Little Dome C

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

Situation Report 27, 13. December 2024

Personnel @LDC:
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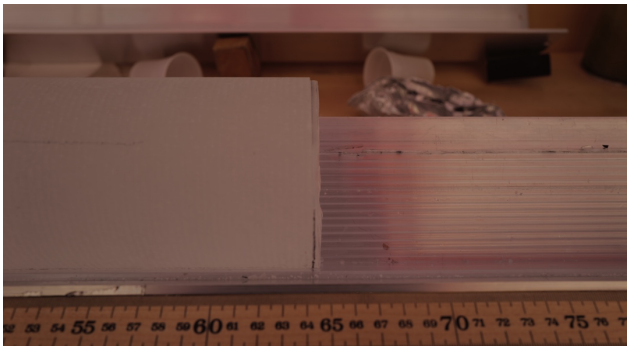
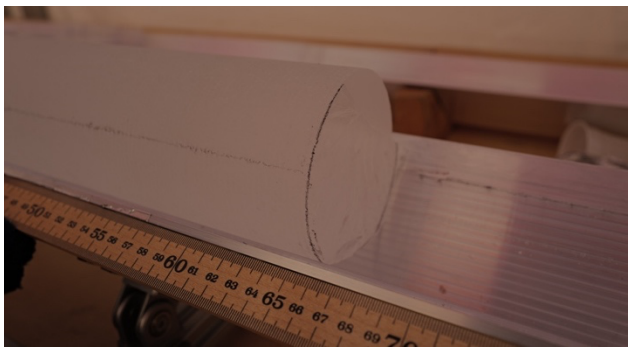
Weather at LDC 5 pm: cloudy
Weather at DC 5 pm: temperature: –30°C, wind 3 knts

Boring. We did 6 runs between 19:30 yesterday and 19:30. Today, processing continued with 31 m and 18 m DEP scanned ice-cores from last year's brittle zone. The PICARRO team continued processing samples with the autosampler.
Today, we report on tests we undertook to break the core instead of cutting with a circular saw:
After difficulties aligning the logging table approx. one week ago, we switched to breaking the ice core. After several iterations and improvements, the method worked well. Yet, a slanting break remained more inclined than the width of a saw blade. Yesterday, as we moved into the 700 ka old ice, we switched back to cutting the ice core using the vertical circular saw. Breaking the ice core can potentially preserve the entire core and the orientation (it is possible to match the cores). We are working on further improvements to this method, yet we refrain from using it to process the oldest stratigraphic ice drilled at LDC. For methods, such as DEP, ECM, line scanning, laser ablation, discrete sampling, and others, this method provides advantages. Difficulties may arise using CFA methods, as the cuts are breaks and they may be slanting, but they can be matched. To avoid unforeseen problems in processing, we now make a clean cut with the circular saw again. We do suggest, to continue exploring the breaking method for the future. This avoids removing 2.3 mm of ice per cut, resulting in a removal of more than 6 m of ice for the entire length of the core.

Ailsa and Julien enjoying the warmth of the Antarctic summer. Credit: J. Westhoff ©PNRA/IPEV



An example of initiating a 2 cm cut and then breaking the ice core. Credit: J. Westhoff ©PNRA/IPEV



Isometric view of an example of initiating a 2 cm cut and then breaking the ice core. Credit: J. Westhoff ©PNRA/IPEV

End of day statistics at 19:30:

- Driller's depth: 2388.76 m;
- we did 6 runs between 19h30 and 19h30. The length of these cores was: 4.465, 4.44, 4.38, 4.385, 4.52, 4.52 (driller length, last run #793), for a total of 26.71 m;
- Logger's depth: 2386.24 m
- Current processing depth: 2338 m; daily total: 31 m; daily brittle zone total: 18 m (bag 903–920); season total: 719 m.

FW, JW, MH, 13.12.2024