

RV MARIA S. MERIAN

MSM98 (GPF 20-3_092):
08.- 23.01.2021, Emden - Emden

3. Weekly Report: 18. – 23.01.2021



During the last week of the cruise, the sea confronted us with all weather conditions possible ranging from sunny weather and almost no winds to heavy winds and large waves. On Monday, 18. January 2021, the multicorer was used to sample two abandoned drill sites. Also, the water samples were taken using the CTD-Rosette at those locations. The samples will be analysed for their methane concentration in the laboratories on land to assess whether the old drill sites are sources of methane escaping to the sea and the atmosphere.

Weather conditions were perfect on Tuesday, 19. January 2021, to recover the sonar lander after the second deployment and four days of measurements of this observatory on the seafloor. Thanks to the great work of the crew, the recovery was fast and flawless. Assessing the recorded data the deployment of the lander was found to be very successful. The data will be very useful to analyse the variability of the gas emissions.



Figure 1: Group image of the scientific crew at the end of the research expedition MSM98 (@Mario Römer).



Figure 2: View out of a bulleye towards an offshore wind park during heavy weather (@Miriam Römer).

The rest of the day proved to become even more successful. The MiniROV completed two important tasks during one dive: On the one hand, a sonar transponder was recovered, which was lost earlier. Since the transponder is almost as heavy as the MiniROV, the task was considered to be quite complex. But thanks to the good cooperation of the ROV-Team and the Ship's crew and engaging a hook on an extra rope, even this task was accomplished after only a few tries. On the other hand, gas samples were successfully collected. The sampled sites were very hard to find, as the gas bubbles there are not released continuously. During the rest of the day a hydroacoustic survey on a very small scale was conducted to quantify the amount of gas released.

The winds started to pick up on Wednesday, 20. January 2021. Nevertheless, the conditions allowed to survey the last remaining working area: The Schillgrund Fault at the Southern edge of the Central Graben. The hydroacoustic surveys aim to clarify, whether this deep rooted fault is a migration pathway for gases. As this last profile has been successfully acquired, the approaching storm did not hit us hard from a scientific point of view.

To escape the predicted severe waves of up to 7.5m height, we decided to focus more on possible gas emissions at abandoned drill sites closer to the shore in the last two days before the end of the cruise. One of those sites has also been sampled with the rosette on Friday, 22. January 2021, after the decrease of the strength of the storm allowed station work again. The scientific program ended then just before midnight. The pilot assisting the port entry to Emden came aboard at approx. 6am on Saturday, 23. January 2021, as planned. After clearing the labs and storing all goods in the containers, the scientific crew of MSM98 left Maria S. Merian until 2pm greatly satisfied with the achievements of the two week cruise.

All cruise participants came home safe and sound.

Greetings on behalf of all participants,
Miriam Römer (MARUM)

Bremen, Sunday, 23. Januar 2021