

Little Dome C

Beyond EPICA Oldest Ice Drilling Site (75.29917 °S, 122.44516 °E)

Situation Report 20, 16. December 2023

Personnel @LDC:

Saverio Panichi (ENEA, Camp Leader), Olivier Alemany (CNRS), Philippe Possenti (CNRS), Matthias Hüther (AWI), Rémi Dallmayr (AWI), Gunther Lawer (AWI), Johannes Lemburg (AWI), Andrea Ceinini (ENEA), Federico Scoto (CNR), Tamara Gerber (UCPH), Iben Koldtoft (UCPH), Julien Westhoff (UCPH), James Veale (BAS), Michaela Mühl (UNIB), Fortunat Joos (UNIB), and Inès Gay (IPEV)

Weather at LDC 5 pm: sunny and nice; temp.: -15°C; wind: 0.5 m/s



Today drilling continues in shift with runs averaging 4.5 meters in length, and still with excellent core quality despite being in the brittle zone. During the last 24h we drilled again around 40 meters. We broke one of the booster on the hollow shaft, but we could then switch to the second one.

In the frame of BEOI we got visit of the seismic team (Dimitri Zigone, Marco Buttu, Ricardo Scipinotti, Riccardo Devescovi and Vitale Stanzione), who set up 24 seismic nodes that will record the ambient seismic noise on the LDC site. Those noise records will then be used to perform seismic interferometry in order to study the elastic properties of the firn and the ice with a specific focus on firn and ice anisotropy. The nodes will stay ~15 days on site.

We are still training more people on the logging and we processed another 30 meters of ice from last year.

Yesterday we used the crane for moving ice core boxes, which takes more time, but on the other hand has less negative influence on the backs of our team.

What we did today at LDC:

- We continued to drill in shifts;
- We changed the booster on one of the two hollow shafts;
- We are preparing a second drill head;
- We are now processing the ice from 222m to 608m, which is left unprocessed from last year. We finished another 30 m in shifts, reaching 422m depth;
- We added 500 liter of fresh drill liquid in the hole;
- We emptied the “pig” from water;
- We continue using empty ice core boxes to further insulate the science/processing trench;
- We set up 24 seismometers in the LDC area.





Figure 1: storing the new ice core boxes in the LDC trench: photo: M. Mühl



Figure 2: Our seismometers colleagues watching the arrival of another beautiful 4.5 meters core: photo O. Alemany

End of day statistics at 18h

Driller's depth: 953 m, in between yesterday 20h, and today 18h we made 8 runs (drillers delta depth: 4.5, 4.42, 4.36, 4.48, 4.42, 4.48, 4.37 and 4.4) for a total length of 35.43 meters (drillers delta depth) meters in less than 24h;

Logger's depth: 955.85 m

Current processing depth: 422 m, daily total: 30 m, season total: 400 m.

OA, MH, JW, and SP, 16.12.2023

