



RV Maria S. Merian

Cruise MSM-73

06.04.-22.05.2018

Cadiz – St. John's



1. Weekly Report

06.04.-08.04.2018

At spring temperatures, last Friday (April 6th 2018) the research vessel *Maria S. Merian* left its berth in Cádiz in southern Spain to set off on cruise MSM-73. As part of the “Regional Atlantic Circulation and Global Change” project (RACE, phase 2) funded by the German Federal Ministry of Education and Research (BMBF), teams from the University of Bremen (IUP/MARUM) and the Federal Maritime and Hydrographic Agency (BSH) Hamburg will carry out physical-oceanographic investigations regarding the ocean circulation and water mass exchange in the North Atlantic. Two colleagues furthermore accompany us from Canada, one from the University of Alberta, Edmonton, and another colleague from the Dalhousie University in Halifax, Nova Scotia.

In the coming weeks, we will cross the North Atlantic from east to west at about 47°/48°N and then head north to the Labrador Sea, located between Canada and Greenland. From the southern tip of Greenland we will follow the western flank of the Mid-Atlantic Ridge, which divides the North Atlantic into two deep basins, before moving west again and handing the vessel over to our successors at the end of May.

The research objectives of our cruise deal with the strength and variability of the large-scale circulation in the subpolar North Atlantic as well as the water masses carried with it. The Gulf Stream and its continuation, called the North Atlantic Current, carry comparatively warm and salty waters from the subtropics far into the Nordic Seas. This water is continuously cooled and thereby increased in density. This spatial redistribution of water takes place along different pathways, which we want to analyze during cruise MSM-73. In addition, so-called deep convection takes place in the Labrador Sea in late winter to early spring. Here, the surface water is even more deprived of heat by the late winter conditions at the surface. This process increases the density of the water, and under certain conditions, the water starts to sink to greater depth. As a result, Labrador Sea Water (LSW) is formed, which has a high content of gases such as oxygen or CO₂ and spreads at depth across the equator. The winters of recent years have shown an intensification of deep convection, which consequently formed a cooler and fresher LSW. We are looking forward to find out what kind of LSW awaits us in the spring of 2018.

At the beginning of the cruise, we had a long transit to the working area off the edge of the Irish continental shelf. We used the time in the port of Cádiz as well as the transit to the north to set up

the laboratories and to prepare the equipment for their mission. On Sunday, April 8th 2018, we conducted two test stations in the Bay of Biscay. Here, the acoustic release units required for the deep-sea moorings were checked and various sensors were calibrated, which later are to record time series of temperature and salinity. In the upcoming week, these devices will be installed in the boundary current moorings located off the Irish continental shelf edge. We furthermore used the time to give talks and provide background information to the scientific party. Despite facing some larger swell everyone aboard is doing well and we are happy to be back onboard of *Maria S. Merian*.

Best wishes on behalf of all cruise participants

Dieter Kutz



RV Maria S. Merian leaves the port of Cádiz.