Forschungsfahrt des FS SONNE **SO 314:**

T-SECTOR Southeast Pacific Rise

13.08.2025 (Papeete/Tahiti) –
05.10.2025 (Antofagasta/Chile)

Scientific Cruise SO 314, 4. Weekly Report: 01.09.-7.09.2025

Having finished the recovery of sediment cores on the western flank of the SEPR and a first deployment of the dredge had been carried out to sample the rocks of a submarine volcano at the end of the third week of the expedition, the fourth week started with the refraction seismic profile across the deployed OBS on the eastern flank that had to be interrupted in the week before. After the repair of the airguns the data could now be collected as planned. Subsequently SONNE returned to the starting point of the profile with a small offset whereby an additional profile was measured with the magnetometer and also the coverage of the bathymetric mapping was extended. These data will contribute to a unique high-resolution map of the seafloor structures near the SEPR that will provide new information on the processes involved in the formation of the oceanic crust (Fig. 1).

Subsequently SONNE recovered the 47 OBS starting in the night of the 3rd September. To do that the releasers for each OBS were activated on board, the weights were left behind and the OBS rose to the surface driven by their buoyancy bodies. The red flags of the OBS were well visible due to the good weather, were steered by SONNE, collected with a hook and brought back on board (Fig. 2). For spotting and collection by night the OBS are also equipped with a light that enables their sighting.

Following the collection of the OBS the recovery of gravity cores was continued on 4th September on the eastern flank of the SEPR close to the ridge axis which yielded excellent core material despite the thin sediment cover on the young crust and on 5th September. the sampling of the basalt glasses was continued and extended using the wax corer until the morning of the 6th September. During that time the OBS were prepared for their next deployment on the 6th and 7th September in continuation of the first profile towards the west.

Greetings from Martin Frank (Chief Scientist SO 314), Heidrun Kopp (Co-Chief Scientist SO 314) and the entire team and crew of SO 314.

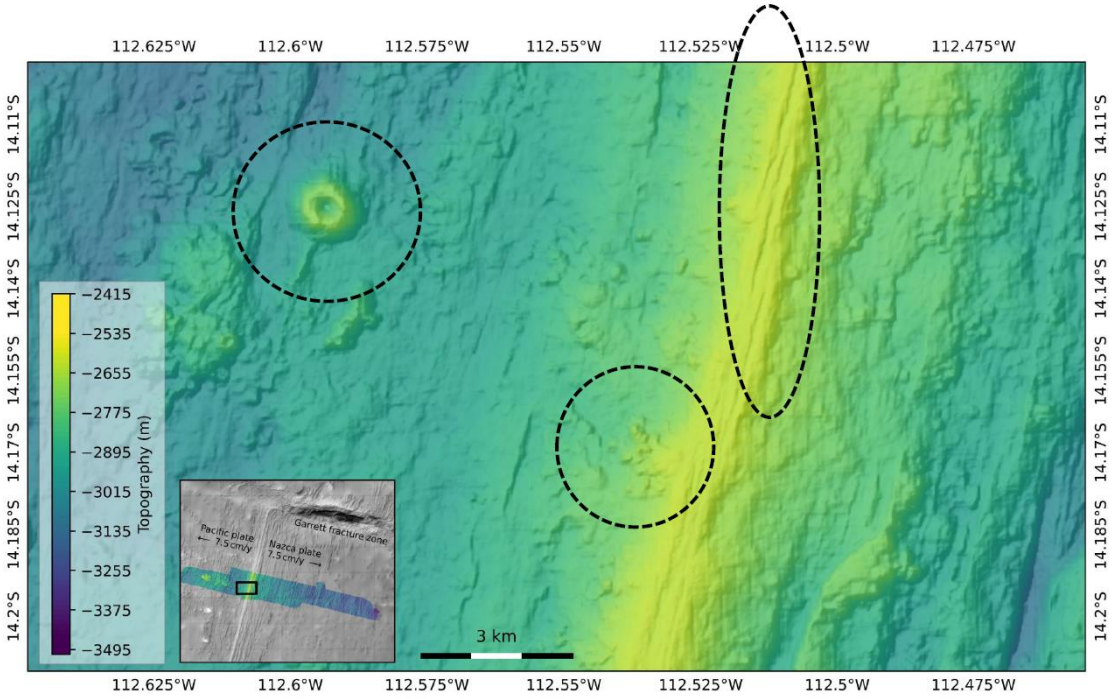

Fig. 1: New high resolution bathymetric map of the SEPR in the working area, where a submarine volcano (upper left), recent lava flows (lower middle) and overlapping spreading centers (upper middle) are visible (map produced by Benedikt Bauer).

Fig. 2: OBS recovery after deployment on board of SONNE.