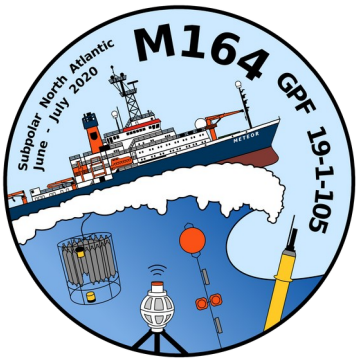
RV Meteor

Cruise M164 (GPF-19-1-105)

23.06.-31.07.2020

Emden – Emden



2. Weekly Report

29.06.-05.07.2020

At the beginning of the second week of our *M164 (GPF-19-1-105)* expedition we continued the mooring work on the Irish shelf edge at Goban Spur. After we had previously recovered the two deep-sea moorings *EB-1* and *EB-3*, we were now ready to redeploy both on Monday, June 29th. The currentmeters and temperature/salinity sensors were previously fitted with fresh batteries, and the devices were set to the desired measuring intervals. In the course of the morning, we brought the *EB-3* mooring back to its intended position. The deployment of the somewhat shorter mooring *EB-1* followed in the afternoon. Despite the emerging sea fog, we were able to observe the proper submergence of the top buoy in both cases. Both moorings will now be managed by the BSH group, which will recover them together with Irish partners in the summer of 2021. Now the data of the retrieved measuring devices are inspected, which should give us information about how the water masses and currents that flow north along the European shelf edge and finally enter the North Sea looked like in the period 2019/2020.

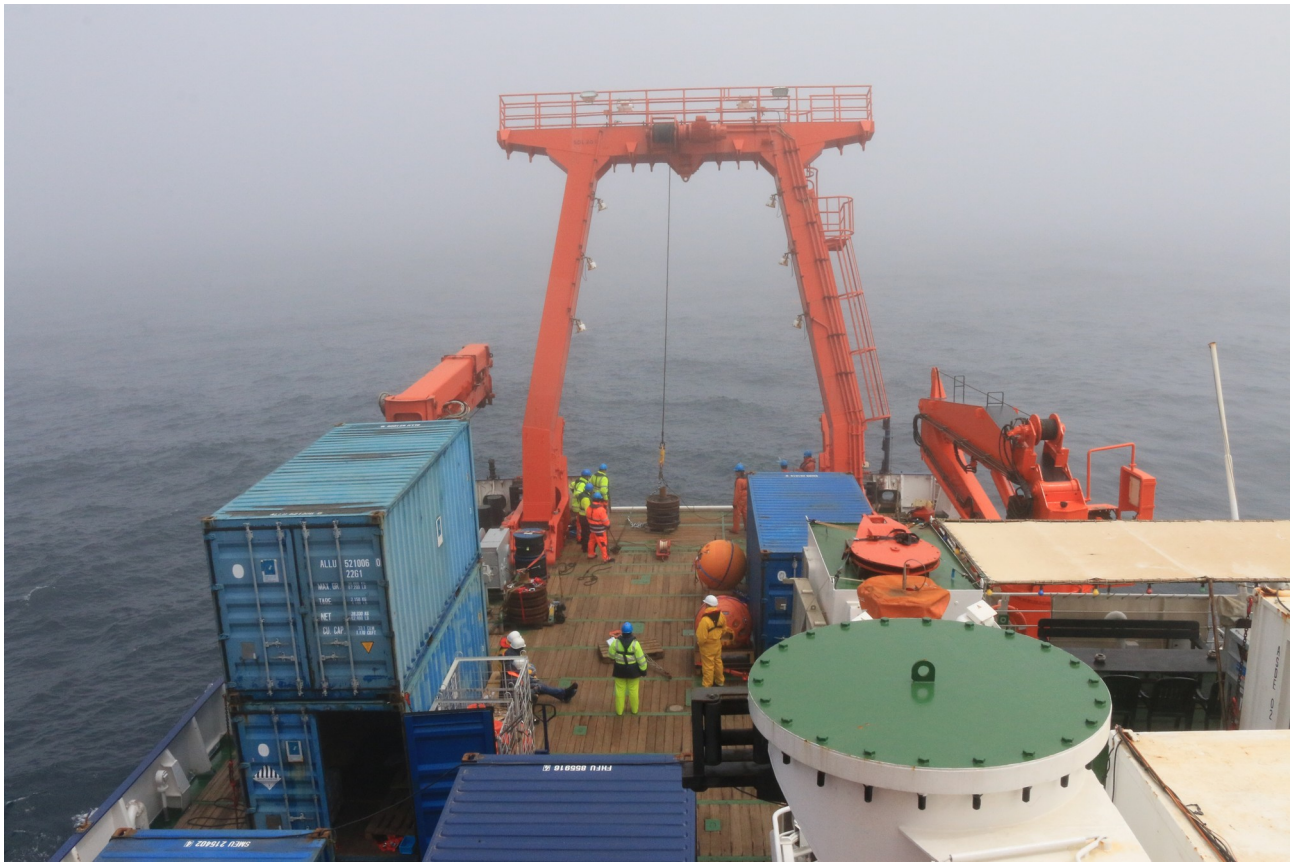
Following the 47°/48°N section, our further measurement program led us continuously westward through the West European Basin. The station distances became larger than at the edge of the shelf, and the station depths sometimes exceeded the 4800m mark. We carried out hydrographic CTD stations along our route and we laid out all the remaining Argo floats of the BSH group. From now on they move autonomously with the ocean currents and provide temperature and salinity profiles of the upper 2000m of the ocean every 10 days. This data is sent by satellite to the Coriolis data center in France, where the first data quality control is carried out. We also contribute very precise temperature and salinity profiles from our own current CTD measurements, which are included in the data control.

The further west we went, the more traces of Labrador Sea Water (LSW) showed up in our CTD measurements, which provide the vertical profiles of temperature, salinity and oxygen. This water mass is one of the foci of the water mass analysis. In comparison to previous measurements, the data from the present cruise will show how far the LSW, which has formed in the Labrador Sea between Greenland and Canada since 2014, has spread in the East Atlantic.

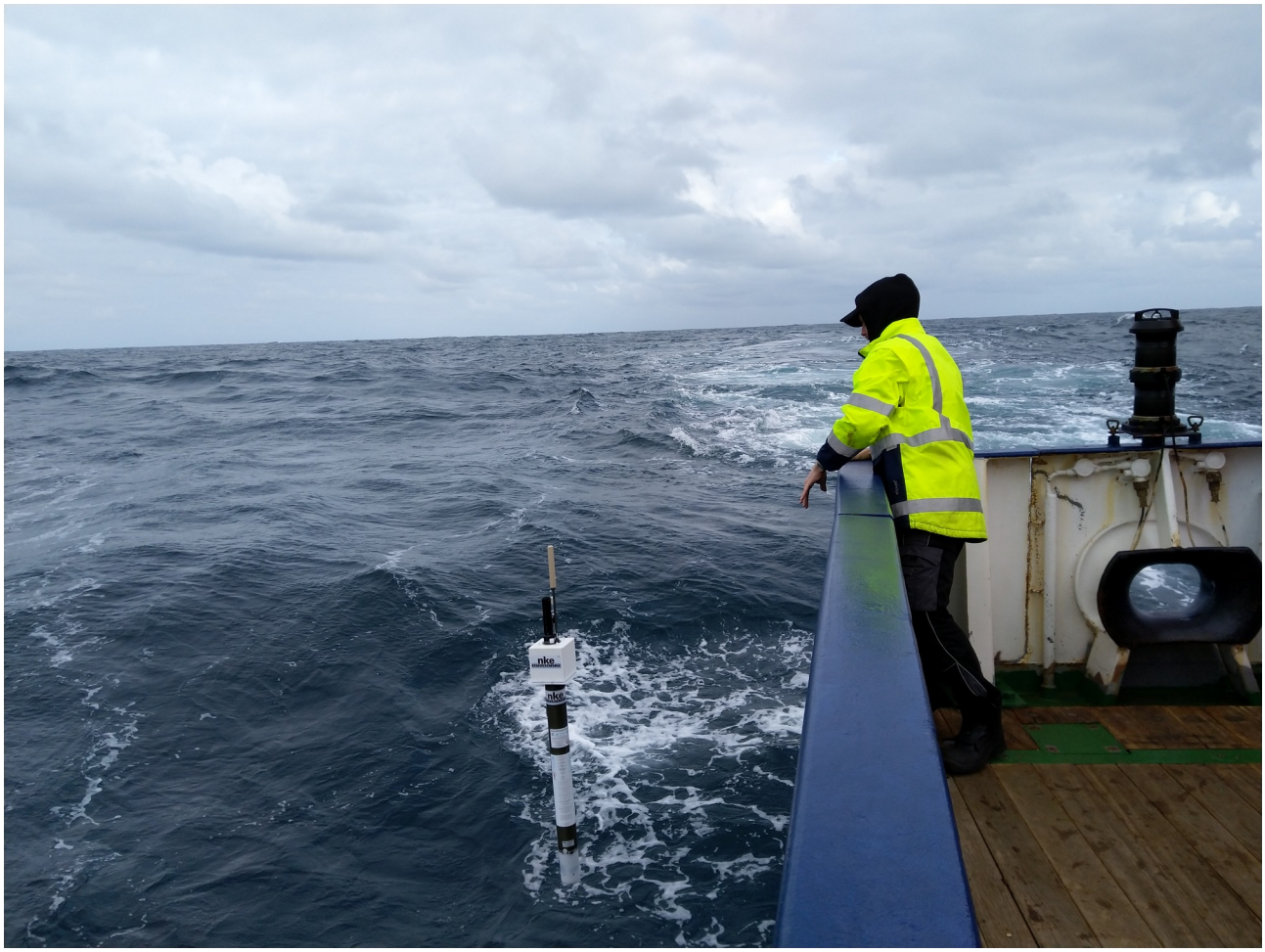
Along our measuring line there are three inverted bottom echo-sounders equipped with pressure sensors in the West European Basin, so-called PIES. With the help of these devices and the corresponding measurement data, the circulation branches in the deep basin far away from the shelf regions can be determined. In the course of this second week we successfully read the data from eastern two devices (*BP-32* and *BP-33*) and then recovered both instruments and brought them on board. At the end of the week the weather worsened and the increasing wind slowed down our journey. As on previous trips, when the position of *BP-34* was reached, the bad weather came up with winds of 7-8 Beaufort and heavy seas. The acoustic data transmission from PIES *BP-34* was unfortunately unsuccessful, and due to the sea conditions we decided to leave the device on the sea floor for the time being. We will collect it later on the return trip when the conditions are hopefully more favorable. Now on Sunday we have a little sunshine for the first time in days, and everyone is enjoying the quiet onward journey. In the evening we will cross the Mid-Atlantic Ridge and thus enter the West Atlantic.

Best wishes on behalf of all cruise participants.

Dr. Dagmar Kieke
University of Bremen



While sea fog emerges, the bottom weight of mooring EB-3 is ready for deployment. Photo: D. Kieke.



Deployment of an Argo float. Photo: K. Wiegand.