

## RV 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

#### 1<sup>st</sup> weekly report, 25. - 31.01.2021

The cruise MSM98/2 has two independent objectives. By means of seismic measurements and sampling by gravity cores, the extent, volume and age of the Tampen landslide on the Norwegian continental slope will be determined, which is crucial for the assessment of the tsunami hazard. So far, it has been postulated that landslides off Norway occur shortly after the transition to an interglacial. The Tampen landslide is the known last major landslide before the 8.2 ka old Storegga landslide; its age has previously been estimated at 130 ka. We will investigate whether a 55-60 ka old mega-turbidite on Aegir Ridge is related to the Tampen slide or another large slide of unknown origin. Both possibilities suggest that models for linking mega-slides to glacial and climatic cycles are incomplete. However, there are no seismic profiles to date to correlate the Aegir mega-turbidite with the headwall of the Tampen landslide.

A study north of Heligoland aims to image a glacio-tectonic complex to reconstruct ice advance and retreat during the Quaternary. The glacio-tectonic complex is known; however, the available data do not allow an accurate picture of the architecture of the complex, including the lateral extent of the different décollements and the thrust directions in different areas of the complex. To reconstruct the glacio-tectonic complex and the margins of the ice sheet during glacial cycles, we plan to record dense seismic profiling. The resulting data will also allow further characterization of the tunnel valleys interacting with the glacio-tectonic complex.

A total of 13 scientists from 3 institutes are on board for the work (Christian-Albrechts-Universität zu Kiel, GEOMAR Helmholtz Centre for Ocean Research Kiel, Center for Baltic and Scandinavian Archaeology). After a 5-day quarantine and COVID-19 tests in a hotel in Leer the embarkation took place on 24<sup>th</sup> of January. On 25<sup>th</sup> of January our equipment was delivered, which was distributed and set up in the laboratories after unloading. With sunshine and calm sea we could leave Emden on the 26<sup>th</sup> of January.

At the moment we are in the working area between the Norwegian continental slope and Iceland just south of the Arctic Circle in rough seas, but we can still use seismic and hydro-acoustic methods to follow the landslide downslope.

With best wishes on behalf of all cruise participants

Jens Schneider von Deimling (Christian-Albrechts-University of Kiel)

At Sea, 65° N , 4° W



Departure from Emden on 26.01.2021 for cruise MSM98/2