

MSM130

RV MARIA S. MERIAN

MSM130 "POLAR BEAST"

9th July – 14th August 2024

Reykjavik (Iceland) – Reykjavik (Iceland)



2. Weekly Report (15th July – 21st July 2024)

Lindenow- and Mogens Heinesens Fjords in east Greenland

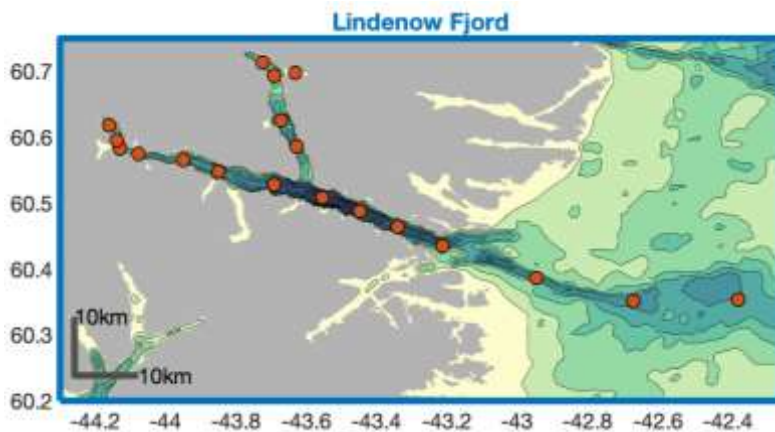


Figure 1. Lindenow fjord in southeast Greenland with sampling stations

the stations we sampled for biological and chemical variables using the standard stainless steel CTD rosette, which also has a camera system. In addition, we conduct a cast for trace metal sampling using trace metal clean Niskin bottles on a plastic wire with the bottles being closed by deploying messengers. Then at a couple of the stations we deploy a mini MUC (multi corer) for collection short (20-30 cm) sediment cores (see below). A gravity corer was also deployed at 3 to 4 stations in the fjords and on the shelf, to collect sediment cores of up to 5 m length. All these activities were successful in Lindenow Fjord. The further we moved into the fjord, the more difficult the ice conditions became, and the vessel slowed down to about 2 knots to find a way through the ice.

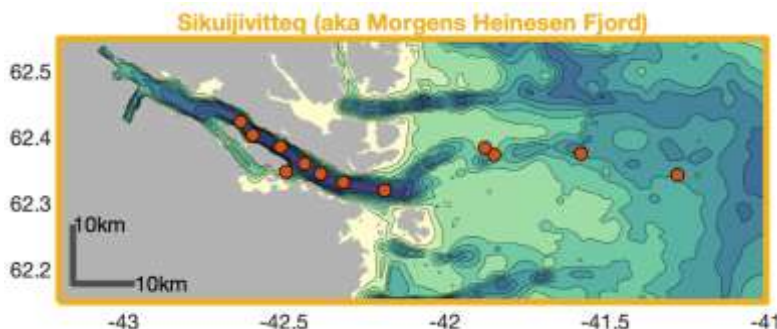


Figure 2. Mogens Heinesen Fjord with sampling stations.

The ice conditions on the shelf were favourable, but just before entering the fjord on July 18,

Progress: We are 2 weeks into our cruise programme, and sailing at 62°28 N, 40°47 W towards our third study area of Sermilik Fjord. We had a very successful week and completed a large amount of work in the Lindenow Fjord (Figure 1) and Mogens Heinesens Fjord (Figure 2) in southeast Greenland. We started work near Lindenow Fjord on July 12 and finalised this on Monday July 15. The work included more than 20 stations and 2 short sampling expeditions with our Zodiac. At

On Monday night July 15, we departed Lindenow Fjord and made our way towards Mogens Heinesens Fjord.

we experienced difficult dense ice in front of the fjord. Next morning we managed to move through the ice and into the fjord, where the ice conditions were favourable. We managed to get a good distance into the fjord until the ice blocked us; we were able to conduct 8 stations with CTDs, MUC and gravity corer deployments, also very close to glaciers (Fig. 3). This was our second fjord, with highly successful sampling. We have daily sightings of polar bears (Figure 4), even this far south below 62°N.

We now finished our work in Mogens Heinesens Fjord and making our way up north along the east Greenland coast towards Sermilik Fjord, which we will reach in 2 days time.



Figure 3. Glacier in Mogens Heinesens Fjord (photo Eric Achterberg)

Sediment coring: The sediment coring is undertaken by researchers from MARUM, GEOMAR and the Geological Survey of Denmark & Greenland (Katharina, Carmen, Malte, Inda, Heike and Lennart) and their work is focused on the finest and oldest mud from the seafloor of East Greenland's fjords.



In the fjords, the mud that makes up the seafloor contains traces of organisms that can tell us how terrestrial landscapes, glacial ice, and marine waters have interacted over thousands of years.

While the top layer of the seafloor is alive and sometimes teeming with benthic organisms such as tube worms, less and less living organisms are found in the deeper layers. At greater depths,

Figure 4. Interested polar bear (photo Eric Achterberg)



Figure 5. Deployment of MUC (photo Eric Achterberg)

we find older material, which we can use to answer questions such as: How did the retreat of glaciers in the past affect the species living in the fjords?

To access mud from the seafloor, we brought two special tools: the mini multicorer (MUC) and the gravity corer. The MUC looks a bit like a space capsule and with its four tubes (Figure 5), it is ideal for retrieving the upper 25 cm. This part of the sediment contains live organisms, and the species we find represent today's environmental conditions. To look back in time, we go deeper by retrieving longer cores. For this purpose, we also brought the gravity corer with which we can retrieve much longer sediment cores (up to 5 m). At 5 meters depth, the sediment can be up to 12,000 years old. The collected cores will be processed and then analysed in the home laboratories.

RV MARIA S. MERIAN at sea 62°28N/40°47 W

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