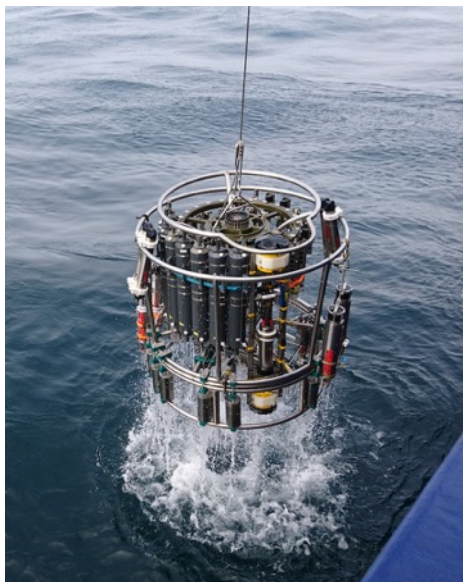


2. Weekly report – Maria S Merian MSM94

This second week of the MSM94 expedition was dedicated to the transit from Germany to our first destination, the port of St. Johns, Newfoundland/Canada. Our route followed a great circle - on our spherical earth this is the shortest way to get from A (Emden) to B (St. Johns). On most maps the course gives the impression that you follow a curve and thus looks the route becomes longer. This is deceptive, as you can quickly see with the help of a string connecting two places on a globe.

The North Atlantic did not show itself from its most dramatic side during the crossing but it was a little shaky and we did not see the sun all the time. For a short time, not everyone on board was feeling well but thanks to our ships doctor Gabriele and her miracle cures, all are well again and now enjoy the movements of the Maria S Merian.



The CTD coming out of the water after a cast, **Photo: Conny Posern**

In this second week we also started with research operations. First of all the most important instruments was used - the "CTD". What does "CTD" mean? "C" stands for Conductivity - from which, taking into account the temperature (the "T"), the salinity is calculated. The "D" ("Depth") also plays a role because the depth would be more accurately translated as "pressure", and this must be known for the salinity calculation.

At each CTD station many different sensors are lowered towards the sea floor with the help of a wire. The measurements thus provide information about the vertical structure of the ocean at the location. In addition to temperature, conductivity/salt content and pressure, we also record the movement of the water, nutrient and oxygen content, algae concentration (chlorophyll-a) and photographs of particles. When these measurements are taken along a route and combined, we obtain maps of the route versus depth showing the distribution of the respective parameters. These maps can then be analysed in relation to scientific hypotheses.

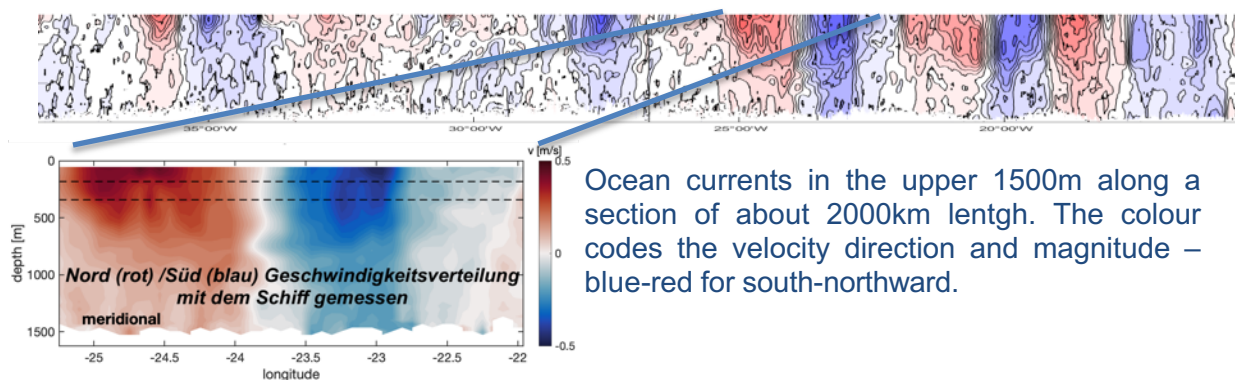
We also use the CTD frame for instrument tests and calibration. These instruments will over the coming weeks be mounted at the underwater stations, called "moorings", we visit during the course of the voyage. Many other preparations that we are currently carrying out concern the moorings. In total we will be recovering 12 moorings and 11 of them will be re-deployed.

We do not only make use of the instruments on board but also use satellite data to be informed about phenomena ahead of us. For example, measurements with the CTD can then be carried out on site. These phenomena include oceanic eddies, which are large rotating water masses.



Preparation of mooring instruments,
Photo: Conny Posern

Our track crosses the North Atlantic Current, which is the "extension" of the Gulf Stream to the east. Eddies are often created along these currents. The eddies are nicely visible in the north-south water movement which is continuously measured under the ship.



Ocean currents in the upper 1500m along a section of about 2000km length. The colour codes the velocity direction and magnitude – blue-red for south-northward.

Simple analyses show that the eddies we crossed have a diameter of up to 150 km (about the size of Schleswig-Holstein) and that they rotate at the outer edge at about 2 km/h, so it takes about 9 days until a complete rotation has been achieved. Many scientifically interesting analyses can be carried out with "underway data" and that is why the DAM Unterwegsdaten pilot project, which I also mentioned in the 1st weekly report, is a remarkable activity.

At the moment we are planning to arrive in St. Johns, Canada on Wednesday morning to bunker fuel and pick-up some parts of our equipment.

The whole crew supports our work wherever possible and the atmosphere on board is still excellent, as is the food.

With regards - Johannes Karstensen GEOMAR for the participants of the MSM94