Swiss Tectonic Studies Group Excursion
4-6th of September 2026

Geothermal energy in the Alps: What can we learn from exhumed hydrothermal systems for the use of geothermal energy?

In contrast to high-enthalpy systems, geothermal activity in a magmatic orogenic stage only permits the exploration of low-enthalpy geothermal applications. Nevertheless, these systems can be an important source of renewable geothermal energy on the path to a net-zero CO_2 world, as evidenced by numerous hydrothermal springs (e.g. in the Rhône Valley). Despite evidence of deep-reaching hydrothermal systems, the key questions are: where and how much hot water circulates underground in an orogen, and how can it be exploited? The Structural Geology and Rock-Water Interaction groups at the University of Bern explored these questions by unravelling the preferential pathways of recharging and discharging fluids and the processes by which such pathways form and are maintained over geological timescales. They also investigated how these pathways can be located, even when covered by hundreds of meters of unconsolidated Quaternary sediments, as in the Rhône Valley. During this excursion, we will visit exhumed paleo-recharge and discharge systems at the southern rim of the Aar Massif and the Helvetic nappes and discuss them in the context of active hydrothermal activity.

Field trip leader: Prof. Marco Herwegh (marco.herwegh@unibe.ch)

To book your participation on the excursion: please send an e-mail to Vénice Akker ismay.akker@unibe.ch **by the 15th of June 2025.** Please note that registration is binding. In the case you have any dietary wishes please indicate.

Max. number of participants: 25
Members of the Swiss Geological Society are prioritized in the case of overbooking

Program:

Day 1 (4.9.26) – How and where water recharges for hydrothermal systems (Hasli Valley)?

- Individual travel to Guttannen
- 12:30h meeting at the big parking lot at the S-entrance of Guttannen (46° 39’ 14.87” N 8° 17’ 25.20” E)
- Aar Massif fluid pathways (surface and Nagra Grimsel Test site underground lab)
- Overnight stay at Hotel Bären, Guttannen (46° 39’ 18.21” N 8° 17’ 21.12” E)

Day 2 (5.9.26) – Discharge of hot hydrothermal water in basement rocks (Grimsel Pass)

- Drive to Grimsel Pass (30 min)
- Several hours hike along the Grimsel Shear Zone system with special emphasis on GBF structures, an active hydrothermal system since 3.4 Ma (6hrs hike, 8 km horizontal distance, 600 m of elevation gain)
- Drive from Grimsel pass to Leukerbad (2 hrs)
- Overnight stay at Touristenheim Bergfreunde, Leukerbad (46° 23’ 00.75” N 7° 37’ 44.68” E)

Day 3 (6.9.26) – The Leukerbad and Rhône Valley hydrothermal systems

- Cable car ride to Gemmi Pass
- Hike to sediment-rock-hosted Gemmi Fault paleo-hydrothermal system
- Cable car ride back to Leukerbad
- Drive to Chlämpuschleif – outlook Rhone Valley and final discussion (46° 19’ 09.52” N 7° 38’ 19.24” E)
- 14h Individual travel back home

Requirements: Ability to hike for several hours in mountainous area in parts without official hiking paths. Bring appropriate hiking and rain gear (warm clothes).
Travel: Travel is organized by participants themselves; we recommend carpooling.
Excursion fee: The excursion fee is **190 CHF** (including 2x overnight stays with 2x dinner and 2x breakfast). The only cost which is not included is the cable car ride to Gemmi Pass which participants need to pay directly on site.
Payment
The excursion fee (**190 CHF**) needs to be transferred before the **15th of August** to the following IBAN:
IBAN CH07 0900 0000 8001 7174 1
Schweizerische Geologische Gesellschaft
c/o Engel Copera AG
Waldeggstrasse 37
3097 Liebefeld