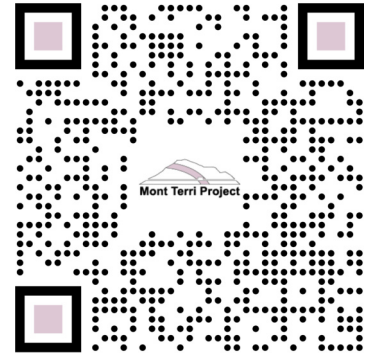


# Mont Terri Project Underground Rock Laboratory



Report period: December 11–17, 2023

Assembled and edited by swisstopo, St-Ursanne



**Spotlight of the week:** The CD-A experiment focuses on coupled HM effects due to excavation and ventilation. The CD-A experiment is located in the twin niches: One of the niches – called the Open Twin - is ventilated in the same way than the rest of the laboratory, while the other niche – the Closed Twin - is sealed off so that a uniformly high humidity is maintained. This results in different conditions of relative humidity and temperature, affecting especially the near field effects like the evolution of EDZ, water content and desiccation cracks. Combined multi-disciplinary investigations are used to increase process and system understanding.

## **BIM (Mont Terri Building Information Modeling) experiment**

- On Wednesday, December 13, C. Oreja and C. Siegrist (ATB) implanted the remaining fix points in GA98.

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

- On Tuesday, December 12, S. Schefer (swisstopo) removed the ERT measuring system for the resin injection in BCL-3. The tiltmeters had to be restarted. Data acquisition resumed on Friday.

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

- On Monday, December 11, U. Mäder (RWC), C. Zwahlen and A. Jenni (UniBern RWI) cut and packaged samples from BCI-D1-OC. Radio protection measures were in place.
- On Thursday, December 14, U. Mäder (RWC) cut the remaining slabs from BCI-D1-OC.
- On Friday, December 15, U. Mäder (RWC), C. Zwahlen and A. Jenni (UniBern RWI) continued the cutting and packaging of the last samples from BCI-D1-OC. The show must go on... (**Figure 1**).

## **CL (CO<sub>2</sub>LPIE-CO<sub>2</sub> Long-Term Pulse Injection) experiment**

- On Tuesday, December 12, M. Ziegler, D. Jaeggi and J. Windisch (swisstopo) filled the annulus space of BCL-3 with resin. Borehole temperature, strain and electrical resistivity were monitored. Active air flushing (at 20-25°C) inside the borehole was used to control resin polymerization temperature for the next 48 hours (**Figure 2**).

## **CS-E (Mini-Fracturing and Sealing) experiment**

- On Friday, December 15, S. Schefer (swisstopo) refilled the water in the injection tank.

## **DM-A (Long-Term Deformation Measurement) experiment**

- From Monday to Thursday, December 11–14, M. Middelhoff, K. Jantschik and B. Zehle (GRS) prepared the drill core samples from the new boreholes for transport.
- From Tuesday to Wednesday, December 12–13, A. Eul and S. Braunschweig (Eul GmbH) drilled BDM-A7 and BDM-A11 to 10 m depth.
- From Tuesday to Wednesday, December 12–13, PX Meury (GeoEnvironnement) performed the mapping of BDM-A7 and BDM-A11 (**Figure 3**).

## **FE-G (Monitoring the Gas Composition within the FE Experiment) experiment**

- On Wednesday, December 13, Y. Lettry (Solexperts) performed maintenance on the gas module cabinet.

## **FE-M (Long-Term Monitoring of the Full-Scale Emplacement Experiment) experiment**

- On Tuesday, December 12, T. Theurillat and S. Schefer (swisstopo) exchanged the mixer in the heated calibration bath, refilled ca. 100 l of demineralized water and restarted the heating.

## **FS-E (Distributed Hydromechanical Response during Fault Damage and Fault Self-Sealing Evolution) experiment**

- On Tuesday, December 12, M. Rutschi and A. Guzik (Neubrex) identified the location of a fiber-optical (FO) cable break at line 4 inside the experiment borehole BPF-7 and measured strains along all other FO lines (**Figure 4**).

## **SM-C (Permanent Nanoseismic Monitoring) experiment**

- From Thursday to Friday, December 14–15, S. Schefer (swisstopo) refilled the HLS in 4 steps of 180 ml with demineralized water.

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

- On Monday, December 11, T. Theurillat (swisstopo) refilled the HPT on shaft 1 and S. Schefer (swisstopo) increased the injection pressure on shaft 2 to 6.3 bars.
- On Friday, December 15, S. Schefer (swisstopo) refilled the HPT of shaft 1.

## Varia

- On Friday, December 15, A. Grignaschi had her last working day in Mont Terri. She was with us as our trainee during the last eight months and moves back to Italy. Alessia, we thank you for all your work and support and wish you a lot of success, joy and happiness for your future! (**Figure 5**).

## Visits

Day	Date	Group Name	Group Size	Visitors Guide
Thu	14.12.2023	Centre Logistique De L'armée, Grolley	18	R. Nicol (swisstopo)
Fri	15.12.2023	Bospi AG	24	H. Sager (Nagra)

## Figures



**Figure 1: CI-D:** Cutting the last pieces from one of the slabs (S. Schefer, swisstopo).



**Figure 2: CL:** Resin injection in BCL-3 (J. Windisch, swisstopo).



**Figure 3: DM-A:** Mapping also involves making well illuminated pictures from the drill core (S. Schefer, swisstopo).



**Figure 4: FS-E:** A. Guzik and M. Rutschi measuring the fibre optics from BPF-7 (S. Schefer, swisstopo).



**Figure 5: Varia:** Enjoying the winter sunset in St-Ursanne before going back the southern sun. All the best Alessia! (S. Schefer, swisstopo).