



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



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**3. Weekly Report**  
**06.07.-12.07.2020**

At the beginning of the third week of our *M164 (GPF-19-1-105)* expedition we continued our track in a westerly direction. On Monday, July 6<sup>th</sup>, 2020, we reached the position of the PIES *BP-12*. This is where the PIES activities of the Bremen working group began 14 years ago. As before with the East Atlantic PIES, we first performed the data transmission using acoustic telemetry and then recovered the device. Since a device can get lost during a planned recovery, the data transfer previously carried out is the best way to secure the stored measurement data in any case. Despite nightly fog and visibility below 300 m, we were also successful here and brought the device safely on deck in the early morning hours of Tuesday.

The position of PIES *BP-12* at 47°40'N/31°09'W was a turning point insofar as we changed our previous westward course after finishing station work. We continued our route in a northwesterly direction along the western flank of the Mid-Atlantic Ridge. The weather forecast indicated that the former subtropical low pressure cell called *Edouard* would cross our path in the southern part of the planned section if we continued with the station work as planned. We therefore were on transit along the section up to its northern end and were thus able to skip the expected bad weather zone. On Wednesday, July 8<sup>th</sup>, 2020, we resumed station work at approx. 52°30'N/36°51'W. This corresponds approximately to the geographical latitude of Berlin. In this region lies the western exit of the Charlie Gibbs Fracture Zone, the deepest gap in the Mid-Atlantic Ridge. This gap enables the exchange of deeper water masses between the East and the West Atlantic. Until Saturday, July 11<sup>th</sup>, 2020, we carried out station work along our measuring line at a distance of 30 nautical miles and again found clear signals pointing to the presence of saline Northeast Atlantic Deep Water (NEADW), which originated in the area of the Iceland-Scotland Ridge. It passes through the Charlie Gibbs Fracture Zone into the West Atlantic, from where it then spreads. The Labrador Sea Water (LSW) has similar layer thicknesses in this region in summer 2020 as in 2018.

Since Saturday, July 11<sup>th</sup>, 2020, we are now back on the 47°/48°N section and continue our station work in a westerly direction. On behalf of a working group from the French *Ifremer Institute*,

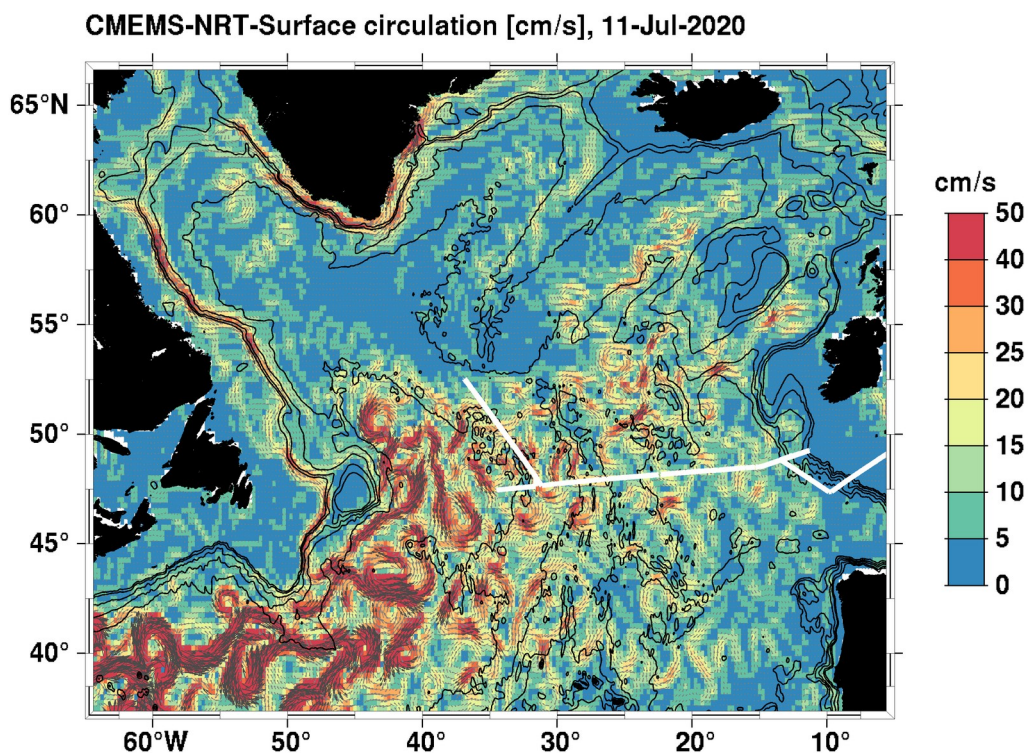
we have already deployed four “Deep Argo” floats. Unlike the conventional floats, which provide temperature and salinity profiles for the upper 2000 m of the ocean, these new devices cover the upper 4000 m of the ocean.

This Sunday evening we will reach the first of the four PIES, *BP-30*, located in the western Newfoundland Basin. Today we also enjoy a sunny day, which, in addition to various whale sightings, also gave us some Portuguese man-o'-wars that drifted past the *Meteor*.

Best wishes on behalf of all cruise participants.



Dr. Dagmar Kieke  
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Velocity distribution at the sea surface from obtained from satellite data (11.07.2020, data in cm/s, data from E.U. Copernicus Marine Environmental Monitoring Service) and track of cruise M164 (GPF-19-1-105).