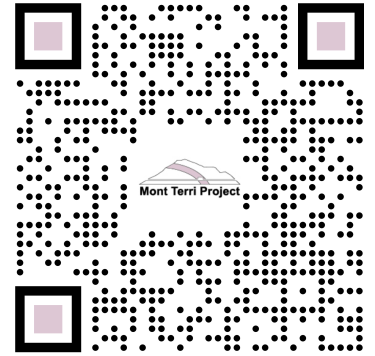


Mont Terri Project Underground Rock Laboratory

Report period: November 13–19, 2023

Assembled and edited by swisstopo, St-Ursanne



Spotlight of the week: Following the heavy rains of recent weeks, the Doubs has been rising steadily until it overflowed its banks in the middle of the week. The water level at Pont Saint-Jean was very high, and the lower streets of St-Ursanne were beginning to flood, as did the fields upstream and downstream of the town. The river flow reached 292 cubic meters per second. During the January 2018 flood, it had reached 339 cubic meters per second.

CD-A (Influence of Humidity on Cyclic and Long-Term Deformations) experiment

- On Monday, November 13, L. Borgeaud and J. Windisch (swisstopo) measured the lengths and the apertures of cracks in both twin niches to understand the cyclic deformation and possible deterioration of gallery walls.

CI-D (Diffusion Across 10-Year-Old Concrete/Claystone Interface) experiment

- On Thursday, November 16, the drilling guide used for the 7 stabilization boreholes was removed and a new drilling guide welded together from our existing tubes for coring with 131 mm diameter. This was quite impressive and quick welding work by A. Eul and S. Braunschweig (Eul GmbH). Then, the 3 m long double-barrel tool with PVC liner was inserted and the first 3 m long sampling core was drilled and recovered at 4 pm. It was wrapped and sealed to await sample processing next week. Radio protection protocols were followed and only background readings were detected at the core.
- On Friday, November 17, a second overcore was drilled (BCI-D4-OC2) and retrieved in two segments, also in good condition. Two core pulls were required because the core catcher did not properly grip and only the important upper part was obtained at first. The last overcore from BCI-D4 will be drilled on Monday.

HE-E (In-Situ Heater Test in VE-Micro-Tunnel) experiment

- On Wednesday, November 15, U. Mäder (UniBern) took samples from BHE-E4 core to perform water content measurements (**Figure 1**).
- On Wednesday, November 15, U. Mäder (RWC), F. Kober (Nagra) and P. Steiner (swisstopo) installed the PVC liner in BHE-E4 and sealed the gap between the borehole walls and the liner.
- From Thursday to Friday, November 16–17, U. Mäder (RWC), F. Kober (Nagra) and P. Steiner (swisstopo) injected 25.6 litres of resin into BHE-E4 in preparation of the overcoring (**Figure 2**).

MA (Microbial Activity) experiment

- From Tuesday to Wednesday, November 14–15, A. Wiseall (NWS), J. Lloyd, R. Snow and L. Foster (University of Manchester) took water samples from different boreholes inside the Opalinus Clay, the Passwang Formation and the Staffelegg Formation. Chemical and microbiological analyses will provide a new profile through these units (**Figure 3**).

SI-B (Seismic Imaging of Structures Below the Mont Terri Tunnel and Rock Laboratory) experiment

- From Monday to Wednesday, November 13–15, B. Wawerzinek, F. Brethauer, A. Bauz and S. Lüth (GFZ) acquired seismic measurements using a weight-drop source in the Safety Gallery. The weight drop source was activated along a profile in the Safety Gallery and at test locations near the entrance to the gallery (**Figure 4**).

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

- On Monday, November 13, the gas cylinder connected to the injection cabinet of BSW-A2 was changed by T. Theurillat (swisstopo).
- On Tuesday, November 14, T. Theurillat (swisstopo) refilled the High Pressure Tank attached to shaft BSW-A1.

Varia

- On Thursday, November 16, Y. Tomonaga (Entracers GmbH) measured the atmospheric composition inside the lab with the miniRuedi at 13 locations. This is part of a survey for existing tracer elements.

Visits

Day	Date	Group Name	Group Size	Visitors Guide
Thu	16.11.2023	PSI / ETHZ / EPFL Master Students Nuclear Energy	26	H. Sager (Nagra) O. Leupin (Nagra)
Sat	18.11.2023	Besuchstag Nördlich Lägern	27	H. Sager (Nagra) O. Moser (Nagra)

Figures



Figure 1: HE-E: U. Mäder (UniBern) taking samples from BHE-E4 (A. Grignaschi, swisstopo).

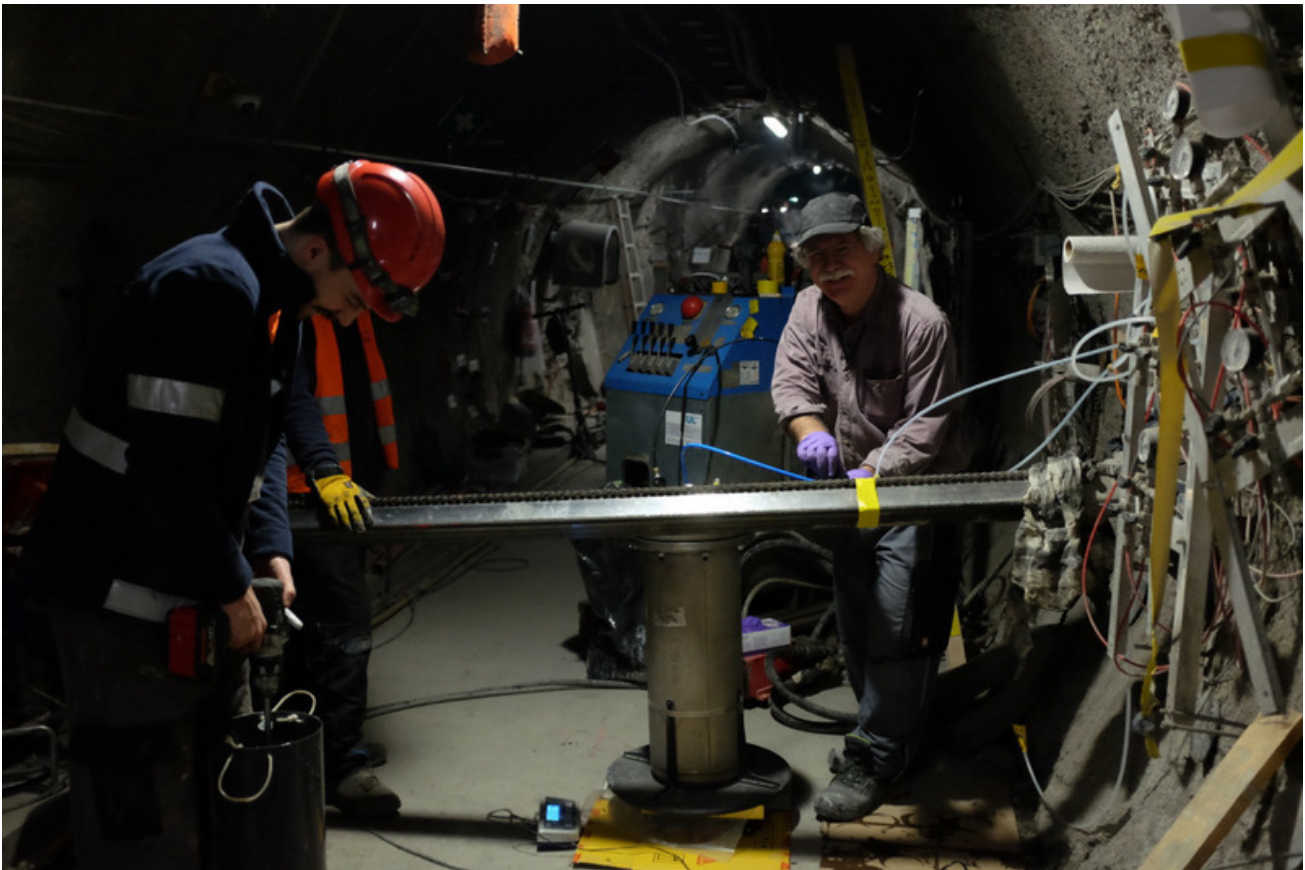


Figure 2: HE-E: U. Mäder (UniBern) and P. Steiner (swisstopo) mixing the resin to be injected in BHE-E4 (A. Grignaschi, swisstopo).



Figure 3: MA: A. Wiseall (NWS) with his collaborators from University of Manchester took microbiological samples (S. Schefer, swisstopo).



Figure 4: SI-B: The team from GFZ acquiring seismic data in the Safety Gallery (A. Grignaschi, swisstopo).