2. Weekly Report of Expedition No. M170 of RV METEOR

Emden, Germany (11.01.2021) – Emden, Germany (14.02.2021)

The transit of the TRANSFORMERS expedition into the working area took over 9 days, meaning the shipboard scientific party was keen to get started on its very exciting scientific programme at the Oceanographer transform fault when we finally arrived. On Wednesday 20th of January in the afternoon, we began to deploy 29 ocean-bottom-seismometers (OBS) and hydrophones (OBH) to register the onset time of seismic waves emitted from micro-earthquakes occurring below the network. Micro-earthquakes are a treasure trove for seismologists, revealing both the geographical location and focal depth of event, which, in turn, can be used to survey tectonic processes and physical parameters of the crust (temperature, seismic velocity, etc.). On 21st of January 2021 the last OBH was deployed at 5 p.m. UTC.

GEOMAR OBS ready for deployment on deck of R/V METEOR.

After a short transit, we deployed the side-scan sonar to obtain high-resolution images of the seafloor fabric. However, at 3000 m depth the communication with the side scan sonar failed and the instrument was recovered. Technical problems were solved and hence the side scan sonar was re-deployed again 24 hours later. Unfortunately, the system broke down minutes after the second deployment and due to increasing sea state with waves of >4 m, we have had to postpone its further operation until weather conditions will improve.

Between 21st and 23rd of January 2021, R/V METEOR mapped large parts of the Oceanographer transform using the ship-mounted EM122 *Kongsberg* swath-mapping echosounder, providing critical information to select sites for geological sampling. On 24th of January, we deployed in total 8 dredges and except at one site all dredges returned igneous rocks from the seafloor. On the outside corner of the ridge-transform system, basically all rocks were basalts, but dredges on the opposite inside corner of the older plate provided serpentinized mantle.

Dredge with basalts from the outside corner of the ridge-transform system

In the name of all cruise participants, best regards from 34°54'N / 34°36'W,

Ingo Grevemeyer
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