Géosciences pour la transition énergétique | GeoT

Les Instituts **thématiques** **interdisciplinaires** de l'Université de Strasbourg & cnrs & Inserm

cdgp Centre de données de géothermie profonde

The data Center of deep Geothermal energy

Salsabyl BENLALAM

Engineer

s.benlalam@unistra.fr

16/05/2023

Geo-iNQUIRE

OUTLINE:

- What is the data Center of deep Geothermal energy?
- What data are distributed?
- Who provides the data and how are they distributed?
- What is the link between the data Center of deep Geothermal energy?
- What are the objectives for the data Center of deep Geothermal energy?

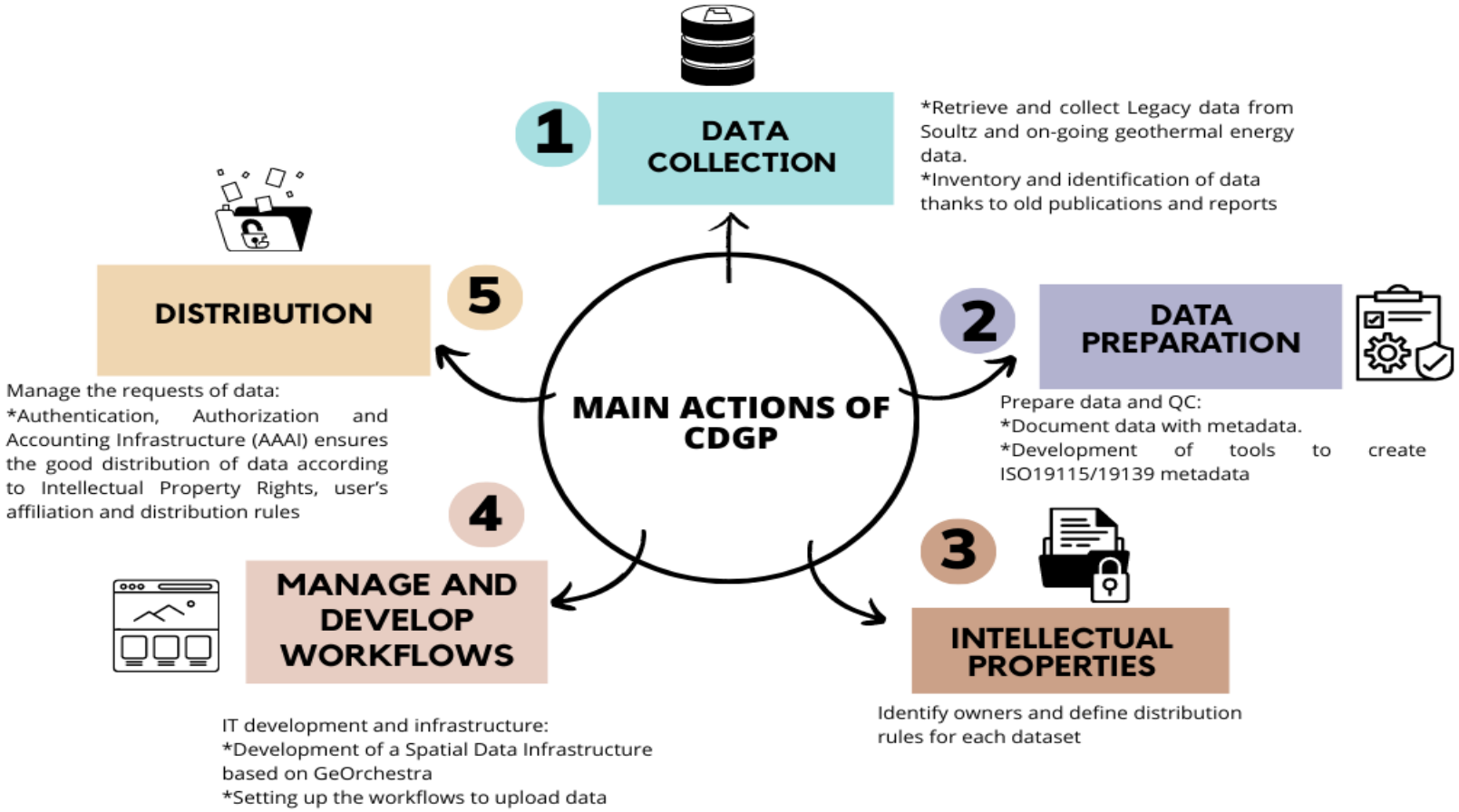
What is the data Center of deep Geothermal energy ?

The data Center of deep Geothermal energy (CDGP) :

- Launched in 2016 by the LabEx G-EAU-THERMIE PROFONDE-now ITI GeoT
- Objective of the CDGP: to collect data collected on geothermal sites in Alsace, to archive them and to distribute them to the scientific community for R&D activities
- The data are distributed on the CDGP website : https://cdgp.u-strasbg.fr/

CDGP website

Main actions of the data Center of deep Geothermal energy (CDGP) :



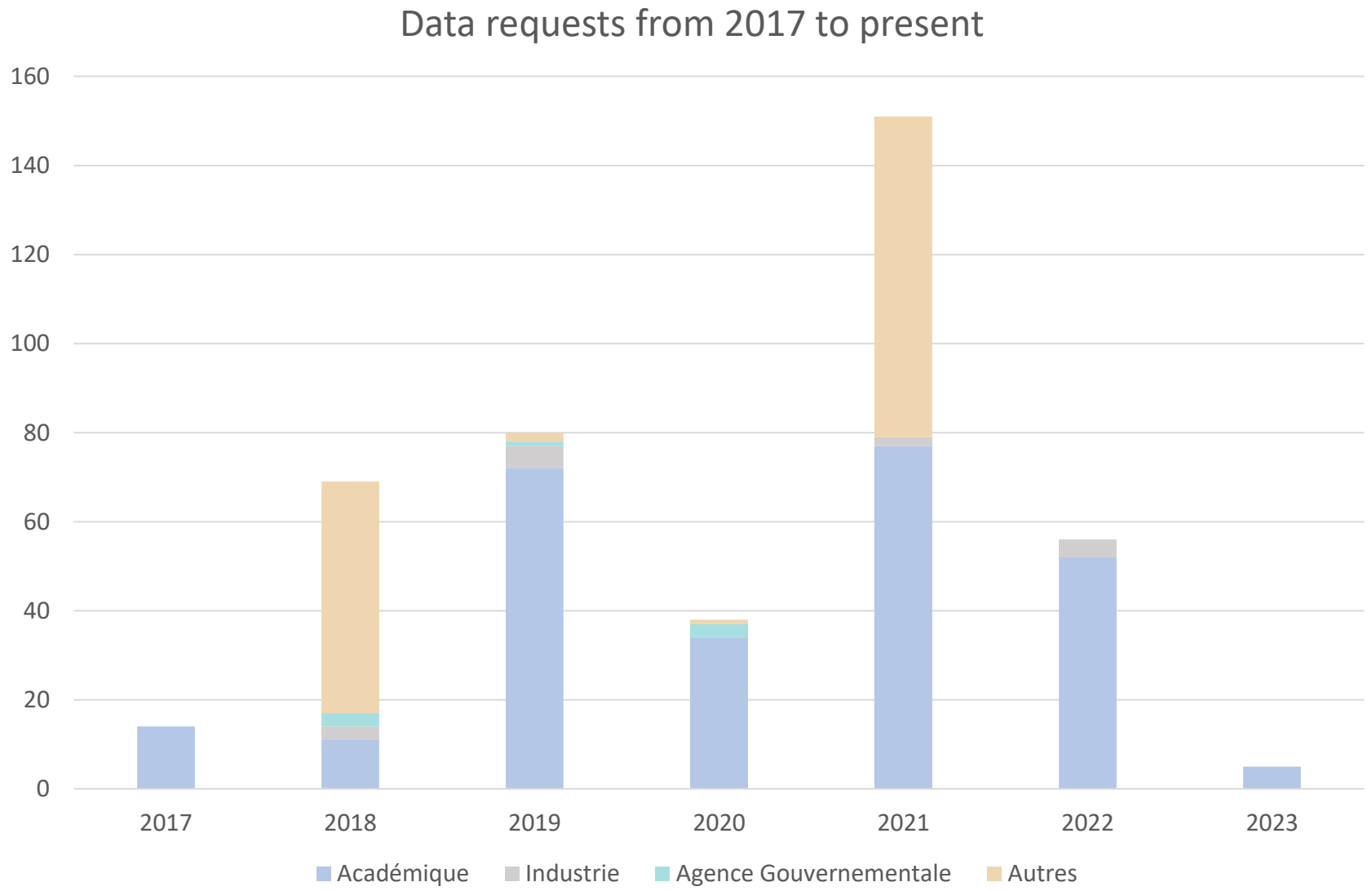
Statistics on data Center of deep Geothermal energy (CDGP) :

88

88 datasets

780

780 requests



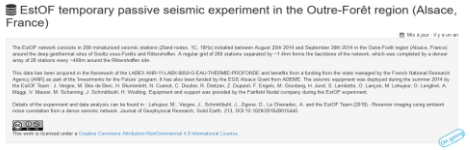
What data is distributed by the data Center of deep Geothermal energy ?

Data from the data Center of deep Geothermal energy (CDGP) :

The data are seismological (catalogs, waveforms, focus mechanisms), seismic, hydraulic, geological (fault model, logs) and all data related to the anthropogenic hazard

Region

- Seismic survey data, velocity models



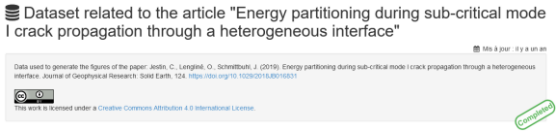
Site

- Various geothermal sites: Soultz-sous-Forêts, Rittershoffen, Vendenheim and soon Illkirch and Eckbolsheim

Episode

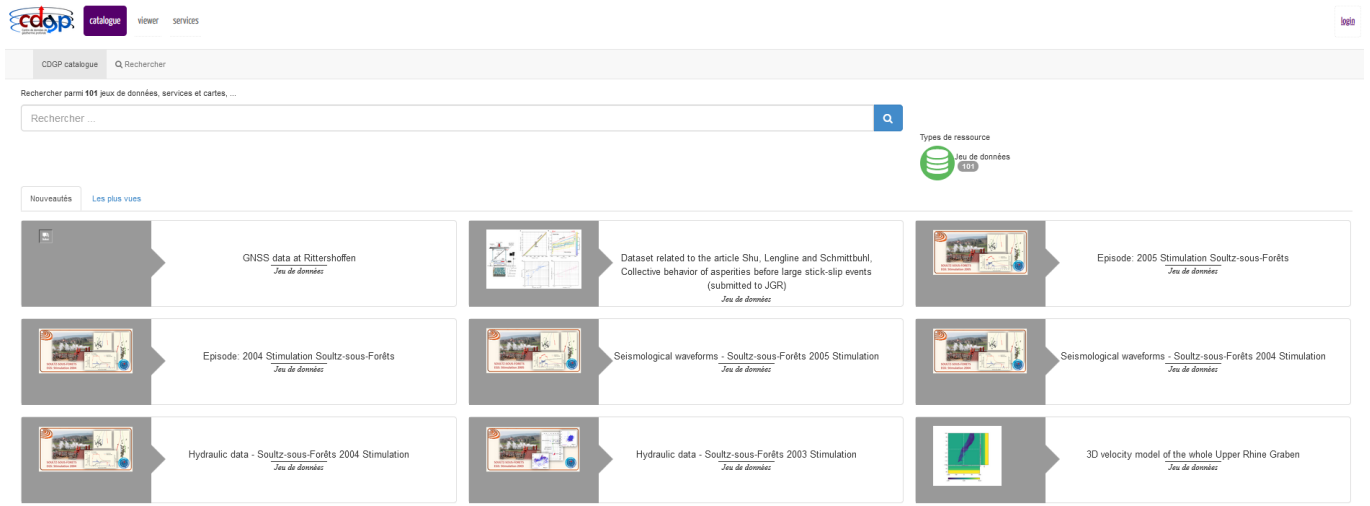
- An episode refers to a set of relevant geophysical and other geodata, correlated over time, that establishes a complete link between anthropogenic seismicity and its industrial cause

Publication: Data produced as part of a thesis or publication



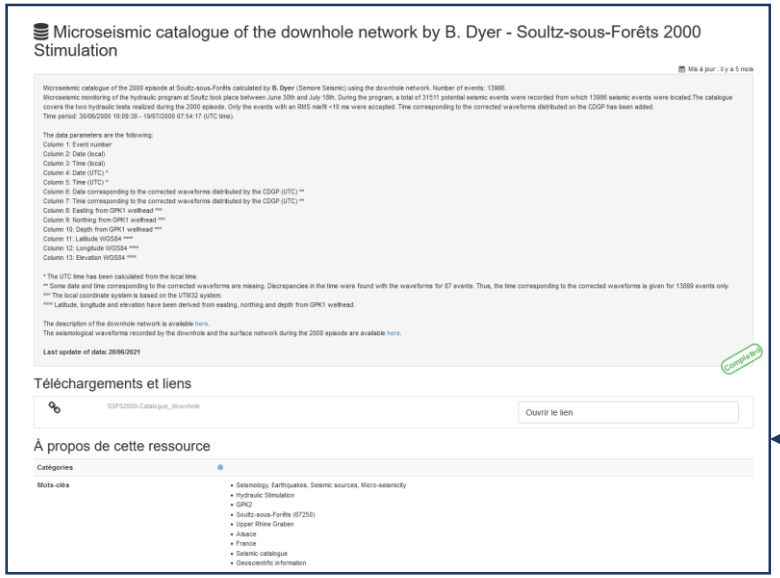
Data from the data Center of deep Geothermal energy (CDGP) catalog :

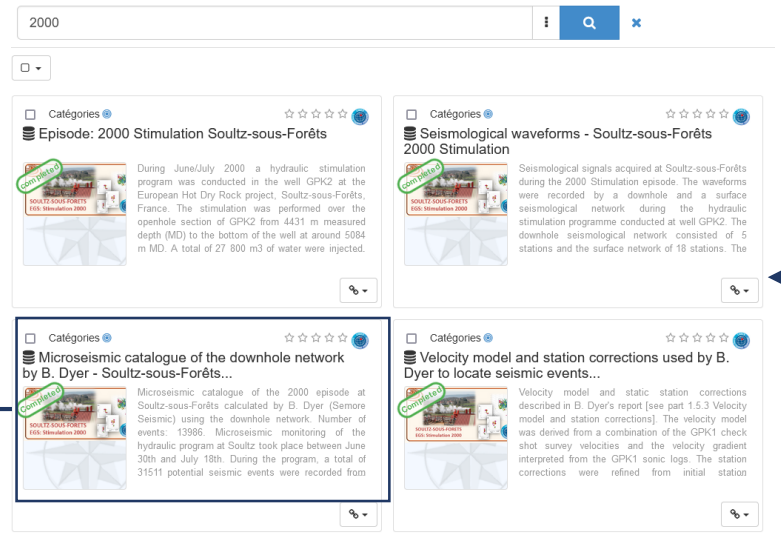
CDGP catalog



Search

Example of metadata





Metadata catalog

Example of metadata from the data Center of deep Geothermal energy :

Microseismic catalogue of the downhole network from CSMA - Soultz-sous-Forêts 1995 Stimulation and Hydraulic Tests

Mis à jour : il y a 2 ans

Catalogue of microseismicity recorded at Soultz-sous-Forêts during 1995 stimulation, injection and circulation tests. Number of events: 5295.
Time period: 15:15:45 14/06/1995 to 04:33:27 15/08/1995.

The data parameters are the following:
Column 1: Seismic ID
Column 2: Time and date (yyyy-mm-dd hh:mm:ss)
Column 3: Easting from GPK1 wellhead *
Column 4: Northing from GPK1 wellhead *
Column 5: Depth from GPK1 wellhead *
Column 6: Latitude WGS84 **
Column 7: Longitude WGS84 **
Column 8: Elevation WGS84 **

3636 events from this catalogue are in the other catalogue for 1995 (available here) as well. There are differences of location for 3287 events between the two catalogues, probably due to the use of different models for the relocation.

* The local coordinate system is based on the UTM32 system.
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Last update of data: 12/07/2019

Completed

Téléchargements et liens

SSFS1995-Catalogue_all — Ouvrir le lien

À propos de cette ressource

Catégories	
Mots-clés	• Seismology, Earthquakes, Seismic sources, Micro-seismicity • Hydraulic Stimulation • Injection test • Circulation Test • GPK1 • Soultz-sous-Forêts (67250) • Upper Rhine Graben • Alsace • France • GPK2 • Seismic catalogue • Geoscientific information
Langue	• Anglais
Contraintes légales	Confidentiality Level 3: Case-by-case How to cite: Baumgärtner, J., Jung, R., Gérard, A., Baria, R. and Garnish, J., 1996. The European HDR project at Soultz-sous-Forêts: stimulation of the second deep well and first circulation experiments, Proceedings of the 21st Workshop on Geothermal Reservoir Engineering, Stanford University, Stanford, California, January 22-24, 1996.
Contact pour la ressource	**Distributor** CDGP - EOST cdgp@eost.unistra.fr 5 rue René Descartes, Strasbourg, 67000, FRANCE **Owner** GEIE - Exploitation Minière de la Chaleur info-geie@cdgp.u-strasbg.fr Route de Soultz, Kutzenhausen, 67250, FRANCE
Status	• Completed

Informations techniques

Fréquence de mise à jour	As needed
Type de représentation	Vector
Système de coordonnées	• ::WGS 1984
Format	csv

Informations sur les métadonnées

Télécharger la fiche

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Example of metadata from the data Center of deep Geothermal energy :

Title

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Abstract

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The data request

SSFS1995-Catalogue_all

Ouvrir le lien

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Level of confidentiality

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Details on data

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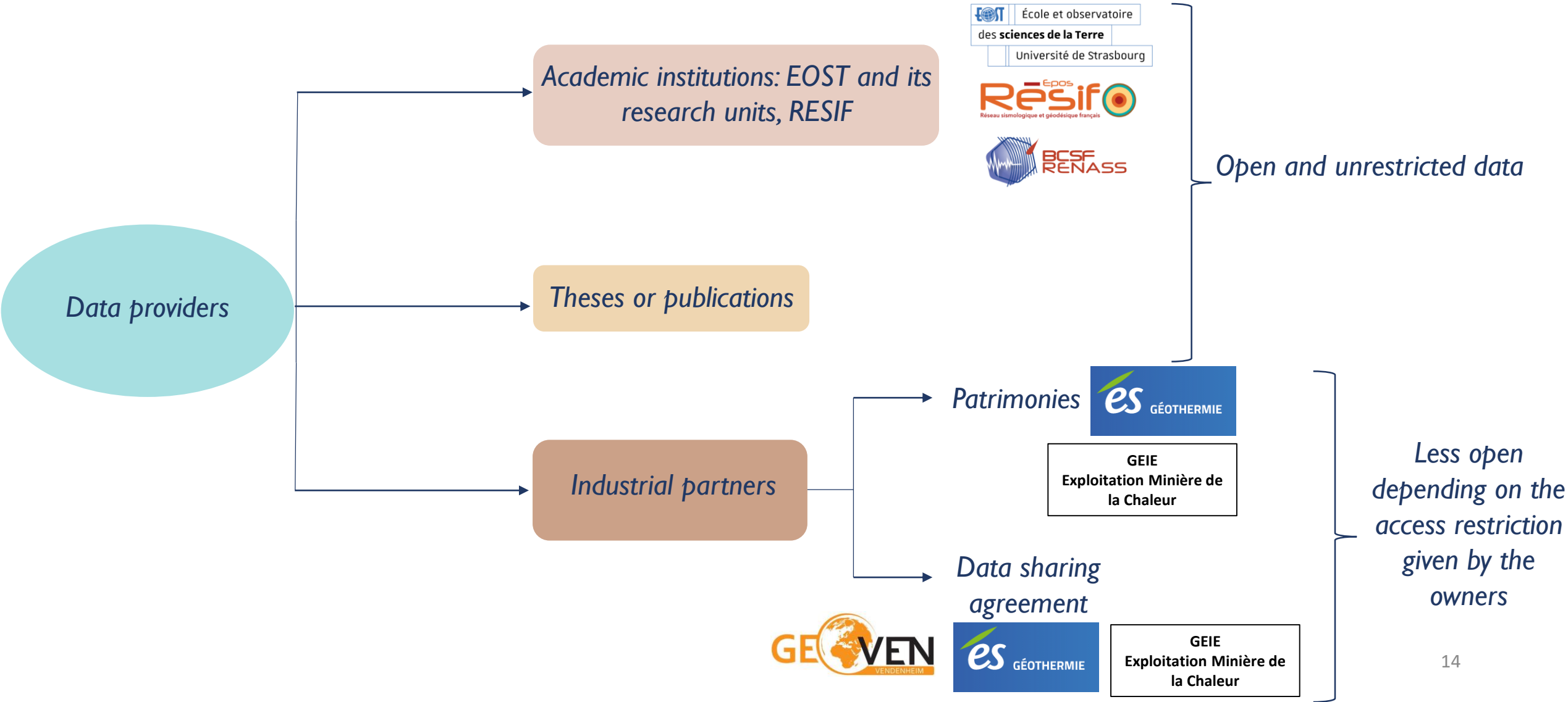
Last update of data: 12/07/2019

Coordinate system

Completed

Who provides the data and how is it distributed?

Data providers of the data Center of deep Geothermal energy (CDGP) :



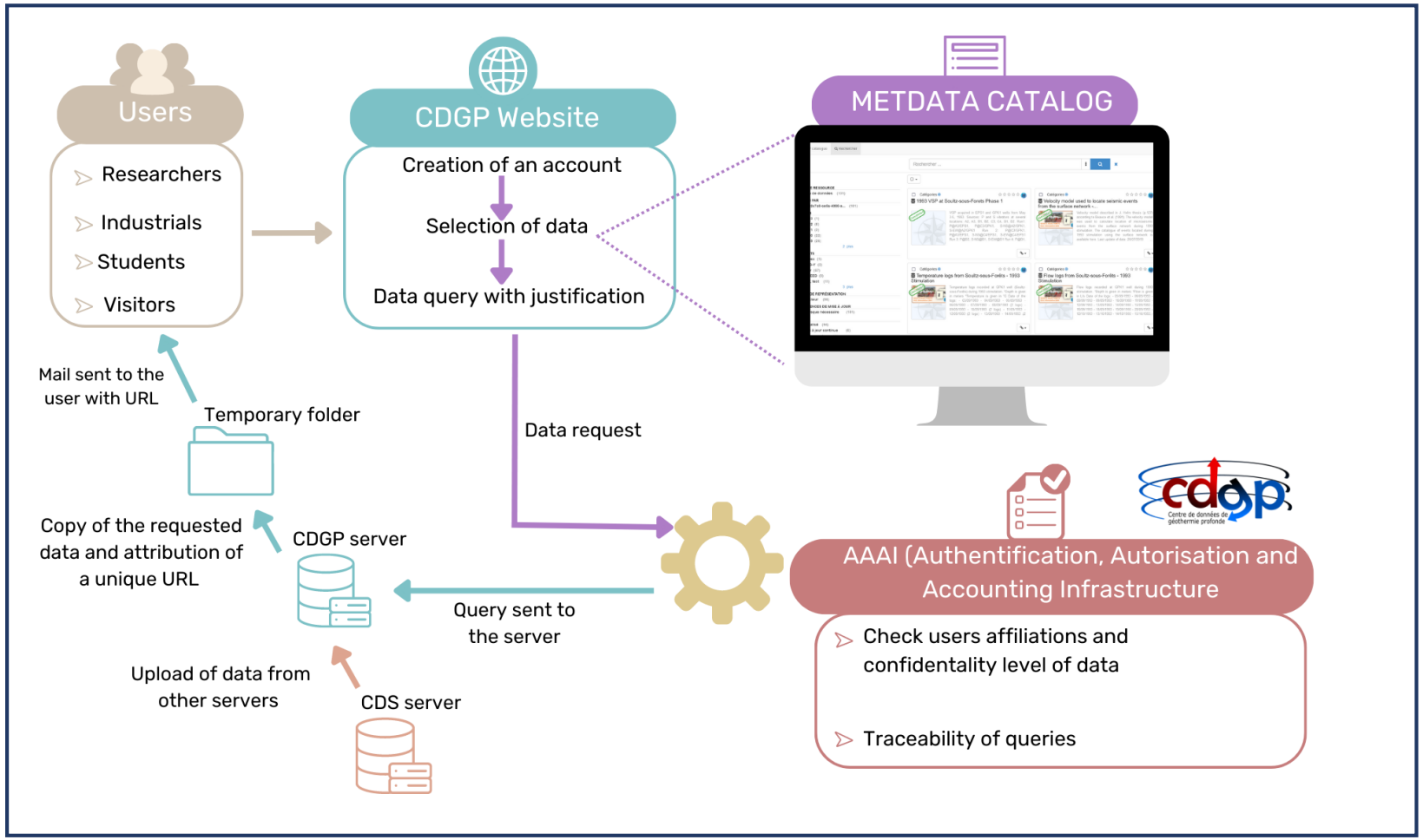
Limit access to data from the data Center of deep Geothermal energy (CDGP) :

Distribution rules have been established to define access to the 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.

Access to data from the data Center of deep Geothermal energy (CDGP) :

- The CDGP has implemented an Authentication, Authorization and Traceability Infrastructure (AAAI) to manage the distribution rules.
- In order to access the data, users may have to register on the CDGP website and specify their affiliation (academic, industrial,...). The affiliation is verified manually by a CDGP administrator. The AAAI tool gives access to the data according to the data distribution rules and the user's affiliation. If necessary, the user's request is forwarded to the provider who can accept or refuse.



Functional diagram of the CDGP data access

The Center of deep Geothermal energy (CDGP) and Suppliers :

The distribution rules have been established to gain and maintain the trust of data providers.

➡ Regular reports listing the datasets distributed to users are sent to vendors every six months.

2022

Philippe Danré, Louis De Barros, Frédéric Cappa, 2022 Inferring fluid volume during earthquake swarms using seismic catalogs
Geophysical Journal International, ggac345. 10.1093/gji/ggac345
[SSFS1996][SSFS1993][SSFS2000][SSFS2003]

Yu Feng, Arnaud Mignan, Didier Sornette, Ke Gaos, 2022 Investigating Injection Pressure as a Predictor to Enhance Real-Time Forecasting of Fluid-Induced Seismicity: A Bayesian Model Comparison
Seismological Research Letters. 10.1785/0220220309

2021

Alexandrov, D., Eisner, L., bin Waheed, U. and Cornet, F.H., 2021 Full-stress inversion from focal mechanisms and borehole data at Soultz-sous-Forêts
SEG Technical Program Expanded Abstracts : 1996-2000. 10.1190/segam2021-3583329.1
[SSFS2000]

Alexandrov, D. (Seismik s.r.o.), co-authored by L. Eisner, F. H. Cornet, and Umair bin Waheed, 2021 Full stress inversion from microseismic data and borehole constraints
Séminaire de la faculté de mathématiques et de physique, Prague, 2021-04-16 http://geo.mff.cuni.cz/seminarSeis.htm
[SSFS2000]

de Barros, L., Wynants-Morel, N., Cappa, F., Danré, Ph., 2021 Migration of fluid-induced seismicity reveals the seismogenic state of faults.
Journal of Geophysical Research : Solid Earth, American Geophysical Union, , 126 (11), pp.e2021JB022767. 10.1029/2021JB022767
[SSFS1993,SSFS1995,SSFS1996,SSFS2000,SSFS2003]

Drif, K., Lengliné, O., Kinscher, J., and Schmittbuhl, J., 2021 Energy analysis of microseismicity induced by fluid-injection in the Soultz-sous-Forêts geothermal reservoir.
Poster at EGW2021.
[SSFS1993](SSFS1995][SSFS1996][SSFS2000][SSFS2003][SSFS2004][SSFS2005]

Haagenson, R., Rajaram, H., 2021 Seismic diffusivity and the influence of heterogeneity on injection-induced seismicity
ESSOAr, 10.1002/essoar.10506096.1
Haagenson, R., & Rajaram, H., 2021 Seismic diffusivity and the influence of heterogeneity on injection-induced seismicity.
Journal of Geophysical Research: Solid Earth, 126, e2021JB021768.
10.1029/2021JB021768
[SSFS2000][TCS-AH]

Javani, D., Schmittbuhl, J, Cornet, F., 2021 Hydro-Mechanical Modeling of the Year 2000 Hydraulic Stimulation of GPK2 Well, Soultz-sous-Forêts, France
EGU General Assembly 2021, online, 19–30 Apr 2021, EGU21-15088
10.5194/egusphere-egu21-15088
[SSFS2000]

Maury, J. and Aochi, H., 2021 Comparison of the seismicity evolution during the 2000 and 2003 stimulations at Soultz-sous-Forêts.
EGU General Assembly 2021, online, 19–30 Apr 2021, EGU21-8864, 10.5194/egusphere-egu21-8864.
[SSFS2000][SSFS2003]

Mignan, 2021 - Induced seismicity completeness analysis for improved data mining. Frontiers in Earth Sciences, Advances in Monitoring, Modeling and Managing Induced Seismicity.
10.3389/feart.2021.635193
[SSFS1993][SSFS2000][SSFS2003][SSFS2004][SSFS2005]

Węglińska, E. and Andrzej Leśniak, A., 2021 - Induced Seismicity and Detailed Fracture Mapping as Tools for Evaluating HDR Reservoir Volume.
Energies 2021, 14, 2593.
10.3390/en14092593
[SSFS1993]

Publications using CDGP data

What is the link between the CDGP and EPOS?

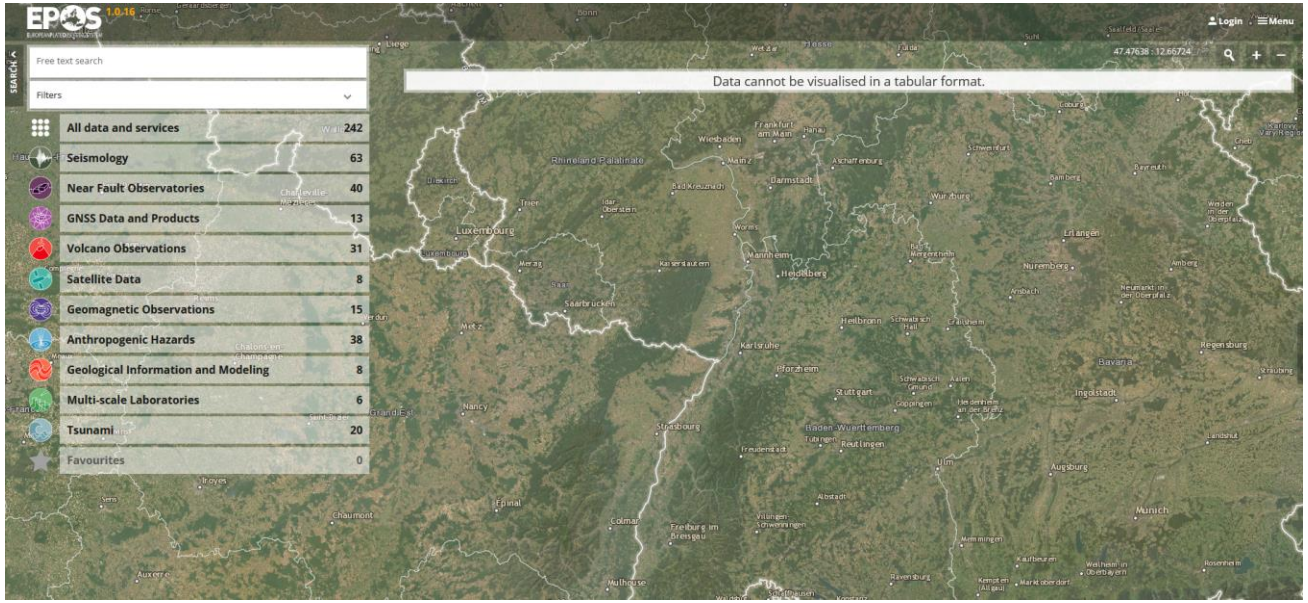
The Center of deep Geothermal energy (CDGP) and EPOS for anthropogenic hazards :

The CDGP is a local node of the EPOS platform for anthropogenic hazards (TCH-AH). The EPISODES platform provides access to some episodes of the CDGP.

Website of the EPISODES platform

The Center of deep Geothermal energy (CDGP) and EPOS DATA PORTAL :

Some episodes are also available on the EPOS data portal.



Website of the EPOS platform

What are the objectives for the next few years?

Objectives of the Center of deep Geothermal energy (CDGP) :

- Integrate GNSS data into a common format for scientists.
- Example of what the CDGP is currently proposing:

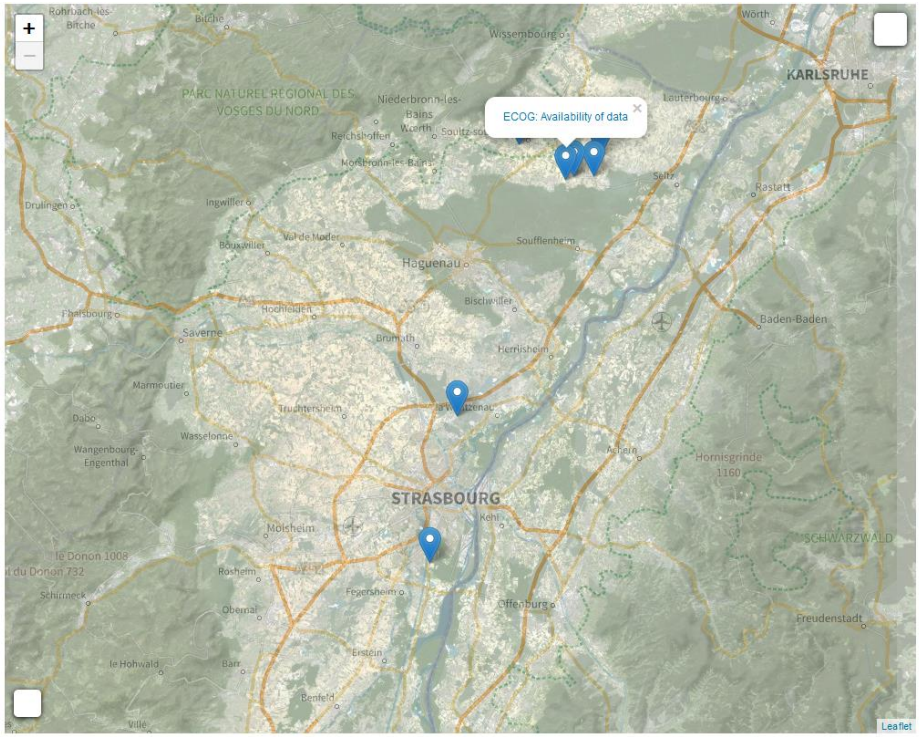
Localisation of Obsnef sites

According to a partnership agreement, the companies involved in deep geothermal energy in Alsace (The GEIE "Exploitation Minière de la chaleur", for the Soultz-sous-Forêts power plant, ECOGI, for the Rittershoffen plant, Électricité de Strasbourg, for the Illkirch project, and Fonroche Géothermie, for the Vendenheim and Eckbolsheim projects) have signed a partnership agreement with EOST under the patronage of the DREAL.

On this site, one can find the geodetic data made available to EOST by the industrials for the monitoring of surface deformations around geothermal sites as well as EOST data. A map of the different instrumented sites and data availability are presented.

Last data:

ECOG: Sun May 7 22:00:00 GMT 2023
GPK1: Sun May 7 22:00:00 GMT 2023
GPK2: Sun May 7 22:00:00 GMT 2023
HATN: Thu Nov 3 23:00:00 GMT 2016
ILLK: Wed Jun 8 22:00:00 GMT 2022
REIC: Sun May 7 22:00:00 GMT 2023
RITT: Tue Jan 16 23:00:00 GMT 2018
STUN: Sun May 7 22:00:00 GMT 2023



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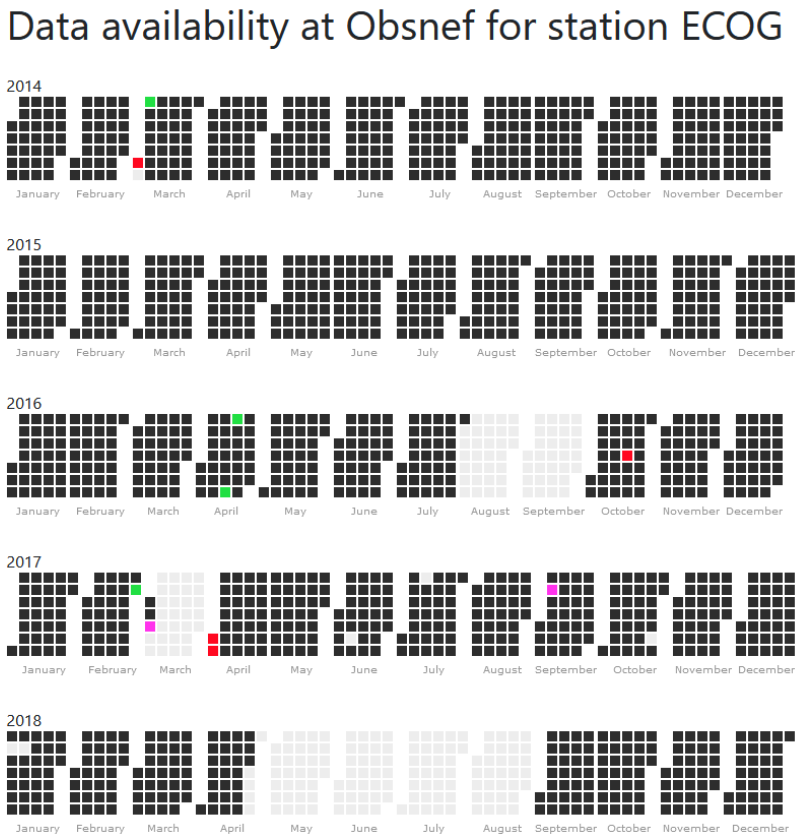
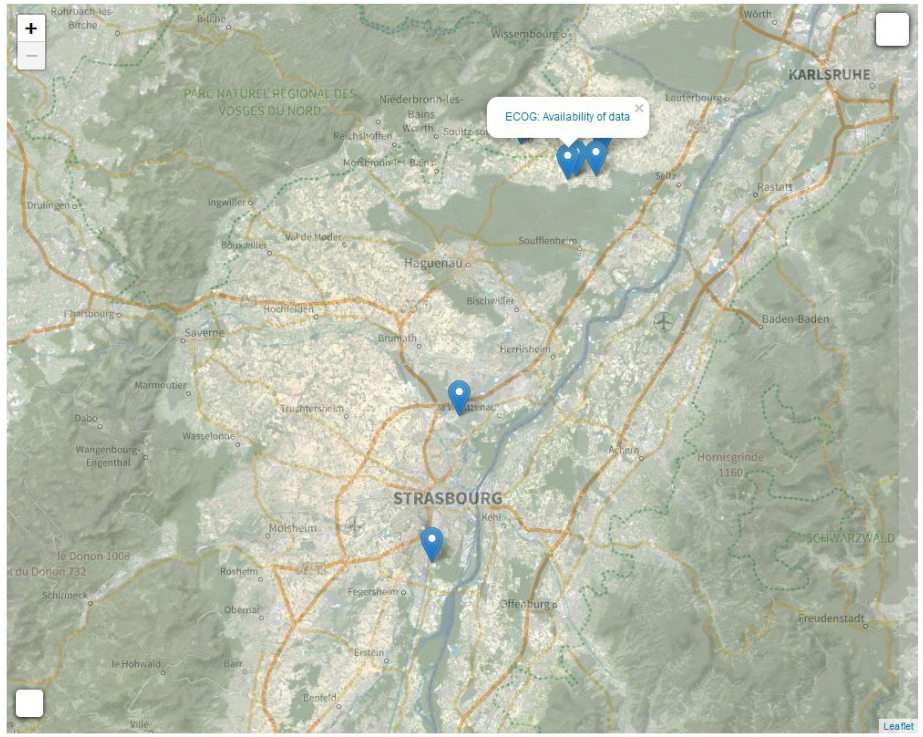


The CDGP works to :

-Offer services: for example, a daily average...

-Add more information on GNSS stations



LEGEND:

- No data
- Less than 50% of data
- Between 50% and 60% of data
- Between 60% and 80% of data
- Between 80% and 90% of data
- Between 90% and 100% of data

Objectives of the Center of deep Geothermal energy (CDGP) :

- Integrate geological data.
- Integrate laboratory data.
- Broaden the spectrum of data: geodesy, hydrology…

Conclusion :

- The CDGP is a Data Infrastructure that distributes different types of data via the web site: https://cdgp.u-strasbg.fr/.

- Quality controls are performed on the distributed data. The CDGP distributes enough information for the data to be used and cited.

- Data distribution is controlled through the Authentication, Authorization and Traceability Infrastructure according to the level of confidentiality established by the provider.

- The CDGP aims to integrate more data and distribute it through its website and through the EPOS platform.