

Little Dome C

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

Situation Report #15, 1st December 2025

Personnel @LDC:

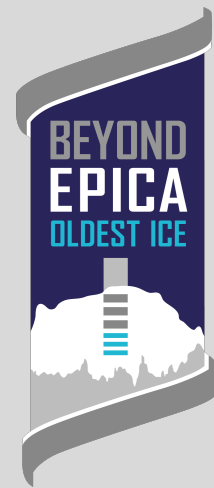
Carlo Barbante (UNIVE, CNR-ISP, PI in the field), Gianluca Bianchi Fasani (ENEA, Camp Leader), Katrin Ederer (AWI), Matthias Hüther (AWI, Chief Driller), Marion Lahuec (IPEV), Gunther Lawer (AWI), Johannes Lemburg (AWI), Barbara Seth (UNIBE), Philippe Possenti (CNRS), Chiara Venier (CNR-ISP), Sergio Zannini (ENEA)

Personnel @DC:

Mohammad Vafadarmianvelayat (AWI)

Weather at LDC: sunny and cold

Meteo at DC 09 pm: T = -36.0 °C, Wind speed = 5.8 kt, Windchill T = -47°C, Humidity = 63 %



Today, December 1st, is a truly special day for us here on the Antarctic Plateau! It's Antarctica Day, an international celebration marking the signing of the 1959 Antarctic Treaty, a landmark agreement that dedicated the continent to peaceful scientific research and cooperation, essentially making it a continent for science. What better place to celebrate this commitment to global science than at Little Dome C, where the Beyond EPICA team is working tirelessly to unlock 1.5 million years of Earth's climate history? This momentous effort epitomizes the spirit of international collaboration and scientific discovery that Antarctica Day represents.

Our Oldest Ice quest continued today with a focused effort to penetrate the bedrock and ensure the borehole remains pristine. We completed three distinct drilling runs with the dual aim of advancing through the final, challenging meters of ice and rock and efficiently cleaning the hole of any accumulated ice chips and debris.

Unfortunately, the day did not conclude with the core retrieval success we had hoped for. During the final evening coring run, as the drill was being brought back to the surface, we encountered a significant mechanical issue with the hoisting system—the component responsible for raising and lowering the drill tower.

Specifically, the problem involves the drill tower (known in the business as the *mast*). The structural integrity was compromised due to the failure of a small, but critical, pin that secures a metal bushing onto the piston responsible for moving the tower between its horizontal (stowed) and vertical (operational) positions. This structural failure led to a potentially dangerous misalignment of the entire drilling tower.

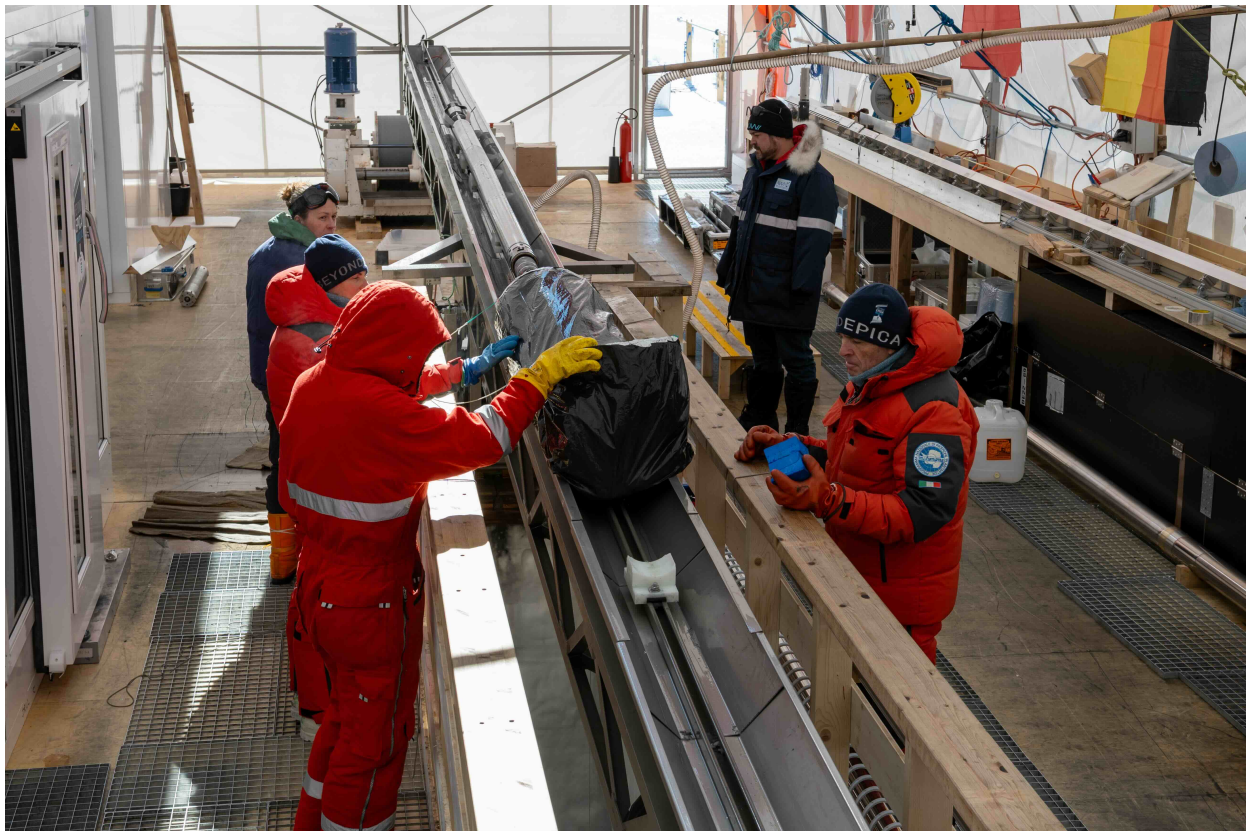
We have immediately shifted into problem-solving mode. Our skilled engineering team is currently assessing multiple repair strategies, and we are absolutely confident that we will devise a solution and have the drilling system up and running in no time to continue our historic mission.

On a very positive note, the Science Trench—the pristine, sub-surface laboratory where the ice cores will be processed and analyzed—is now virtually complete and ready to welcome its first precious samples of deep ice.



Preparations are also well underway for the analysis phase. Tomorrow, the team is scheduled to calibrate the Dielectric Properties (DEP) instrument. This crucial tool, which measures the electrical properties of the ice, is already installed and fully operational at a chilly -47 °C within the Science Trench, poised to provide immediate, high-resolution data as soon as the next ice core segment is recovered.

Beyond the high-stakes science, the day-to-day logistical operations of the field camp proceeded smoothly and exactly as planned. This unwavering stability is a testament to the hard work and dedication of our dream team of support personnel, ensuring that all researchers and engineers are supplied and supported to focus entirely on the mission.



The rock core drill barrel at the surface. It is covered by the shield protection and ready to be transported to the Science Trench.
Photo, G. Lawer





Lemmi is in the drilling trench fixing a rope to the drilling tower, securing it during the recovery operations. Photo C. Barbante



Ski season will start soon in LDC. Lemmi with the shoe tree, a wide assortment of cross-country skiing boots. Photo C. Barbante

CB, GBF, BS & MH; LDC, 01.12.2025

