

4. Weekly Report MSM135

24.-30. March 2025

On the evening of April 24, we completed the seismic and hydroacoustic surveys of Mirabello Bay and set course for the Saronic Gulf. In the meantime, we had processed, visualized, and interpreted the previously collected data from the gulf to test new hypotheses.

After our arrival on March 25, research activities began with gravity coring stations in the Epidaurus Basin. Additionally, we conducted sound velocity measurements in the water column to calibrate the hydroacoustic systems. Due to the large number of fishing devices in this area, the planned seismic and magnetic measurements could not be carried out. Instead, we investigated tectonic fault systems north of the basin. The reflection seismic data revealed impressive tectonic structures, some of which extend to the seafloor (Figure 1).

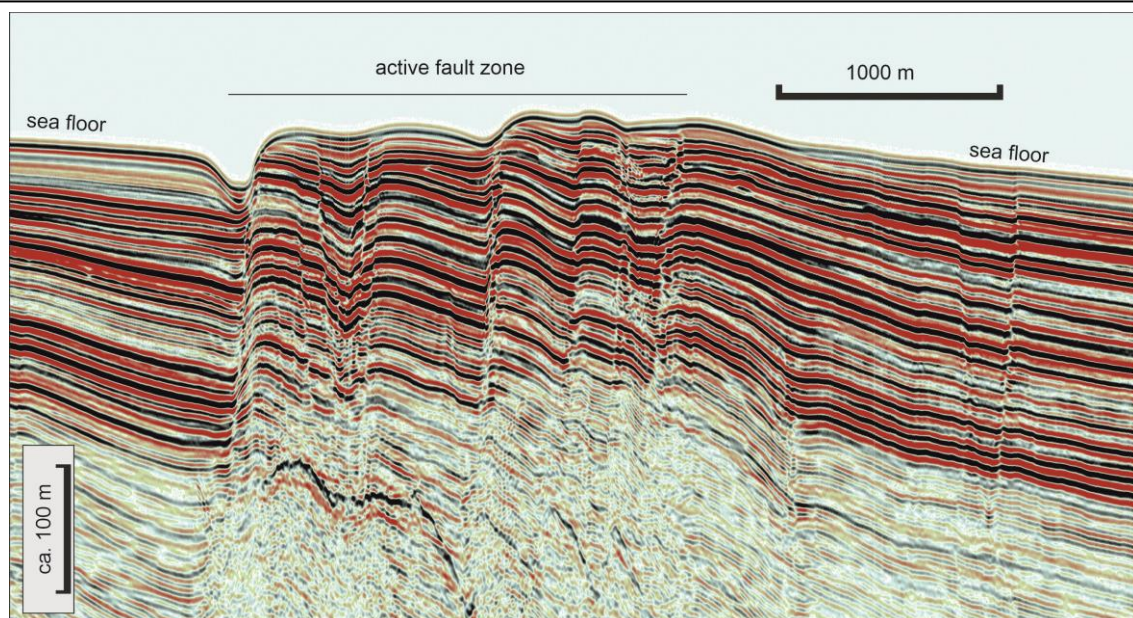
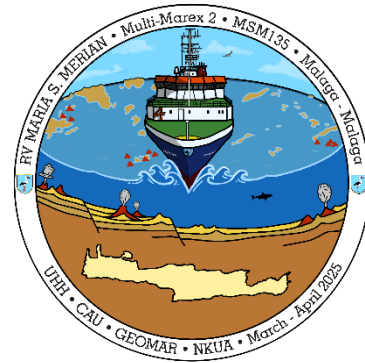


Figure 1: Active tectonic fault in the Saronic Gulf. The faults continue into the hinterland.

An inspection of the Epidaurus Basin the following morning showed a significantly reduced number of fishing devices. Therefore, in addition to the already deployed streamer, we were able to use the magnetometer as well. After another gravity coring station, we concluded our research activities in the Saronic Gulf.

On March 27, we reached the working area around the island of Milos, where another gravity coring station was first conducted. Subsequently, we examined a seafloor depression for its magnetic signature. In the afternoon, the reflection seismic equipment was used again (Figure 2) to investigate a circular structure located just 5 km off the coast. Two additional gravity coring stations on the morning of March 28 were aimed at searching for traces of past volcanic eruptions. The subsequent profile-based mapping of the seafloor using reflection seismics and hydroacoustics extended into Milos Bay. The data indicate that fluids are ascending through the seafloor and entering the water column.



Figure 2. Deployment of hydrophone cable. Foto: H. Jähmlich.

By midday on March 29, this work package was also completed. After a few hours of transit, we reached the Santorini caldera. There, a stationary hydroacoustic survey of the water column was conducted over a suspected hydrothermal vent. The insights gained will later be analyzed in connection with the current seismic activity in the Santorini region. During the night, we began multibeam mapping around Kolumbo Seamount to examine the effects of numerous earthquakes that have occurred in recent months.

On the afternoon of March 30, we finally commenced seismic measurements in the Christiana Basin, southwest of Santorini. The goal of these investigations was to identify traces of early volcanic activity on Santorini.

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

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