

POS535 – Loki2GrimseyEM – 2.7.2019

3. Weekly Report

After a long and rather turbulent transit, we are now in the German Bight and marvel at – with the first real sunshine and finally bearable temperatures for weeks – the new offshore wind farms off the German coast. Tomorrow morning we will moor in Bremerhaven and probably leave the Poseidon for the last time.

The conclusion of this trip is that we were able to carry out our extensive work program without any significant cuts. In 3 ½ weeks on the ship, with effectively 13 full working days, we were able to carry out investigations in 5 working, which will allow us to gain new insights into different hydrothermal systems along the Arctic part of the Mid-Atlantic Ridge. While we are still busy with the preparation of the electromagnetic (EM) data after the first backup, we can already derive first indications and results from the other methods:

- Measurements with the heat probe and temperature measurements in the sediments recovered with the gravity corer, indicate that the hydrothermal activity in the Grimsey hydrothermal field (GVF) in 2019 is significantly smaller as compared to exactly one year ago. To what extent this trend is also reflected in the EM data, is a question that we will answer in the coming evaluation of this data.
- During the experiment at the GVF we had a CTD attached to one of the stations for several days. The data of the CTD show considerable temperature fluctuations, which coincide with anomalies in the depth of the station (visible in the data of the pressure sensor after elimination of the tide signals). In our first interpretation we believe that this reflects fluctuating hydrothermal activity of the field, which leads to ground movements. To what extent signals of regional ocean currents also have an influence will still need to be investigated.
- In two areas southeast of the GVF, only one out of five sediment cores showed slight signs of hydrothermal activity (anhydrite, altered clay).
- In the Norwegian working area Loki's Castle, we found native copper in one sample. In a preliminary search we could not find a similar finding in any previous publication. The evaluation of the CTD data, which was attached to our mobile MARTEMIS coil system, shows a significant anomaly along one of the profiles. Thus, we are optimistic to have actually flown over the area around the two active vents during our profiles. At a water depth of 2400m with strong winds and strong ocean currents this was not necessarily a matter of course.

This weekly report must of course finish with a few words about *RV Poseidon* and her crew. During the cruise we learned that *RV Poseidon* will make her final cruise for science in a few months. After 43 years of service to research – we are just about to finish cruise no. 535 – this news came as a surprise to the crew. For many of them – some have served more than a decade on this ship – this is hard to take news. All the more I would like to thank the whole crew of Poseidon for their very good cooperation and for hanging in there.



From a personal point of view, the Poseidon – while not offering the comfort and technical capabilities of the new, much larger research vessels – still has some great advantages:

- well-rehearsed crew,
- ideal platform for projects with a limited number of 2 - 3 working groups,
- reasonable duration of cruises (maximum 4 weeks),
- availability with relatively short lead times (~ 12 months).

In this sense, the Poseidon will be missed for future research.

I wish the crew of the Poseidon all the best for the final cruises, fair winds and following seas and hopefully a good transition to the next research vessel.

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