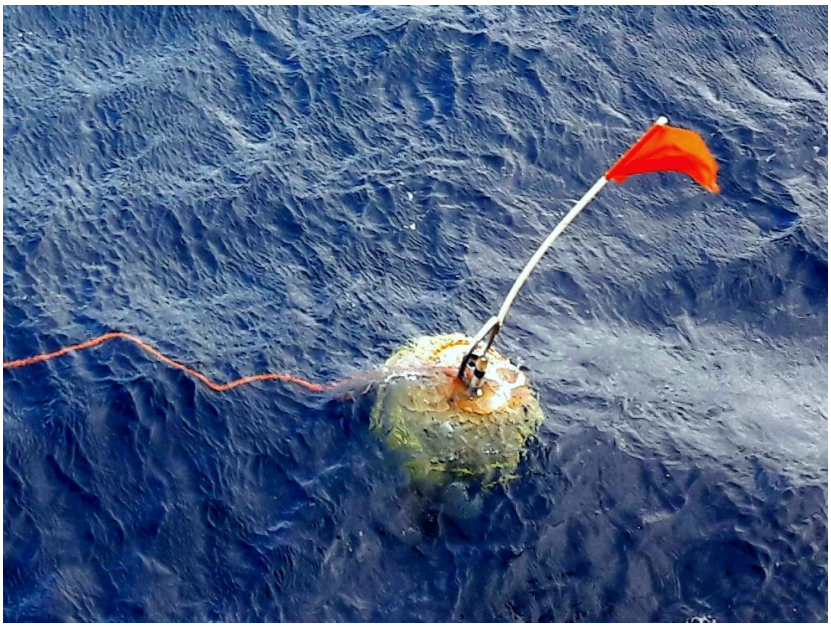
3. Weekly Report of Expedition No. M170 of RV METEOR

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

The third week of the TRANSFORMERS expedition was strongly affected by a number of low-pressure systems, causing rough sea and strong wind. First, we had to abandon a dredge station in the night of Sunday to Monday 25th of January. Second, weather prediction was bleak for the coming days, indicating high waves of over 6 m and strong wind. We therefore had to leave the working area at the Oceanographer Transform fault as safe handling and operation of scientific equipment did not seem possible. We decided to move roughly 140 nm southwestward to map the Hayes transform fault and fracture zone system and dredge the ridge-transform intersection as the weather forecast for this alternative working area seemed to be much more appropriate.



GEOMAR OBH retuning from 4100 m to the sea surface to be recovered with METEOR

Strong head winds slowed down the transit to the south. Unfortunately, pitching of the ship affected the ship's echosounder, resulting in data of rather poor quality. However, after reaching the Hayes fracture zone, METEOR changed course and sailing in an eastward direction provided data of good quality along both the inactive fracture zone and the active transform fault. Most interestingly, at the western ridge-transform intersection bathymetry reveals striking evidence for recent magmatic activity crossing the plate boundary and hence covering both the younger and older plate. Two dredges confirmed this observation. Unfortunately, increasing swell approaching from different directions caused strong rolling of the vessel. Consequently, we had to abandon another dredge station. METEOR therefore continued mapping the eastward extension of the fracture zone, before terminating the southern "excursion" on 30th of January 2021 and sailing back northward into the working area.

On Sunday 31st of January 2021, we reached at 9 a.m. the first ocean-bottom-hydrophone, released the OBH and recovered it roughly one hour later. However, rough weather conditions with 5-6 m of swell and wind of up to 7 Beaufort slowed down recovery of seismic ocean-bottom-equipment so that we had to suspend it after the recovery of 6 OBH for the night.

In the name of all cruise participants, best regards from 35°06'N / 35°06'W,

Ingo Grevemeyer
GEOMAR Helmholtz Centre for Ocean Research Kiel