



Research Vessel SONNE Cruise SO312

3rd weekly report 19.5.-25.5.2025

During the third week we managed to complete the 3D seismic cube over Brothers and Healy volcanoes. Weather conditions were not ideal with 5-6 Bft from the SE. On Tuesday there were gusts of up to 8 Bft which is above the typical normal operation conditions. Still, we had to continue data acquisition in order to complete the survey in the remaining time for the expedition. Fortunately, the equipment did not get damaged.

As the ship cannot properly hold course in such conditions given the low surveying speed of 3.2 knots, we were forced to collect the final lines at Brothers in wind direction. This is the reason for the additional NNW-SSE lines in the north of the survey area. Altogether 157,583 seismic signals were emitted along 700 nm of survey tracks. The resulting fold map (Figure 1) shows that the whole area of interest is covered. This will allow us to achieve the most important objective of the cruise: the three-dimensional imaging of Brothers caldera.

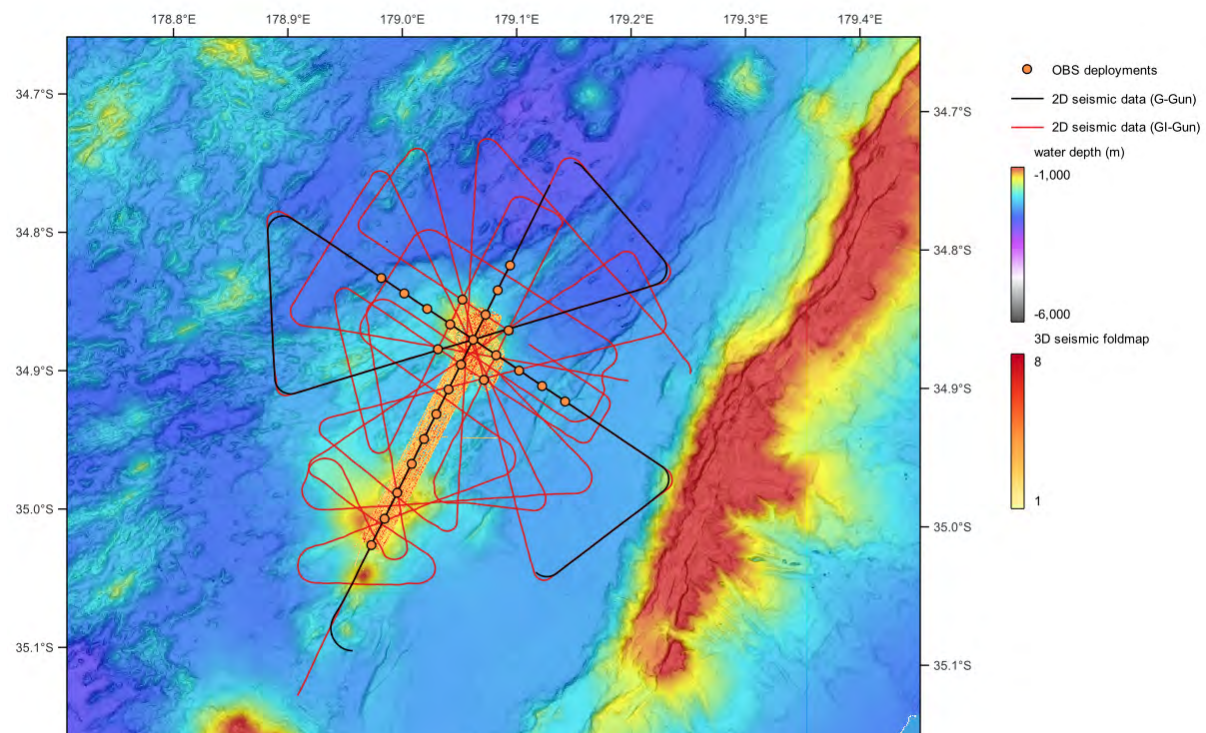


Figure 1: Survey of Brothers and Healy volcanoes in the north and south of the 3D cube, respectively.



Figure 2: Deployment of the 3D seismic system with the port side paravane in the water and the starboard paravane still on deck. Photograph: Aude Lavayssiere.

On Friday morning at sun rise we recovered the P-Cable system. Operations were smooth and by 10 o'clock everything was on deck and we were able to clear the deck for the mobilization of the large port side airgun array. This took 30 hours and we used the available time to conduct a multi-beam echosounder survey Rumble II volcano in the southwest of the study area.

We were back on station at Brothers volcano on Saturday morning ready to deploy both seismic arrays. In excellent weather conditions the operations were routine and after the 'all clear' by the marine mammal observers we could begin with generating seismic signals that are being recorded by the ocean bottom seismometers that are still on the seafloor. This survey is still ongoing and will continue either until Tuesday or Wednesday morning depending on the course of a major low-pressure system that is approaching the study area.

After recovery of the ocean bottom seismometers, we will then start the transit back to Auckland. Already now we have collected all the main data to reach the cruise objectives.

All on board are well and look forward to the last week of the expedition.

On behalf of all cruise participants,

Christian Berndt
(Chief Scientist)