



FS Maria S. Merian

Reise MSM-64

27.05.-24.06.2017

Southampton – Galway – St. John's



2. Weekly Report

29.05.-04.06.2017

In this week of cruise *MSM-64*, the calibration of the newly installed shallow-water echo-sounder system, *Kongsberg EM712*, was completed. The official technical approval for the operation at sea was carried out by the inspector of the shipping company, *Briese*, and this state-of-the-art device from *Maria S. Merian* is now officially available for scientific applications in the shallow water sector. On *MSM-64*, however, it will not be used as our particular interest is in surveying the deep ocean.

Whenever it was possible to work without disturbing the echo-sounder calibration, this week we used the opportunity to carry out test stations with the CTD/water sampler system and to test equipment that we would later install in deep-sea moorings at high water pressure. This was done on one hand to ensure the general functionality of the devices, on the other hand to calibrate the temperature and conductivity sensors of the devices to be moored in comparison with the measurements of the CTD probe. In return, the echo-sounder team received a regional vertical profile of the sound velocity in the ocean, which was required for the corresponding calibration work. Between 31 May and 01 June, we crossed several times over the northern flank of the Porcupine Bank. The aim was to gather first measurements of the flow strength at the Irish shelfbreak with the Acoustic Doppler Current Profiler (ADCP) installed in the ship's hull before we started heading towards Galway, Ireland, on the night of 02 June 2017. At 08:00 a.m. of 02 June, we arrived in Galway and stayed alongside the roads for about 3 hours to take the missing participants of cruise *MSM-64* on board and the calibration team after a successful mission back to land. After the change of personnel, we set course towards the topographic obstacle "Goban Spur" at the southern Irish shelf edge and began with the actual physical-oceanographic research program of cruise *MSM-64*.

The goal of our trip is, among other things, to measure the strength and variability of the oceanic circulation at about 47°-48°N at the eastern and western edges of the North Atlantic as well as in

its interior. At Goban Spur measurements and mooring work were carried out in the 1990s. Within the framework of the BMBF research program RACE-II (Regional Atlantic Circulation and Global Change), we are now investigating the current conditions and want to relate these to the large-scale circulation. For this purpose, we had already installed deep-sea moorings in the framework of the *Maria S. Merian* cruise MSM-53 in the spring of 2016, which were to provide us with hourly measurements of the temperature, the conductivity (and thus the salinity) and the flow strength of the water following the continental slope towards north.

On Saturday afternoon, 03 June, we were able to successfully retrieve the first of three deep-sea moorings (EB-1/1), read out the recorded data, inspect the equipment and replace the batteries. During Whit Sunday (04 June) we put the mooring EB-1/2 back in place. With respect to the two remaining moorings EB-2/1 and EB-3/1, unfortunately, we were out of luck. In January we received the news that at least the uppermost elements of both moorings had arrived unexpectedly at the surface. Unfortunately, our hopes of finding more instruments at the mooring sites have not been met, and we must regard both moorings as lost. With this sad certainty we prepared the deployment of at least one further mooring (EB-3/2), which will take place at the beginning of the coming week, and worked us from the shallow shelf edge into the deep West European basin.

On behalf of all cruise participants

Dagmar Kieke