



RV Meteor
Cruise M164 (GPF-19-1-105)
23.06.-31.07.2020
Emden – Emden



5. Weekly Report
20.07.-26.07.2020

In the fifth week of our *M164 (GPF-19-1-105)* expedition, we continuously shifted our work area further east. After a long transit, we reached the western flank of the Mid-Atlantic Ridge on Monday, July 20, 2020. There, we resumed our hydrographic station work. On the 100th CTD station, we mounted the temperature and salinity sensors previously recovered from the mooring *BM-22/10* on the frame of the water sampler. At different water depths we made comparative measurements between these sensors and the measurements of the CTD probe, similar to what we had done at the beginning the cruise for the corresponding sensors of the *EB* moorings. If such comparative measurements are carried out directly before and after a mooring period, we can determine whether the moored sensors have a temporal drift or any offsets, which must then be taken into account and corrected for accordingly in the course of the data processing.

We then continued the hydrographic section along the western flank of the Mid-Atlantic Ridge, which had led us to 52°30'N in week 3 of our cruise, in a southeasterly direction to about 44°44'N. At this geographical latitude, we reached the summit of the ridge, so to speak, which divides the Atlantic Ocean into a western basin (the Newfoundland Basin) and an eastern basin (the West European Basin). In this way, we want to use the ship's data to determine whether a considerable part of the North Atlantic Current on its way from west to east reaches the West European Basin on a route located south of our 47°/48°N section.


After this work was completed on Thursday, July 23, 2020, we continued our cruise along the 47°/48°N measurement line in an easterly direction and were back in the West European Basin. Three weeks ago, we had made stations at rather large distances of approx. 50 nautical miles. Since we did not know at that time whether we could expect good weather conditions in the western Atlantic, we had to make the compromise of first increasing the distance between the stations in order to have time reserves for our planned work in the western Atlantic. Three weeks later, we have indeed been largely lucky with the weather conditions in the western Atlantic and have recovered all the moored devices without any significant loss of time. The tailwind also has helped pushing us east across the Atlantic faster than expected. So on the way back, it was now

necessary to fill these gaps in the 47°/48°N section and fit in further stations. In addition, we learn something about the short-term temporal variability of the currents and water mass properties, since there are now about three weeks between the measurements on the way there and back along this line.

On Friday evening, July 24, 2020, we reached the position of the PIES, *BP-34/3*, the last bottom-mounted echo-sounder still on the seabed. Three weeks earlier, the acoustic communication with this device was badly disrupted, and its recovery in the prevailing sea and weather conditions seemed too risky to us. Therefore, we had left the device on the ocean floor for the time being. Now, we had better conditions and were able to recover the device early Saturday morning. This means that all eight bottom-mounted echo-sounders are back on board as planned. All devices were opened and checked for any damage, all raw data on the memory cards were read out, and the devices are now being prepared for return transport. Most of them will be used in another scientific project in the South Atlantic next year.

Today, Sunday, July 26, 2020, we more and more approach the end of our station work, and we will report on this in a last weekly report.

Best wishes on behalf of all cruise participants.



Dr. Dagmar Kieke
University of Bremen



The inside of a PIES is inspected and checked for damage. Photo: K. Wiegand.



Group picture with seven out of eight recovered PIES. Photo: D. Kieke.