Mont Terri Rock Laboratory

Field report: July 11–17, 2022 (Phase 28)

CD-A (Influence of Humidity on Cyclic and Long-Term Deformations) experiment
- On Thursday and Friday, A. Degiacomi and S. Schefer (swisstopo) installed 5 levelling points along the axis of the Open Twin Niche (the Closed Twin Niche will be done next week). These levelling points (in collaboration with the MH-experiment) will give us an alternative method to determine uplift and compare with the laser scans and 3D-convergence measurements.

CS-E (Mini-Fracturing and Sealing) experiment
- On Friday, A. Rinaldi (ETHZ) finally calibrated the pH and EC-sensors in all three circulation lines and connected them to the intervals inside BCSD-1 and BCS-D2.
- With the help of A. Degiacomi, P. Maeder and S. Schefer (swisstopo), they tried pulling the SIMFIP from BCS-D7. After about 2 m the SIMFIP got stuck and the rope broke (Figure 1).

DM-A (Long-Term Deformation Measurement) experiment
- On Thursday, M. Middelhoff (GRS) was on site to retrieve data from the dilatometer probe and to verify the proper functioning of the experiment setup (Figure 2).

DR-D (Heterogeneity of Sandy Facies by Geophysical Characterization and Diffusion Studies) experiment
- On Wednesday, the active logging of BDR-D1 and BDR-D2 took place (Figure 3). The logging team consisted of M. Ensmenger and W. Voigt (BBi GmbH), supervised by J-P. Bischoff (Terratec). F. Heberling and D. Glückman (KIT) and D. Jaeggi (swisstopo) observed the measurements scientifically and T. Theurillat (swisstopo) was responsible for the safety during the campaign. The lab was closed to people not involved in the measurement campaign.

FE-M (Long-Term Monitoring of the Full-Scale Emplacement Experiment) experiment
- On Monday, J. Gisiger (Solexperts) did maintenance work.
- On Friday, the PI R. Schneeberger and B. Firat (Nagra) were on site to explain the manual humidity and electrical conductivity measurements to T. Theurillat and S. Schefer (Figure 4).

GT (Gas Transport Models and the Behavior of OPA to Gas Pressure) experiment
- On Monday, J. Gisiger (Solexperts) performed maintenance on the installation and started the He-injection.

HS (Hydrogeological Survey of the Mont Terri Anticline) experiment
- On Monday, J. Gisiger (Solexperts) repaired the pressure sensors in BHS-1.

MA-A (Modular Platform for Microbial Studies) experiment
- On Thursday, C. Rolland (EPFL) sampled BMA-A1 and BMA-A2 to do comparative chemical analysis (Figure 5).
MH (Monitoring of Heaves and Displacement) experiment
• On Tuesday, S. Condamin (swisstopo) was on site to retrieve data from the meteo logging stations inside the safety gallery.

PF (Progressive Rock Mass Failure and Overbreak Sealing) experiment
• On Tuesday and Wednesday, F. Schulte and T. Tietz (BGR) performed seismic measurements between BPF-3 and BPF-4 (Figure 6). They also measured ERT along all six observation boreholes and crosshole on all combinations of BPF-1 to BPF-6.

SW-A (Large-Scale Sandwich Seal in Opalinus Clay) experiment
• On Tuesday, A. Degiacomi, M. Ziegler and S. Schefer (swisstopo) installed humidity sensors inside shaft 2 (Figure 7).
• On Tuesday and Friday, S. Schefer refilled the high pressure tank with Pearson water.
• On Thursday, S. Schefer reconnected the Taupe sensor from port 5 onto port 6 to hopefully resolve a data quality issue.

Varia
• Information: The rock lab will be closed for summer break from July 18 until August 14.
• The next weekly report will be sent after the holidays. We wish you all a wonderful and energizing summer break!

D. Jaeggi and S. Schefer, July 16, 2022

Visits

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Figure 1: CS-D: Pulling the SIMFIP just before the rope broke… (Photo: A. Degiacomi, swisstopo).
Figure 2: **DM-A**: M. Middelhoff explains the experiment (Photo: A. Degiacomi, swisstopo).

Figure 3: **DR-D**: There is a lot of waiting time during a logging campaign (Photo: D. Jaeggi, swisstopo).
Figure 4: FE-M: B. Firat explaining the protocol to T. Theurillat (Photo: S. Schefer, swisstopo).

Figure 5: MA-A: C. Rolland is sampling fluids and preparing them for the transport to the lab at EPFL (Photo: A. Degiacomi, swisstopo).
Figure 6: **PF:** T. Tietz and F. Schulte during the seismic measurements (Photo: A. Degiacomi, swisstopo).

Figure 7: **SW-A:** M. Ziegler observes the humidity measurements inside shaft 2 (Photo: A. Degiacomi, swisstopo).