

Expedition SO MerMet17-06 – IceAGE3

Emden – Emden

Weekly Report No 2

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Waves and benthic samples on the Arctic Circle and along the Aegir Ridge

As expected by the end of the first week, stormy conditions hit us in the beginning of the second week. Working on the main deck was becoming more and more impossible, and when the gear on deck was becoming tricky to handle all in situ operations (box corer, CTD, plankton net, EBS, MUC) were cancelled for security reasons. The only feasible activity that was mapping the seafloor with the best option heading North against the wind and waves to stabilise our course. During the night from Monday to Tuesday, the ship motion became so severe that even mapping was not possible. As result, we spent 6 hours 'weathering' right on the polar circle.



Figure1: Creatures from 3800m depth of the Aegir Ridge (Norwegian Basin). In order from left to right: 1 - amphipod, 2 - sponge with decapod and pantopod, 3 - copepod from the water column. Photos taken by Solvin Zankl.

On Wednesday, the weather was calm enough to have a second successful ROV dive in 3800m depth exploring the deep part of the Aegir Ridge. Doing six 200 m video transects followed by an exploratory dive, we observed various different species and traces - from the most peculiar feeding trails made by holothurians (sea cucumbers), tracks from trawling nets, piled up sediment with a wormhole on top (which resembles a mini volcano), small red shrimps drifting slowly through the water, and sponges blooming with live and give home to a lot of small creatures. A lot of the species are known already and can be identified in real time by the deep-sea life experts on land who are watching the video stream and tune in on board via live chat. The Aegir Ridge was still actively drifting >30 million years ago before the Iceland-Faroe Ridge sank below sea level. Nowadays, a consolidated sulphite substrate bottom is home to various species of crustaceans, sponges and also polychaetes - little worms that live in and on the seafloor.

Thursday and early Friday we spent mapping the seafloor along the Aegir Ridge on the transit to the southern part of it. In the afternoon, we put behind us 20h of transit to our next working area, the third one, located just East of the Icelandic continental shelf. Planning for the next two ROV dives happening Saturday and Sunday, a detailed multibeam bathymetry was followed by deploying the complete set of gear (CTD, plankton net, boxcorer, mulicorer and EBS) inside the valley like structure in 2100m depth of the southern end of the Aegir Ridge as well as on the shelf break in 700 m depth and its sedimented areas.



Figure 2: What's this? It looks like a rusty can of some liquid or food – did someone drink a soda and it ended up 3700m deep being the new home of pantopods, amphipods, sponges and cnidarians? Photo taken by ROV pilots.

To deploy the benthic gear, it is important to know the local depth and especially the structure of the seafloor for using trawled gear like the EBS. The bathymetry can usually be derived sufficiently enough from satellite altimetry. However, in our case and in our third working area, the difference in depth between the altimetry model and the true multibeam bathymetry was up to 1000 m- and that makes a huge difference if the water depth is between 700 and 2600 m!

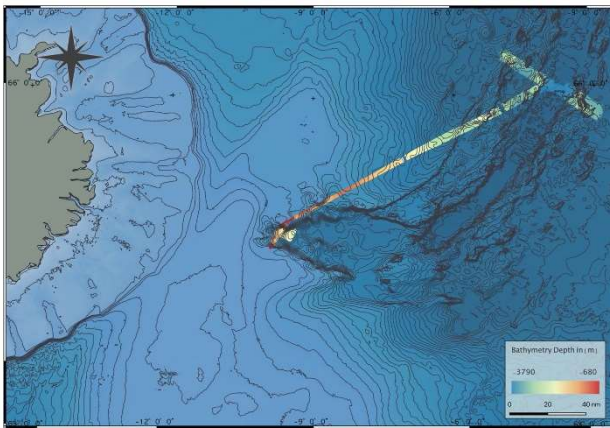


Figure 3: Bringing light into the dark: Our mapping progress until now. Map created by Mia Schumacher.

Happy about the detailed maps, and lucky with excellent weather conditions, we were able to conduct two extremely successful dives over the weekend. One in 2100 m depth on Saturday and one starting in 1500 m depth flying up the wall in 700 m water depth. The start of the next week will be a dive in Lónsjúp, a coral reef in cooperation with our colleagues at the Icelandic Marine Fishery and Research Institute. Looking forward to exploring further unknown cold-water coral habitats at high northern latitudes!

Sunday, 5th July 2020

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