3rd Weekly Report MSM135
17. - 23. March 2025

Just as the geometry of the Earth's layers beneath the seafloor and their characteristics provide visually recognizable clues about active geological processes in reflection seismic images, the chemical compositions of seafloor deposits also offer insights into their origins. The so-called "chemical fingerprints" of volcanic ashes are characteristic of individual volcanoes and their eruptions.

Figure 1: The Gravity Corer back from the seafloor. *Picture: H. Jähmlich.*

The deposits must be retrieved from the seafloor and brought to laboratories to perform necessary chemical analyses. For this purpose, a gravity corer (Figure 1) —a steel tube driven into the seabed to extract sediment cores—is used. Thus, to reconstruct the volcanic history of the Aegean volcanic island arc, we study the morphology of the seafloor, the internal geometric configuration of the seafloor deposits, and their chemical signatures.

It was therefore a logical step to begin sampling sediments with the gravity corer on the morning of March 18, following the completion of the geophysical survey of hydrothermal processes north and south of the island of Milos, which had started the previous week. Indeed, layers of volcanic ash were found in the sediment cores, which will be analyzed in the coming months and years.

Hydroacoustic measurements conducted during the night of March 19 completed high-resolution seafloor maps. The following morning, we set course for the northwest coast of Crete, where we began reflection seismic and hydroacoustic surveys along the island's west and south coasts. The work focused on the Gulf of Messara to map and understand the offshore continuation of tectonic faults. Throughout its geological history, the island of Crete has been affected by a large number of earthquakes, many of which are associated with these fault zones. Our research will contribute to understanding the movement of tectonic plates and the forces at work after the later evaluation phase.

On the evening of March 21, we completed the reflection seismic measurements (Figure 2), rounded the western coast of Crete, and continued these measurements. At this point, we are studying the same fault zones, but now mapping their offshore extension northward.

Figure 2: Deployment of the 800 m long receiver cable for the reflection seismic measurements. *Foto: J. Vollert.*

Once again, we have completed a busy and productive week. Our efforts were rewarded with a breathtaking view of Crete's snow-covered mountains.

All expedition participants are in good health and send their greetings home.

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