

## Task 1.4

### Title

Geo-data infrastructure and analysis

### Project (presented on the following page)

GeoTherm: The Federal Data Infrastructure for Deep Geothermal Energy  
M. Faubert, M. Manzini, L. Boulicault, L. Glaus, C. Minnig, S. Brodhag, R. Baumberger

# GeoTherm

## The Federal Data Infrastructure for Deep Geothermal Energy

M.Faubert\*, M.Manzini\*, L.Boulicault\*, L.Glaus\*\*, C.Minnig\*, S.Brodhag\*, R.Baumberger\*

\*Federal Office of Topography swisstopo, Swiss Geological Survey, Seftigenstrasse 264, CH-3084 Wabern  
\*\*SCCER-SoE, ETH Zürich, Sonnegstrasse 5, CH-8092 Zürich

**GeoTherm is the public federal database for deep geothermal energy. It provides a data infrastructure for all existing and future data. It facilitates their access and usability.**

### Challenges for geothermal projects

- Having an updated national overview of relevant data
- Difficult access to data limits our understanding of swiss deep geology
- Limited understanding of subsurface increases risks for geothermal projects
- Data acquisition and inventorization is expensive and time consuming

### Advantages of GeoTherm

- ✓ Harmonized data in Switzerland
- ✓ Perennial data storage
- ✓ Easy access to free data
- ✓ Overview of existing data

### Context

Energy strategy 2050  
Legal: GeoIA<sup>[1]</sup>, OGN<sup>[2]</sup>, OGéo<sup>[3]</sup> and EnA<sup>[4]</sup>  
Motions: 11.3563 (Gutzwiller)<sup>[5]</sup> and 11.4027 (Riklin)<sup>[5]</sup>

Data

### Data Collection

We collect geological data of national interest<sup>[2]</sup> that are relevant for developing deep geothermal projects. The motivation is the decided phase out of nuclear power and the necessary promotion of renewable energy in Switzerland.

### Data web-publication

In order to make the existing data visible, we always publish the metadata of existing datasets.

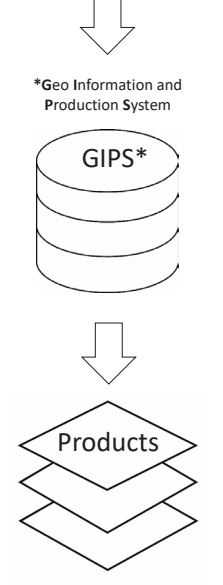
**Metadata<sup>[6]</sup>:** Data describing data. Allows to find the data and to assess their relevance. E.g. Location coordinate, owner, content, etc.  
**Data<sup>[6]</sup>:** Findings gained through observations, measurements, statistical surveys. Data can be stored in analog, digital or physical form.

The use and publication of all collected data are agreed upon by a contract between the data owner and swisstopo. Data from projects which were partially or fully financed by the state will be published according to the EnA<sup>[4]</sup> law and the legal framework of geological data<sup>[7]</sup> (geologyportal.ch).

Metadata

Data

↓ Non confidential  
↓ Non confidential or confidential  
→ According contract  
→ OGéo<sup>[3]</sup>



### Data model<sup>[6]</sup>

- Definition and harmonization of standards (data format, metadata)
- Selection and organization of relevant data
- Quality checks

Data model → Implementation

Borehole database management system of Swiss Geological Survey

### Products: 3 layers

1. Deep geothermal projects (now available on map.geo.admin.ch)
2. Geothermal potential studies (in prep.)
3. Wells >500m MD (in prep.)

### Perspective

- Integration of cantons data
- Layer of Reflexion Seismic
- Layer of Seismic Monitoring (in coll. With SED)
- Layer of temperature

Update of the heat flow map (in coll. with SGPK)

3D  
Parametrizing GeoMol 3D model<sup>[9]</sup> with temperature data

### Take Home Message

**GeoTherm** will facilitate the development of new deep geothermal projects by **enhancing geological data exchanges**. This project highly contributes to the Federal Energy Strategy 2050.

Only an **active collaboration** and **transparent sharing** of data between all the involved stakeholders will help us to apply the new prescriptions for energy in Switzerland.

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[1] Federal act on Geoinformation (GeoIA) 510.62, 2007.10.05  
[2] Ordonnance sur la géologie nationale (OGN) 510.624, 2008.05.21  
[3] Ordonnance sur la géoinformation (OGéo) 510.620, 2008.05.21  
[4] Energy Act (EnA) 30.09.2016  
[5] Motions: Gutzwiller F., 11.3562 et 11.3563, 15.06.2011, Riklin K., 11.4027, 30.09.2011.  
[6] Brodhag S. & Osterling N. (2014): Datenmodell Bohrdaten. Beschreibung des Kernmodells mit Objektkatalog und UML-Modell. Version 2.0, Bundesamt für Landestopographie swisstopo  
[7] Kettiger, D. (2017): Rechtlicher Rahmen für das Erheben, Nachführen und Verwalten von geologischen Daten. Landesgeologie, No.5, Bundesamt für Landestopographie swisstopo  
[8] Landesgeologie (in prep.): Datenaustausch und Datenfreigabe: Minimalanforderungen an Datenaustausch unter (Bundes-)Behörden, Ämtern und Privaten. Version 2.0, Bundesamt für Landestopographie swisstopo  
[9] Landesgeologie (in prep.): GeoMol – Geologisches 3D-Modell des Schweizer Molassebeckens. – Ber. Landesgeol. 10.