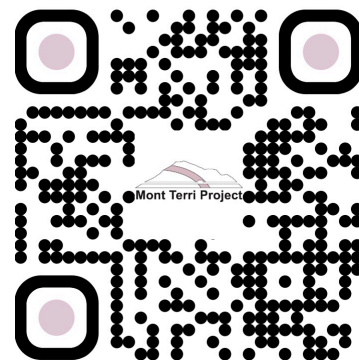


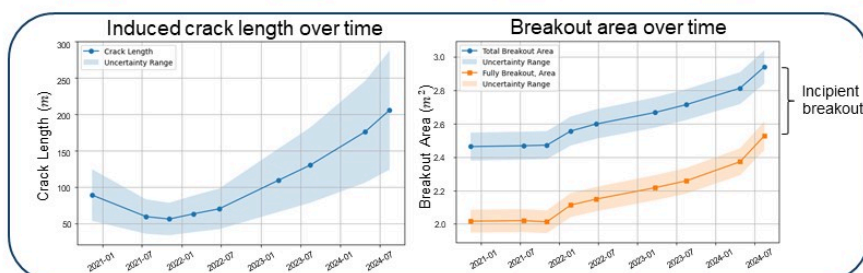
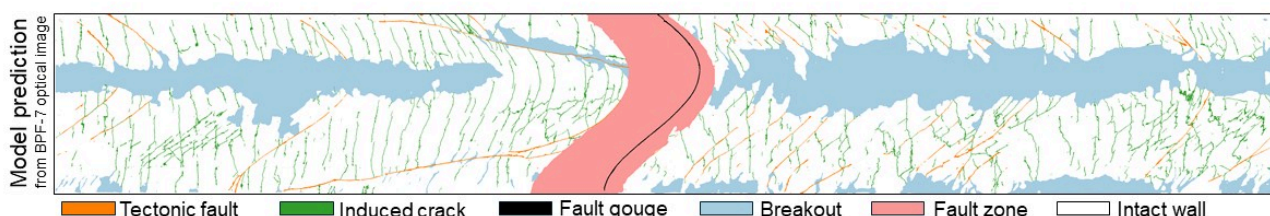
Mont Terri Project Underground Rock Laboratory



Report period: May 19–25, 2025

Assembled and edited by swisstopo, St-Ursanne

Advances in the identification of Geological Discontinuities in Boreholes with Deep Learning



Conclusion

Deep learning enables fast and consistent segmentation of geological discontinuities in borehole images. It also contributes to assessing rock mass behavior of large datasets.

Spotlight of the week: The ML experiment aims at developing machine learning routines to automatically identify and differentiate between different geological discontinuities. In the first phase of the study, the focus is on BPF-7 borehole data. This borehole exhibits different tectonic structures, induced cracks, and borehole wall breakouts, and is monitored in the frame of the PF/PF-A experiment. Preliminary results were presented by R. Wang (WSL/ETH) at the EGU General Assembly 2025 and were honored with the Outstanding Student and PhD Candidate Presentation (OSPP) Award (R. Wang, M. Ziegler, A. Manconi, M. Volpi).

DR-E (Long-Term Diffusion Experiment in the Main Fault-Zone) experiment

- On Tuesday, May 20, S. Schefer (swisstopo) took samples #14 from the injection fluid on both boreholes BDR-E1 and BDR-E2.

FS-B (Imaging the Long-Term Loss of Faulted Host Rock Integrity) experiment

- From Wednesday to Thursday, May 21–22, S. Braunschweig and F. Durulan (Eul GmbH) continued drilling of BFS-B14 to a depth of 42 m, where water was encountered in BFS-B14 and also pushed out of BFS-2. Drilling was stopped and air was used to dry the borehole overnight. M. Ziegler (swisstopo) was on site to assess the situation (**Figure 1**).
- On Friday, May 23, S. Braunschweig and F. Durulan (Eul GmbH) tried to save the borehole but unfortunately the drying air hose broke inside. Next week will tell how to proceed (**Figure 2**).

SW-A (Large-Scale Sandwich Seal in Opalinus Clay) experiment

- On Monday, May 19, the HPT attached to the borehole BSW-A1 has been refilled by T. Theurillat (swisstopo).

Visits

Day	Date	Group Name	Group Size	Visitors Guide
Mon	19.5.2025	Collège De Delémont	15	R. Nicol (swisstopo)
Mon	19.5.2025	University Of Texas AM	23	H. Sager (Nagra)
Tue	20.5.2025	Bundesamt Für Die Sicherheit Der Nuklearen Entsorgung (BASE)	13	D. Jaeggi (swisstopo)
Tue	20.5.2025	Lion's Club Delémont	15	J.-P. Meusy (freelance)
Wed	21.5.2025	Logistikbasis Der Armee, Othmarsingen	83	H. Hauser (freelance) H. Sager (Nagra) R. Nicol (swisstopo)
Thu	22.5.2025	ABB-Pensioniertenverein, Zürich	15	O. Moser (Nagra)
Fri	23.5.2025	Simultec AG	15	M. Abdelouhabi (swisstopo) R. Nicol (swisstopo)
Sat	24.5.2025	Oberstufe Gsteighof, Burgdorf	11	H. Sager (Nagra)
Sat	24.5.2025	Schule Gsteighof	13	H. Sager (Nagra)

Figures



Figure 1: FS-B: Water pushed out from the existing boreholes (M. Ziegler, swisstopo).



Figure 2: FS-B: The borehole is completely deformed with many breakouts (M. Ziegler, swisstopo).