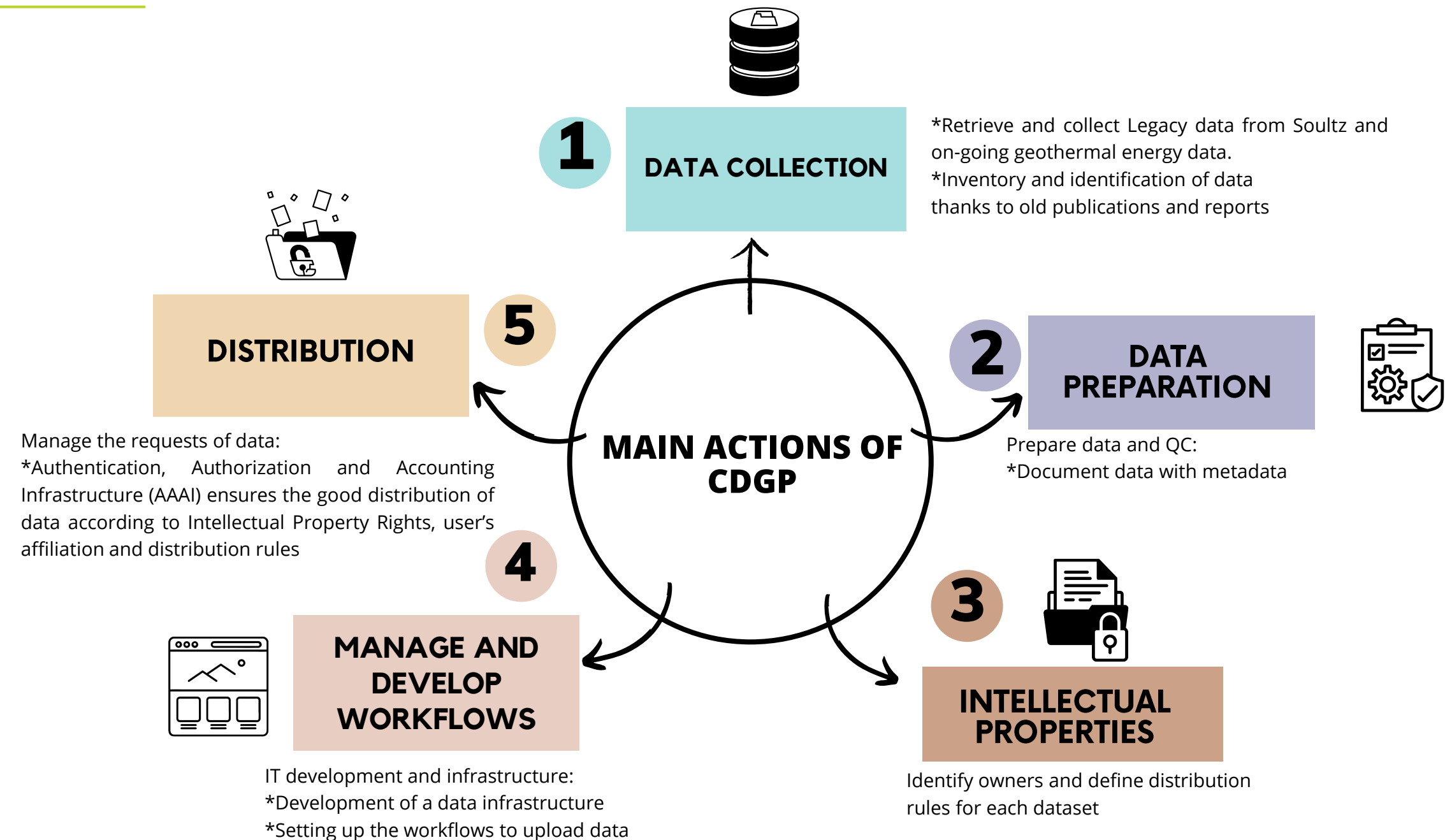
Addition of Vendenheim data



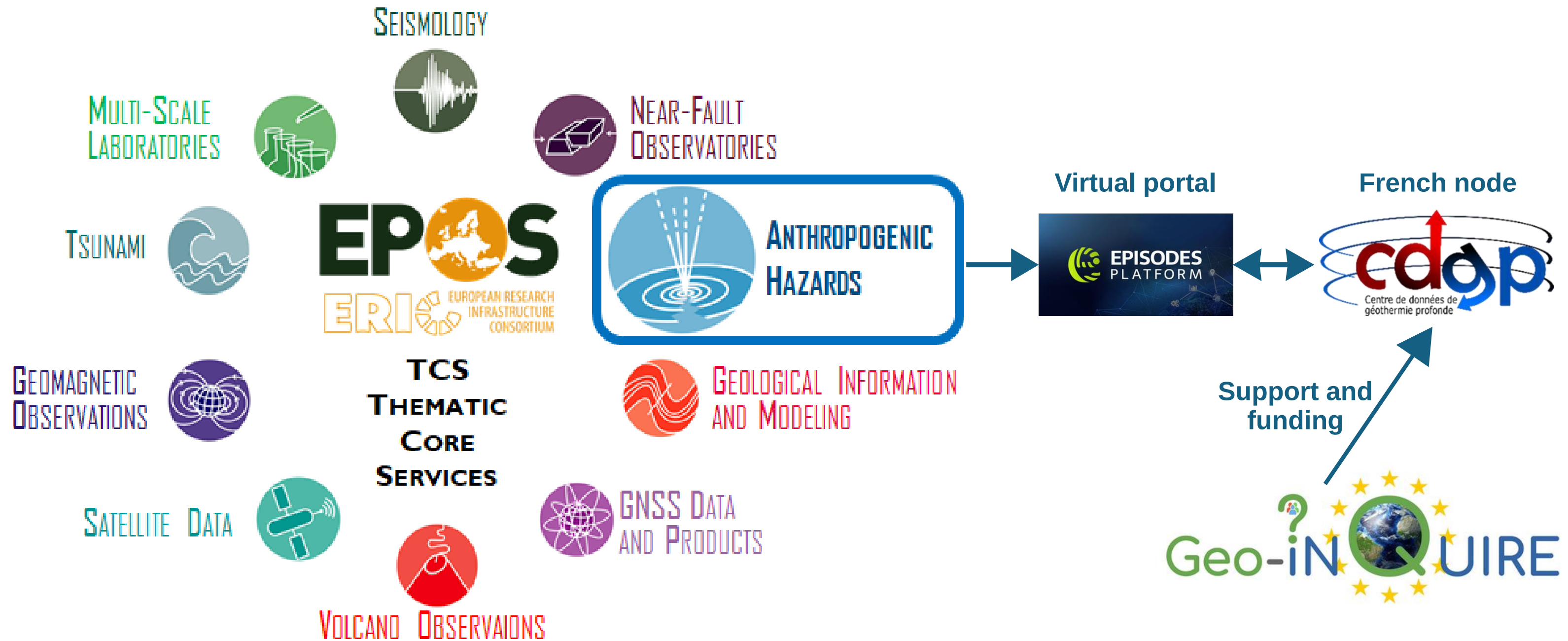
Expansion to new data types

Centre de Données de Géothermie Profonde (CDGP)- Deep geothermal data center

- Collects
- Prepares
- Stores
- Distributes



Centre de Données de Géothermie Profonde (CDGP)- Deep geothermal data center



The CDGP team:



Benoit Derode
CDGP SCIENTIFIC LEADER
COORDINATOR



Fabien Engels
IT SPECIALIST



Sébastien Meiss
SOFTWARE DEVELOPPER



Salsabyl Benlalam
DATA MANAGER

EPIISODE:

- The data are grouped into “episodes”
- An episode refers to a set of relevant geophysical and other geodata, correlated over time and space, that establishes a complete link between anthropogenic seismicity and its industrial cause

Episode: 1991 Stimulation Soutz-sous-Forêts  During the 1991 episode, two 50 hours hydraulic injection tests were carried out at the bottom of the well GPK1. The fresh water was injected at a flowrate of 7 l/s during the.. BRGM Finalisé	Episode: 1993 Stimulation Soutz-sous-Forêts  After the deepening of well GPK1 to 3590m in 1992, an extensive stimulation program was performed in September and October 1993. GPK1 was stimulated with large scale. CDGP - EOST Finalisé	Episode: 1988 Stimulation Soutz-sous-Forêts  The Hot Dry Rock (HDR) site of Soutz-sous-Forêts in Alsace was chosen in 1986 for scientific investigations. During the first phase of the project (1987-1988), a first ... BRGM Finalisé
Episode: 2000 Stimulation Soutz-sous-Forêts  During June/July 2000 a hydraulic stimulation program was conducted in the well GPK2 at the European Hot Dry Rock project, Soutz-sous-Forêts, France. The ... CDGP - EOST Finalisé	Episode: 2020 Stimulation Geoven geothermal project at Vendenheim  During the interruption, at the end of 2019, the GT2 well was deepened. The tests were authorized in September 2020, and new tests were carried out. CDGP - EOST Finalisé	Episode: 2019 Stimulation Geoven geothermal project at Vendenheim  Geoven is a geothermal ... CDGP - EOST Finalisé

Episode: Geoven geothermal project at Vendenheim

Geoven (<http://www.geoven.fr>) was a geothermal power plant project initially managed by Fonroche Géothermie, later taken over by Arverne (https://arverne.earth/wp-content/uploads/2023/02/Communique_Presse_Georhin_130223.pdf). Located at the Ecoparc Rhénan site in Vendenheim, north of Strasbourg, the project aimed to generate 6 MW of electrical energy and 40 MW of thermal energy. It relied on two deep wells to extract hot water and reinject it at depths exceeding 4,000 meters.

The two wells VDH-GT1 and VDH-GT2 had been drilled and some tests had been conducted (5 injectivity and productivity cycles between 02/2018 and 11/2019).

A first interruption occurred after a first period of seismicity (11/2019 – 01/2020, MLv=3.0 max) at Strasbourg and Vendenheim, to allow a third-party scientific expertise. During this period, the well was deepened of 450m to reach 5000m.

New tests were authorized starting 10/2020, but were stopped on 28/10/2020 after a new period of seismicity with quake reaching 3.6MLv (04/12/2020). Authority decided on 07/12/2020 to definitely stop the project.

Another earthquake of 3.9 ML (https://www.franceseisme.fr/donnees/intensites/2021/210626_0300/Rapport_BCSF-RENASS_2021R1_EVT210626-DPT67.pdf) occurred on 28/06/2021.

Authorities set up a committee of experts that delivered a first report (<https://www.bas-rhin.gouv.fr/Politiques-publiques/Environnement/Geothermie/Rapport-du-comite-d-experts-creee-en-appui-a-l-administration-sur-la-boucle-geothermique-GEOVEN>).

The Episode contains several datasets which you can find further down the page in "Links".



Découvrir les données



Links

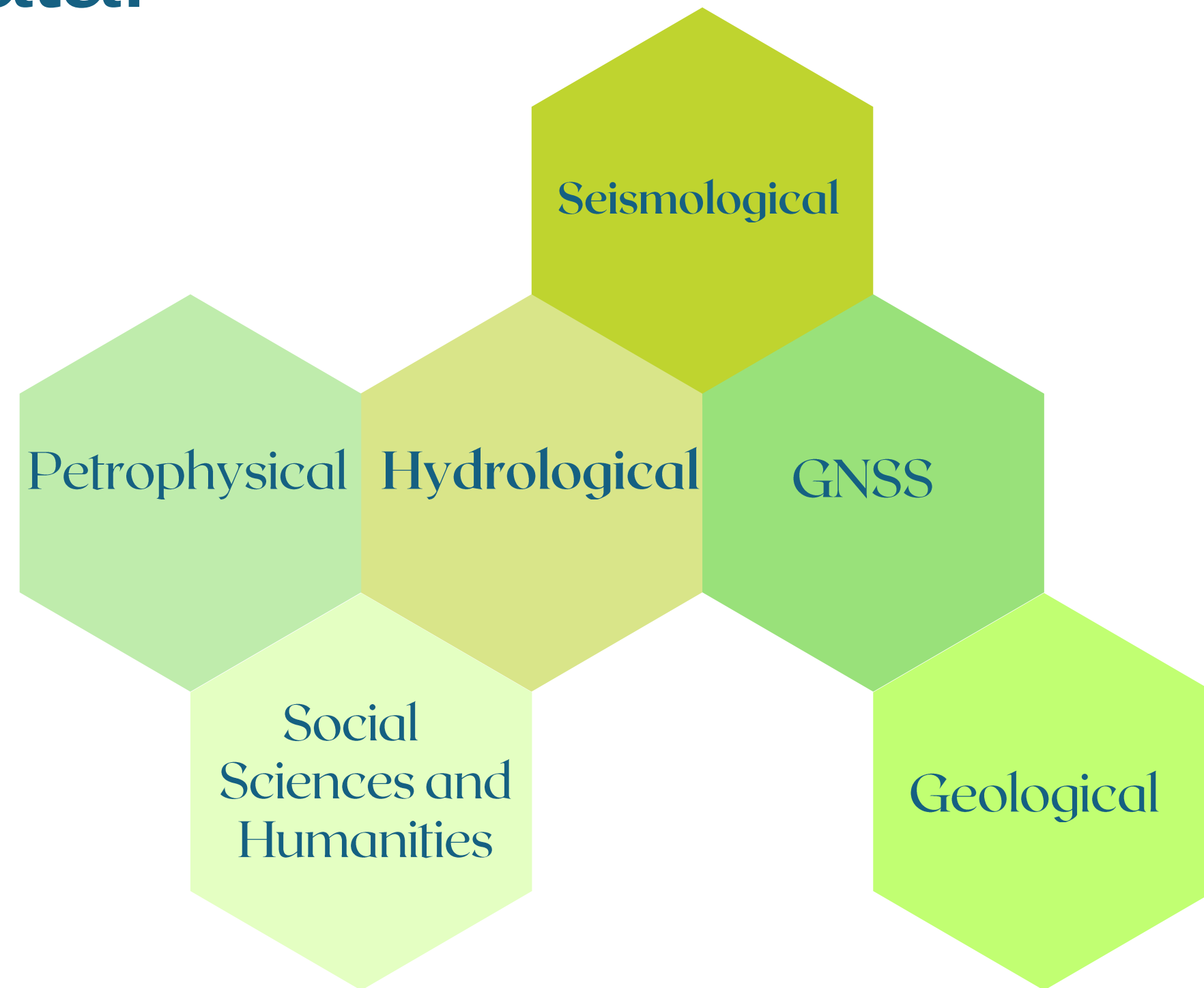
	Catalogue Schmittbuhl et al.	Ouvrir le lien	
	Catalogue_Fiori	Ouvrir le lien	
	GeORG sections	Ouvrir le lien	
	GNSS data	Ouvrir le lien	
	Microseismic catalogue from Minetto et al. (2025)	Ouvrir le lien	
	Microseismic catalogue with magnitude from BCSF-RéNaSS	Ouvrir le lien	

Links

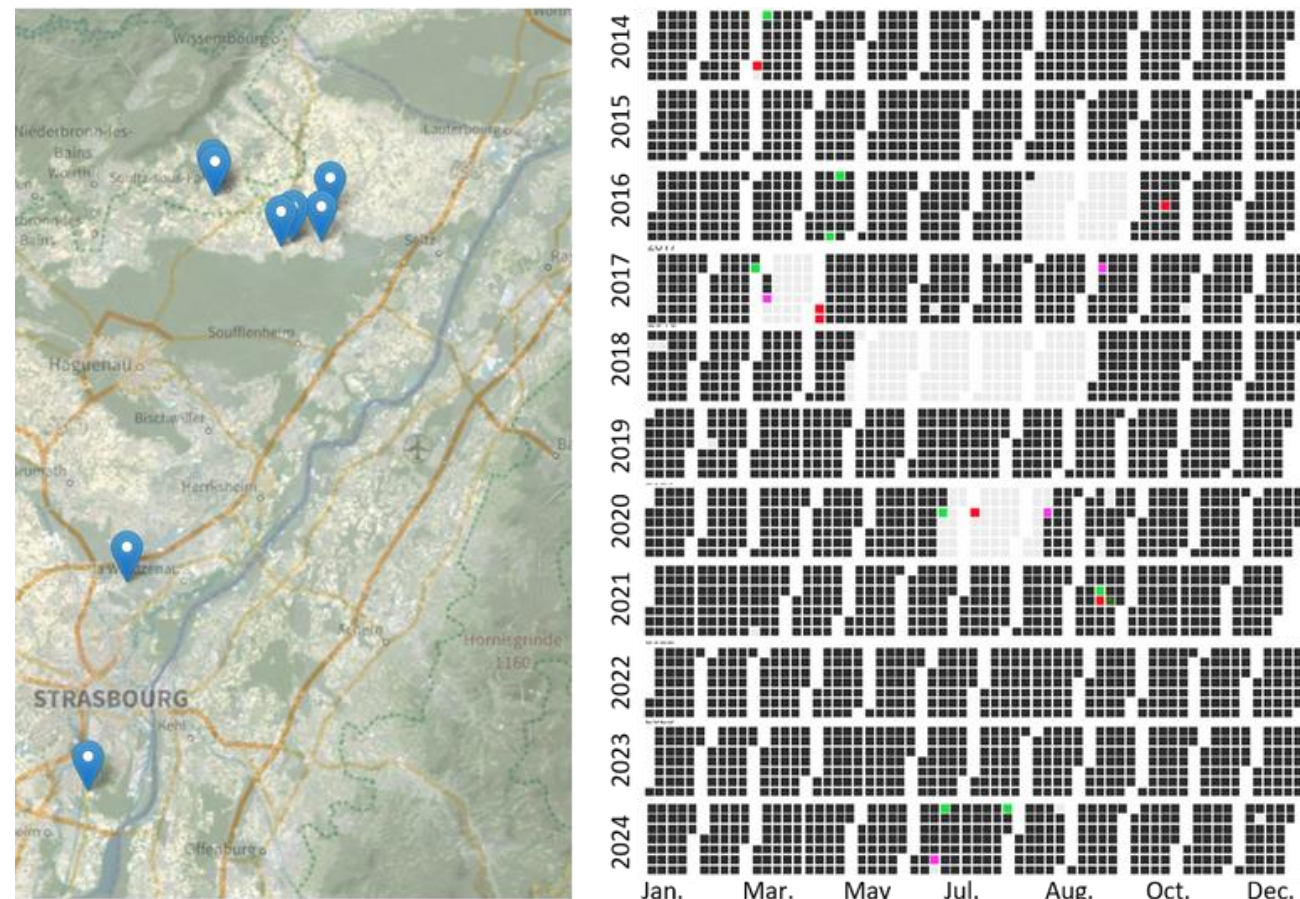
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	Microseismic catalogue with magnitude from BCSF-RéNaSS	Ouvrir le lien	
	Microseismic surface network	Ouvrir le lien	
	Seismological waveforms from Résif	Ouvrir le lien	
	VDH-GT1 well	Ouvrir le lien	
	VDH-GT2 well	Ouvrir le lien	

Multidisciplinary data:

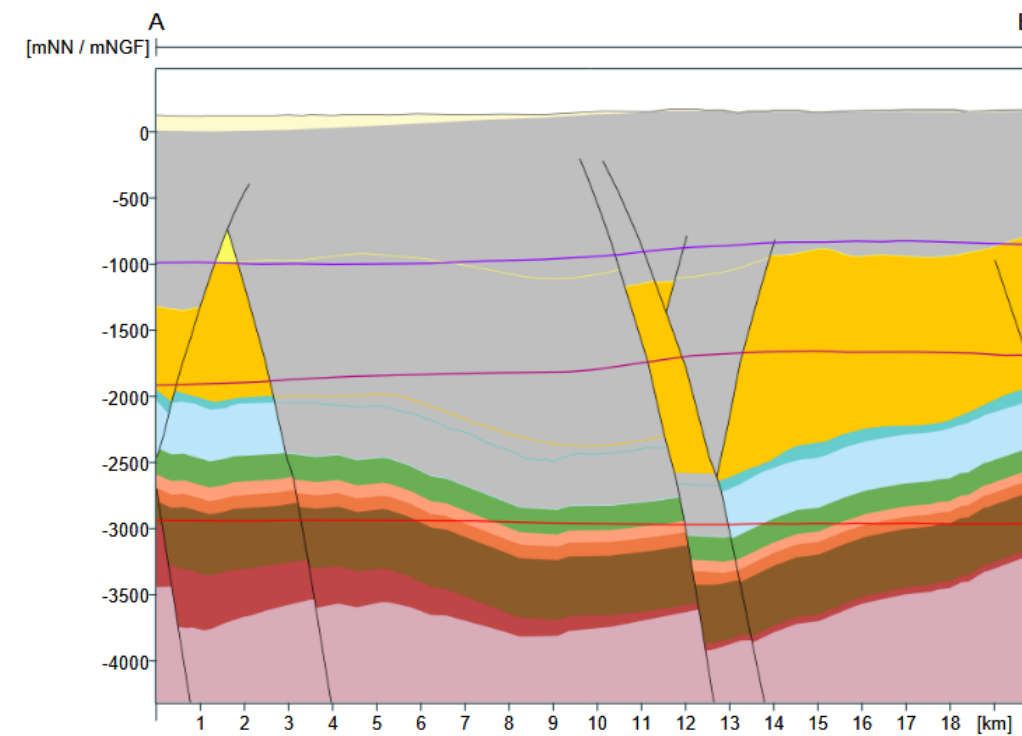
- Each episode contains different types of data: seismological, hydraulic, geological, etc.



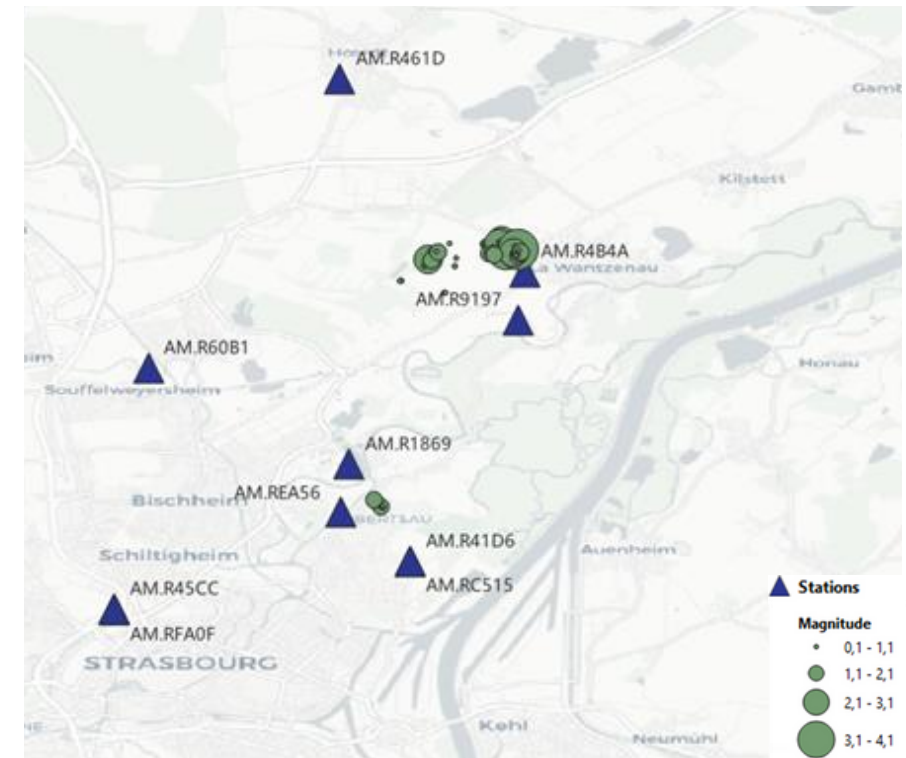
Multidisciplinary data:



Location of the 8 geodetic stations (GNSS) used to monitor in real-time the deformation of the hydraulically stimulated reservoirs (left). To the right, an example of the data availability of the ECOG station from January 2014 to December 2024. Over 90% of the eleven-year time series is accessible upon request through the CDGP website.



Example of vertical geological section corresponding to the north-west-south-east diagonal at Vendenheim site, Geoven project. Extracted from the Geopotentials of the Deep Upper Rhine Graben project (GeORG).



Example of seismic events (green circles) from the seismological catalogue Schmittbuhl et al.

New data (2024-2025):

- Enrichment of existing episodes with seismicity catalogs produced in various research projects at the Soultz-sous-forêt and Vendenheim sites.



- 18 catalogs on Soultz-sous-Forêt
- 3 catalogs on Vendenheim

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- Adding new type of data



- Petrophysical properties - Soultz-sous-Forêts

Petrophysical properties - Soultz-sous-Forêts

Data on the petrophysical properties of samples from geothermal wells at the Soultz-sous-Forêts site. These data have been collected by Professor Michael J. Heap from numerous articles.

- The data parameters are the following:

Column 1: Lithostratigraphic unit

Column 2: Formation

Column 3: True vertical depth (m)

Column 4: Box number

Column 5: Direction (perp if not given)

Column 6: Natural fracture

Column 7: Connected porosity

Column 8: Dry P-wave velocity (km/s)

- Column 9: Wet P-wave velocity (km/s)

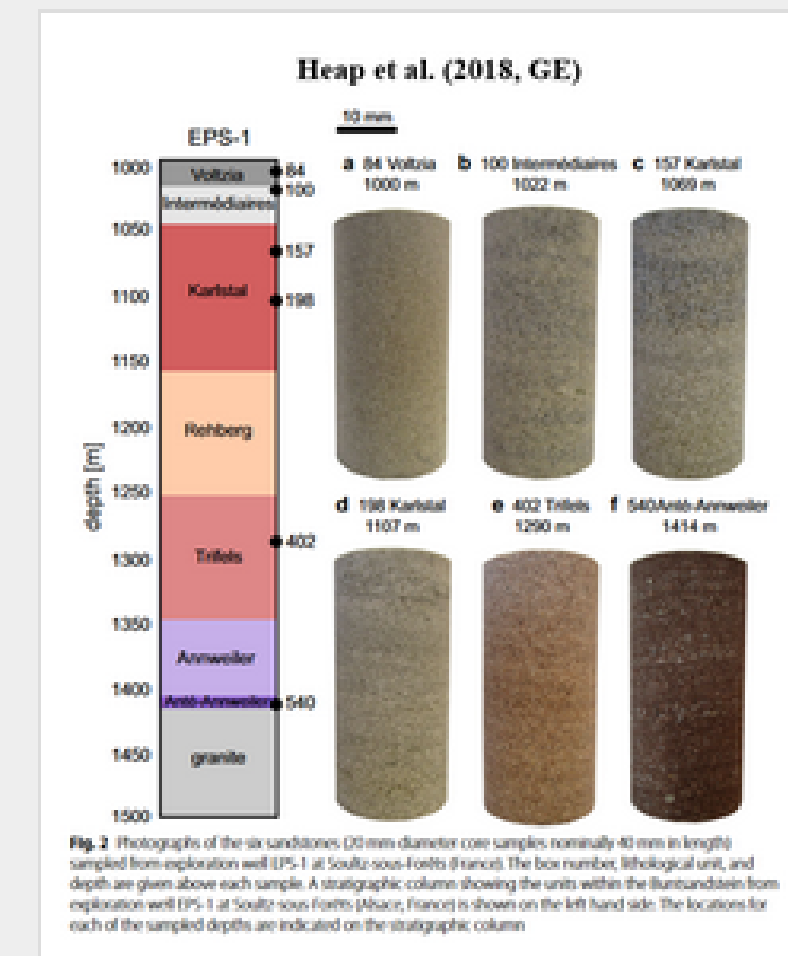
Column 10: Permeability (mD)

Column 11: Sample condition for UCS

Column 12: Young's modulus (GPa)

Column 13: Uniaxial compressive strength (MPa)

Column 14: Reference



Finalisé

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- Adding new type of data



- Petrophysical properties - Soultz-sous-Forêts
- Social Sciences and Humanities

Referencing Reactions to Earthquakes and Geothermal Energy in Alsace on Social Network Networks from Arnaud et al.

Finalisé

- This dataset collects user reactions on social networks, specifically Facebook and Twitter, regarding geothermal energy in Alsace, in connection with the perception of earthquakes. In the context of an environmental controversy, this study highlights the role of these digital platforms as spaces for expression and public debate.

- In this dataset, publications by various actors are analyzed, including industrial players involved in geothermal projects, associations engaged in environmental issues, public institutions such as the prefecture and municipalities, as well as academic institutions such as EOST. The media, as vectors of information and debate, also play a role in shaping the discourse and influencing perceptions around this controversy.

This study covers the period from 21/09/2015 to 24/03/2022

New data (2024-2025):

- Enrichment of existing episodes with seismicity catalogs produced in various research projects at the Soultz-sous-forêt and Vendenheim sites.



- 18 catalog on Soultz-sous-Forêt
- 3 catalog on Vendenheim

- Adding new type of data



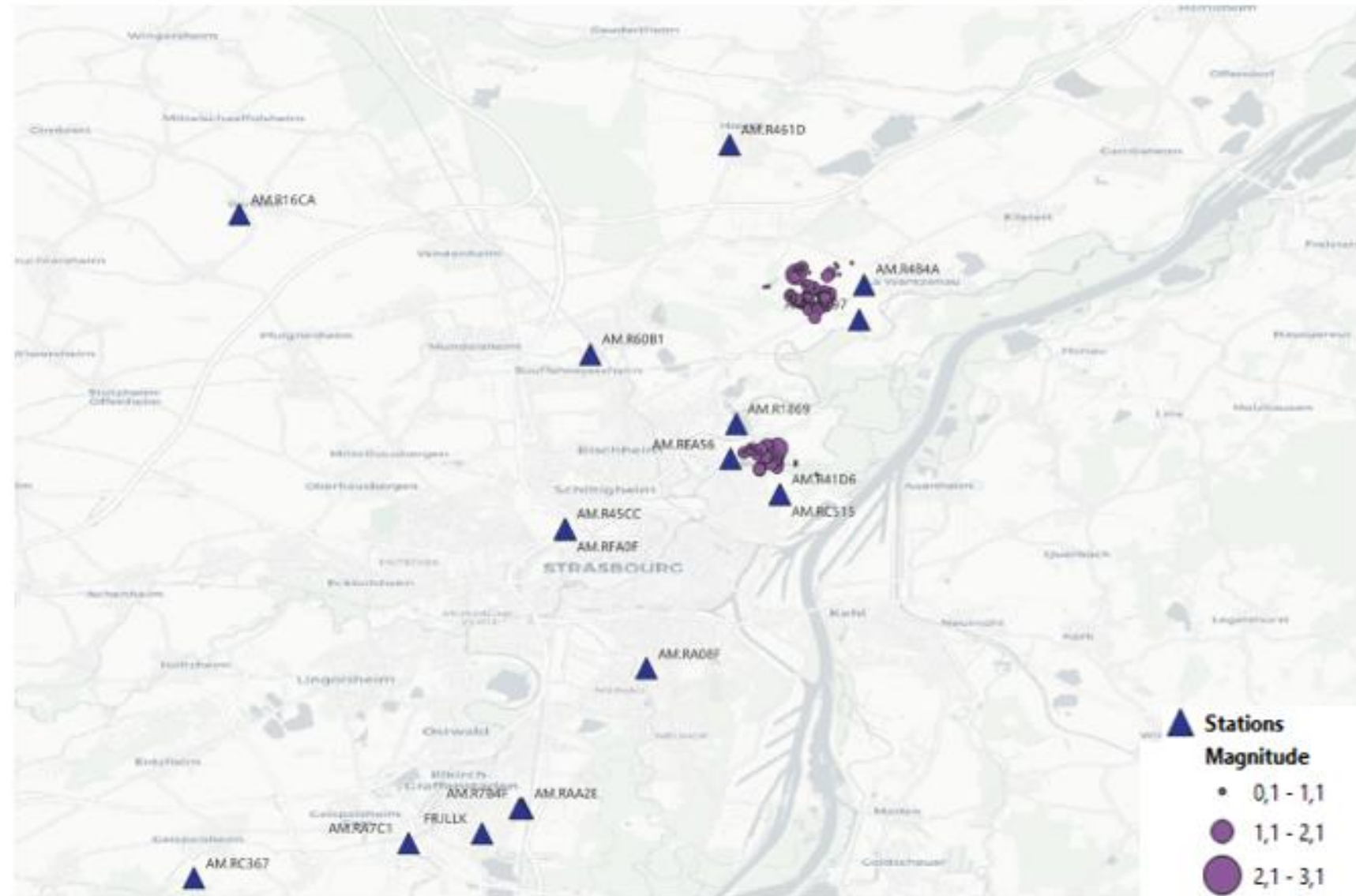
- Petrophysical properties - Soultz-sous-Forêts
- Social Sciences and Humanities

- Adding new Episodes

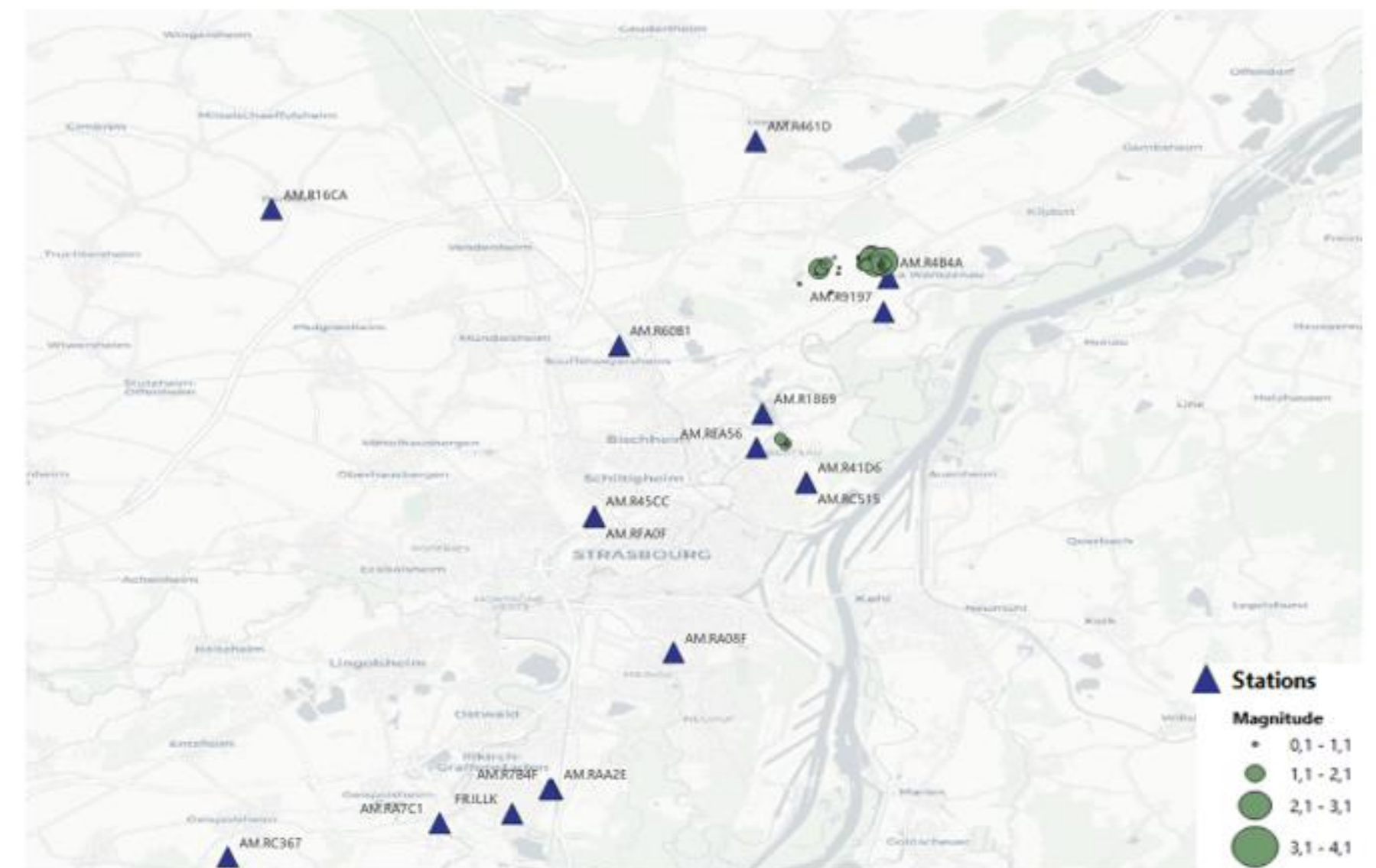


- 2 new Episodes on Vendenheim 2019 and 2020

Location of public seismological stations and events from the catalogue Schmittbuhl et al. with magnitude 2019



Location of public seismological stations and events from the catalogue Schmittbuhl et al. with magnitude 2020



Adapted from figure 3 from J. Schmittbuhl, S. Lambotte, O. Lengliné, M. Grunberg, H. Jund, J. Vergne, F. Cornet, C. Doubre, F. Masson.

Induced and triggered seismicity below the city of Strasbourg, France from November 2019 to January 2021. *Comptes Rendus Géoscience*, Vol. 353 (2021), pp. 561–584. doi:10.5802/crgeos.71

Data distribution:

- Distribution rules were established to define access to some geothermal data:

Level of confidentiality	Restrictions
0 – Public	No restrictions. Access to non-sensitive data: all users have access.
1– Public and traceability	Data accessible to anyone with a CDGP account, need for traceability.
2 – Reserved for the academic community	Data for academic researchers (project researchers and students). Before downloading the data, the user must provide details of the project they are working on.
3 – Case-by-case	Restricted data : the owner of the data is contacted to allow access.

FAIRness:



F-UJI is a web service to programatically assess FAIRness of research data objects at the dataset level based on the FAIRsFAIR Data Object Assessment Metrics

[Click here to assess a dataset](#)

Assessment Results:

Evaluated Resource:

Episode: 2000 Stimulation Soultz-sous-Forêts

Save (JSON) New

FAIR level: moderate

Resource PID/URL: <https://doi.org/10.25577/SSFS2000>

DataCite support: enabled

Metric Version: metrics_v0.8

Metric Specification: <https://doi.org/10.5281/zenodo.6461229>

Software version: 3.5.0

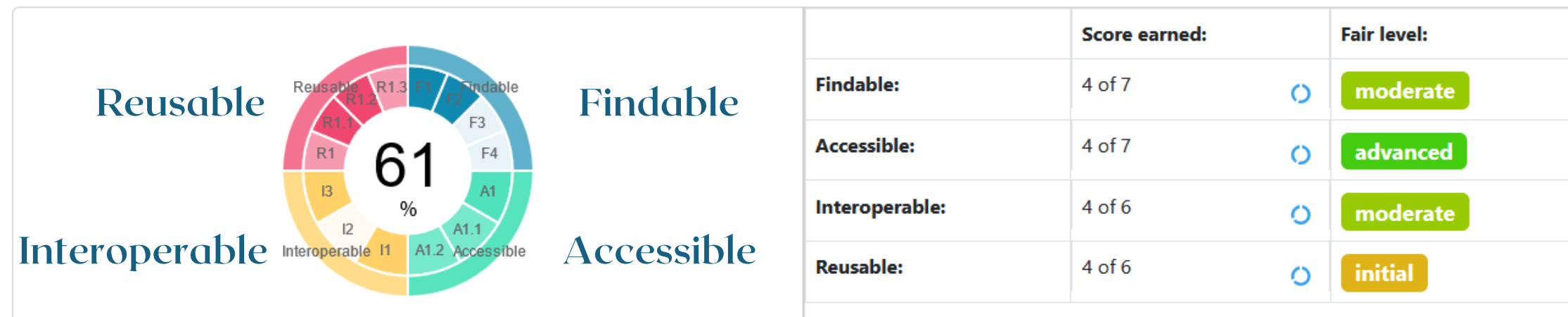
Download assessment results: [\(JSON\)](#)

Save and share assessment results:

Saved assessments:

- FAIR 50% 2023-09-14 (2.2.5)
- FAIR 50% 2024-02-15 (3.1.0)
- FAIR 58% 2024-03-19 (3.1.0)

Summary:



FAIRness:



Automated FAIR Data Assessment Tool

F-UJI is a web service to programmatically assess FAIRness of research data objects at the dataset level based on the FAIRsFAIR Data Object Assessment Metrics

Click here to assess a dataset

Summary:



Saved assessments:

- FAIR 50% 2023-09-14 (2.2.5)
- FAIR 50% 2024-02-15 (3.1.0)
- FAIR 58% 2024-03-19 (3.1.0)
- FAIR 61% 2025-04-08 (3.5.0)
- FAIR 61% 2025-08-13 (3.5.0)

Findable:	4 of 7		moderate
Accessible:	4 of 7		advanced
Interoperable:	4 of 6		moderate
Reusable:	4 of 6		initial

Some figures:



120

datasets



20

Users from over than 20 countries



40%

**40% of our users produce
a publication, poster, or
thesis based on our data**

Some figures:



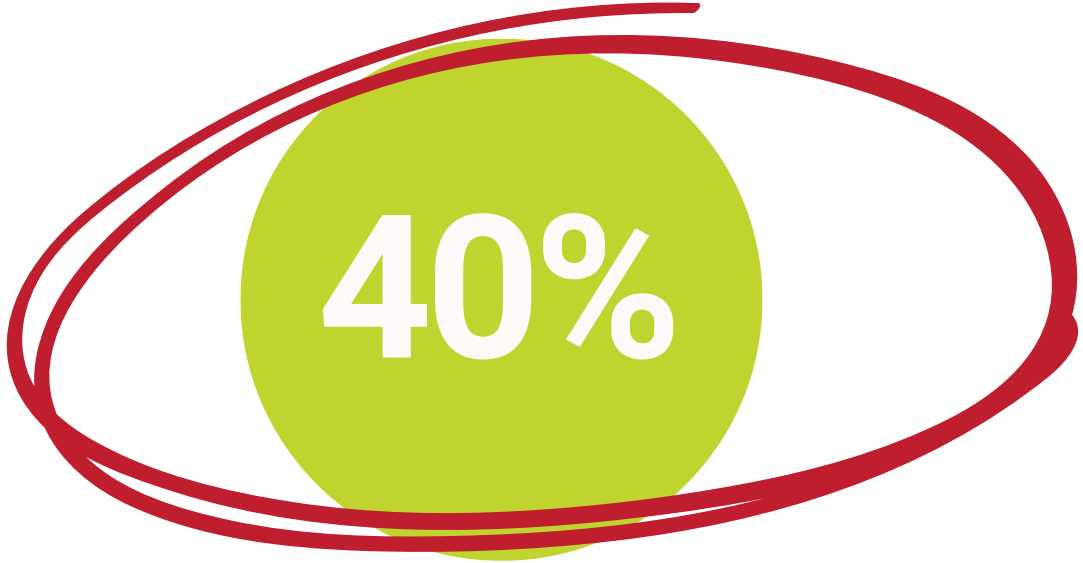
120

datasets



20

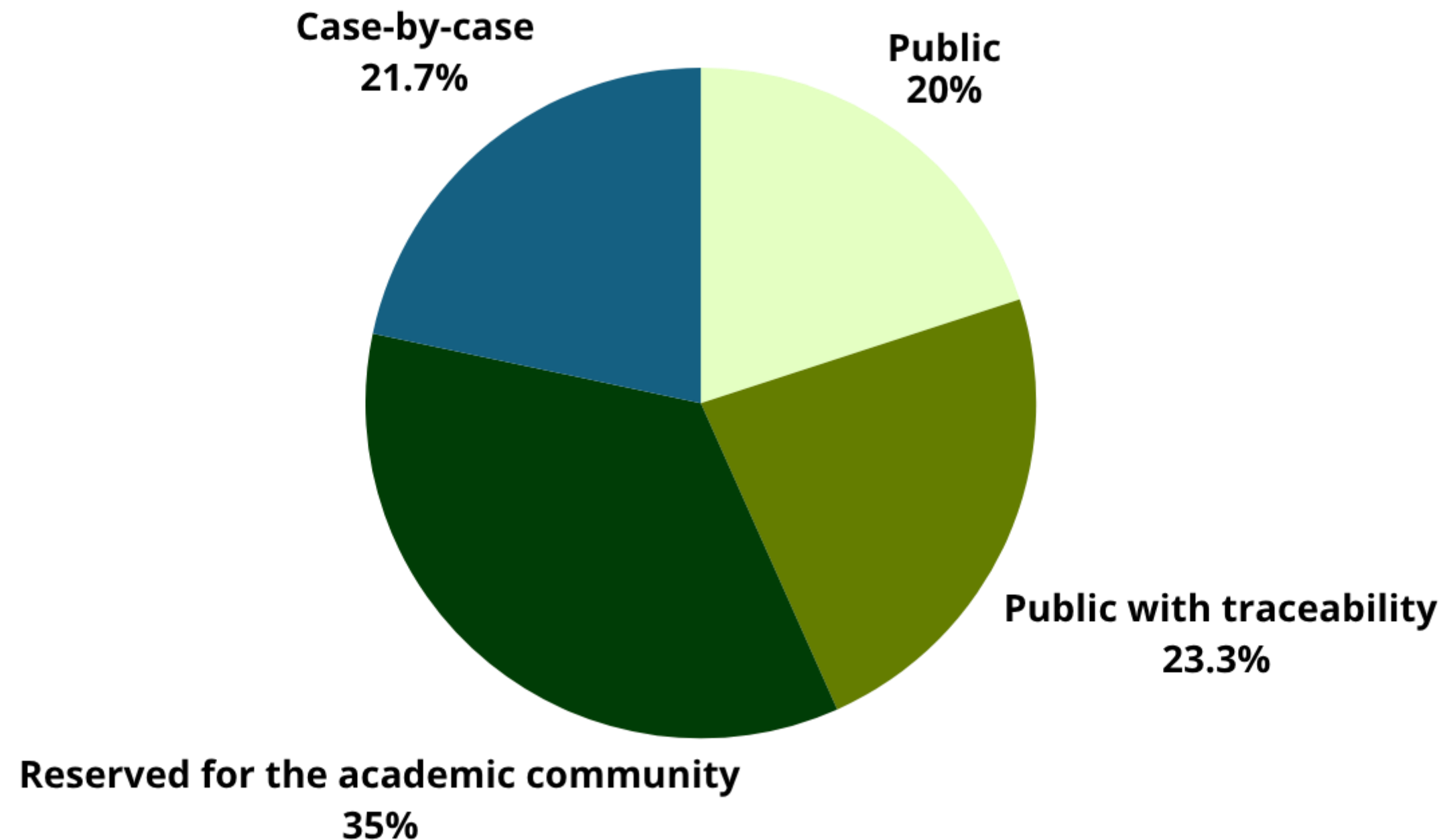
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Some figures:



PUBLIC

No restrictions. Access to non-sensitive data: all users have access.

PUBLIC AND TRACEABILITY

Data accessible to anyone with a CDGP account, need for traceability.

RESERVED FOR THE ACADEMIC COMMUNITY

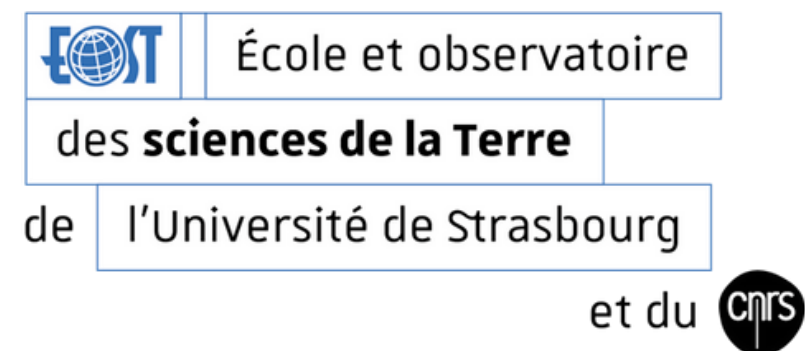
Data for academic researchers (project researchers and students). Before downloading the data, the user must provide details of the project they are working on.

CASE-BY-CASE

Restricted data : the owner of the data is contacted to allow access.

Perspectives :

- The CDGP will soon be enriched with new episodes from recent geothermal activities, providing an updated view of reservoir response.
- The restructuring of the CDGP currently underway aims to develop a more intuitive interface that meets user expectations while complying with the guidelines defined in Geo-INQUIRE.
- The CDGP will be a cornerstone of a new regional infrastructure, the Deep Reservoir Observatory (Observatoire des Réservoirs Profonds, ORP).



Geosciences for the energy
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Thank you for your attention

Partners

