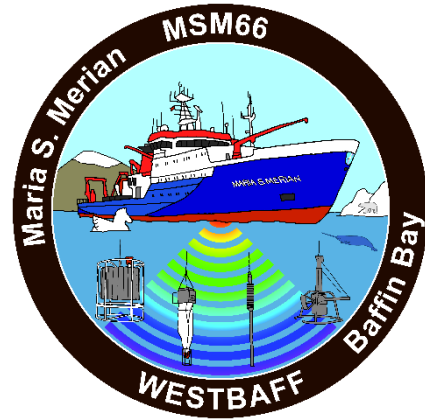


RV *Maria S. Merian*

Expedition MSM66 – WESTBAFF

22.07. – 28.08.2017

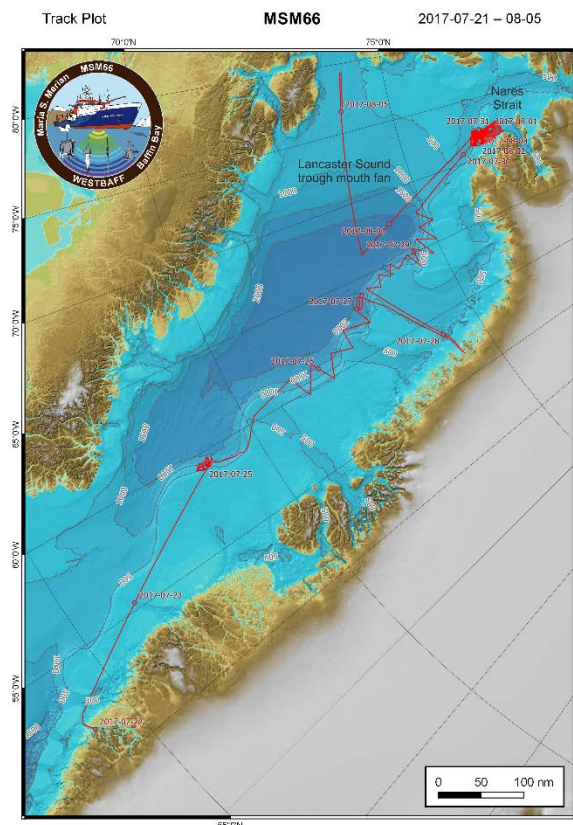
Nuuk (Greenland) – Reykjavik (Iceland)



3. Weekly report

31.07. – 06.08.2017

During the last week, we worked in two areas in northern Baffin Bay, in the southern Nares Strait and on the Lancaster Sound trough mouth fan (see map). In the southern Nares Strait, we mapped and sampled a trough; afterwards, we ran long profiles with the multibeam and sediment echosounder along the Lancaster Sound trough mouth fan.



Map: S. Dreutter, AWI

After a few days of transit, we reached northern Baffin Bay on the 30th of July. In this area, the Nares Strait and the Lancaster Sound connect Baffin Bay to the Arctic Ocean. Both are pathways of Arctic water masses into Baffin Bay and further to the North Atlantic where these water masses are an important factor affecting the climate of the Northern Hemisphere. Furthermore, large glaciers of the Greenland Ice Sheet terminate in the Nares Strait. Hence, there are several reasons to conduct studies in this part of Baffin Bay.

For detailed studies, we selected a trough in the southeast Nares Strait hoping to again find glacial landforms to supplement and extend our models for ice sheet retreat in northern Baffin Bay. Additionally, sediments

from this trough can potentially provide palaeoceanographic information on the interplay of Arctic and Atlantic water masses in northern Baffin Bay.

For studies on plankton that we conduct here on board, this area is of particular interest. It is located in the area of the North Water Polynya, a region that even during winter is only covered by thin or no ice. The composition of the plankton in this area reflects this oceanographic peculiarity. Furthermore, here the planktic faunal assemblages have the highest influence of Arctic waters. Thus, they represent a northernmost end-member in Baffin Bay.

The work in the southern Nares Strait started with detailed mapping of the southern part of trough, including the southern sill separating the trough from the Nares Strait, from the 30th of July until the 2nd of August. The very nice resulting map allows a glimpse of the landscape the glaciers have left behind after their last retreat. Based on this map, 9 sites were selected for geo-sampling. Despite some lost material, two bent gravity cores (so-called 'bananas') and a folded box of a box core, we managed to recover sediments from all sites. Once again, we realised that working on high latitudes can be a challenge. Other than clay and silty sediments, we faced stiff polymicts including large boulders.

After we finished the work in the Nares Strait, we headed to the Lancaster Sound trough mouth fan. The Laurentide Ice Sheet that covered parts of North America during past glacials, transported large volumes of sediments through Lancaster Sound into Baffin Bay, depositing a large trough mouth fan. The sediments at the geo-sampling stations we plan to sample during the next days will provide a better understanding of the architecture and evolution of this trough mouth fan and will be used for studies on the history of the Laurentide Ice Sheet. Also in the study area, we commenced our work with high resolution mapping of the seafloor and the upper sediment successions. Due to the large extent of the Lancaster Sound trough mouth fan, we will not be able to map the entire trough mouth fan. Instead, we will run long profiles from the distal part of the fan to the Lancaster Sound. Later, sampling of sediments and the water column will be conducted along these profiles.

Despite the damaged equipment, we have already successfully completed the work in two study areas. In the Nares Strait, we also reached the northernmost point of this expedition with 77°03.259'N. According to custom, this event was celebrated with a mug of mulled wine during transit after we finished working. At this point, I would also like to thank specifically our Canadian colleague from the Geological Survey of Canada and the colleagues involved in ArcticNet. With their in depth knowledge of the study area and by contributing extensive information on activities in the past, they are a great support for the expedition. By now, also the ArcTrain students have started to rotate their jobs. In this way, they gain insights in all the activities of the different working groups on board. More than two week into the cruise, the mood on board is still very good and we continue our work within viewing distance of Canada.

On behalf of all on board, I sent greetings from the outer Lancaster Sound,

Boris Dorschel



(Box core on deck. Photo: V. Diekamp, MARUM)