

## MSM76 – Weekly Report 4

On Monday, 27 August, we finally left our working area southwest of Denmark Strait. Strong winds and swell accompanied our two day-long transit at first along the south coast and then along the east coast of Iceland toward the Iceland-Faroe Ridge. The latter is - just like the sill in Denmark Strait – a part of a ridge system that marks the boundary from the subpolar North Atlantic to the Nordic Seas.



*Fig. 1: View of the coast of Iceland. (Photo: Dragonfly Leathrum-Simons)*

One year ago two bottom moorings (so-called PIES) have been deployed on the Iceland-Faroe Ridge in order to observe a possible pathway of overflow of dense water from the Nordic Seas toward the Atlantic. It is assumed, that this near-bottom current should be considerably weaker than the one we observed in Denmark Strait, yet, reliable observations are missing. On 29 August we successfully recovered both PIES. Subsequently we continued our way across the Iceland Sea toward the shelf of Greenland. On the way we conducted lowered hydrographic measurements, in order to calibrate sensors, that we had previously recovered. The fairly uniform water mass properties of the deep Greenland Sea are ideal for this exercise.

Much of our time in this week, that was characterized by extended transits, was spent on first analyses of the observational data. We investigated the performance of the sensors of the lowered CTD system, visualized the data sets recovered from the moored sensors, evaluated their plausibility. Based on this first analyses regarding the circulation in Denmark Strait were carried out, for which also underway measurements of ocean currents, surface temperature and meteorological parameters are taken into account. Overall, we are very pleased by the high degree of both data return and quality.



*Fig. 2: A grapple is used for the recovery of a mooring. Photo: Dragonfly Ame Leathrum-Simons*

In the early morning of 31 August we reached the shelf of Greenland near the latitude of the mouth of Scoresby Sound. Since then we moved toward the North with partly spectacular views of the Greenlandic coast. The shelf exhibits deep troughs that extend eastward from the large fjord systems on the coast toward the shelf edge. The troughs are regarded as possible conduits along which Atlantic Water (see weekly report 3) may penetrate from the open ocean into the fjords where it may interact with marine terminating glaciers. In the troughs and at selected shallower sites we conducted hydrographic measurements. These are regions in which historically only very few measurements have been taken. On 1 September the measurements were completed, and RV Merian moved further north, through sea ice and fog. Our target is the embayment in front of the 79°N glacier – one of the largest marine terminating glaciers in Northeast Greenland. Together with a neighboring glacier, it drains the ice masses of the Northeast Greenland Ice Stream (NEGIS) into the sea, with NEGIS comprising 15% of the area of the entire ice shelf of Greenland. It is in this bay, where we want to work at the beginning of next week.

Kind greetings on behalf of the expedition team,

Torsten Kanzow