

R/V MARIA S. MERIAN



Cruise MSM98/2 (GPF20-3_073)

Development of the glacio-tectonic complex at Heligoland and investigation of the lateral extent and age dating of the Tampen landslide off Norway.

Emden – Emden

3rd weekly report, 08- 14.02.2021

After about 10 literally eventful days and nights on board near the Arctic Circle, the weather situation has developed in our favor. The now formed so-called OMEGA weather situation with a blocking high over Scandinavia/Jutland is considered as very stable. It leads to bathing fun in summer, brings bitter cold in winter, and lets us work under calm conditions on board RV MERIAN. Thus, we were able to successfully complete our work in Norwegian waters. The focus was on mapping of the Tampen landslide on the mid-continental slope, where the thickness of the slide above a basement high becomes very small. This mapping has been successful (Fig. 1); however, we will not be able to answer our scientific questions until the data have been fully processed and analyzed in detail. We used the transit of about 600 nautical miles from the Arctic Circle back to the German Bight to maintain our damaged equipment and to prepare it for the work in the German Bight.

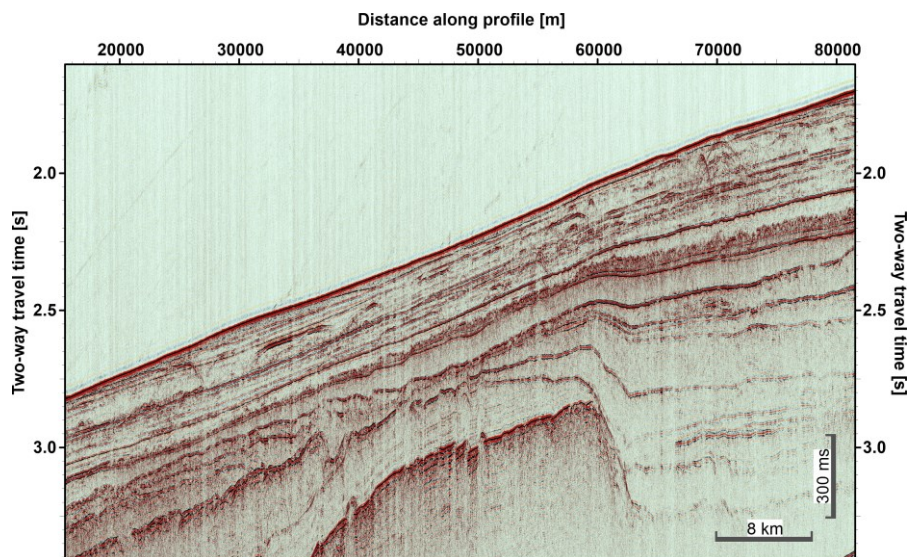


Fig. 1: Seismic profile P1001 from the beginning of our seismic survey. The slope of the seafloor is evident at first glance. Different high-amplitude reflections characterize the sedimentary drape on top of the high-amplitude acoustic basement. The morphological high in the deeper part of the seismic profile is called Møre-Marginal-High. Its morphology is compensated to either side by subsequent sedimentation, which led to a flat seafloor.

After the transit we were able to start our seismo-acoustic work program again on the morning of February 12th in sunshine and calm seas. We are currently just northeast of Heligoland. With the prevailing easterly winds we have hardly any distance between us and land to build up waves - the result is a very calm sea. Wind alone hardly disturbs our ship and our work.

Between Amrum and Heligoland we concentrate on the geological reconstruction of glaciation during past ice ages. The glaciation has left deep furrows and other traces in the subsurface. The associated so-called glaciotectionic complex in the shallow subsurface has to be mapped with seismo-acoustic methods in the best possible way, to understand its history, and thus to better reconstruct the landscape situation in the Pleistocene. This belt of glacial scales at the former ice margin has an extension of about 660 km² and is thus one of the largest of its kind. It is located about 40 to 250 m below the current seafloor. From its shape, size and structural characteristics, the advance and retreat of the ice during the Pleistocene can be reconstructed. Reconstructions of the geological past form the basis for raw material exploration and provide an important contribution for subsoil investigations as well as for the exploitation of groundwater resources. The investigation and reconstruction of the very shallow subsurface are also essential in order to be prepared for future challenges in coastal protection.

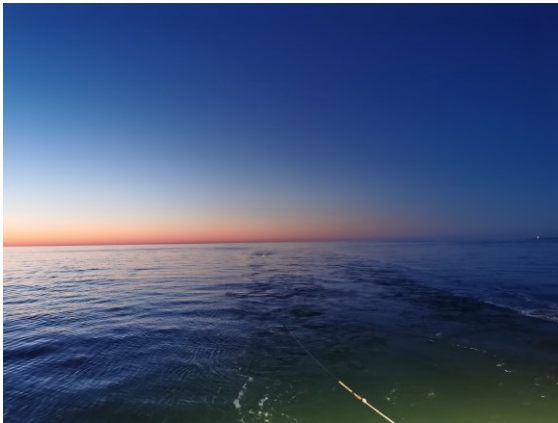


Fig. 2: Our towed streamer hydrophone cable at sunrise. You can see the front connection cable and the tail buoy. The light on the right is the Heligoland lighthouse.

Kind regards on behalf of all on board the "MERIAN"

Jens Schneider von Deimling (Christian-Albrechts-Universität zu Kiel)

Auf See, 54° 24' N 008° 4'n E