

17.08.2019 Walvis Bay, Namibia

Research cruise M157 EVAR

Second weekly report for the period 11.08. to 17.08.2019

The second week of our expedition was again dedicated to the preparations of the scientific work off Namibia. At a station in the Angola Basin, we tested the equipment that will be used next week. We were able to eliminate the minor defects discovered during this test during the course of the week, so that we are now very well prepared for the coming work.

In addition, we continued the ongoing measurements on the way with the shipborne current meters, as well as the surface water sampling along our route. Another focus on the journey from Mindelo to Walvis Bay was the sampling of air and surface water to determine the concentration of persistent organic pollutants (POPs) on the Atlantic off the coast of West and Central Africa. This work is carried out by the Max-Planck-Institute for Chemistry in Mainz as part of the ITTWIA project "Intercontinental transport of persistent organic pollutants from Western and Central Africa".

Despite their negative effects on the environment and human health, the proliferation of many of these pollutants is still insufficient or in areas far from primary sources almost not described at all in the literature. This campaign aims to determine the concentrations of these pollutants in the tropical Atlantic off the West and Central African coasts during the West African rainy season and the slash-and-burn season on agricultural land in Central Africa. In addition, the transatlantic transport of the substances will be investigated by simultaneous sampling on the coast of French Guyana. Due to the trade winds in the tropics, air masses with the pollutants will be transported from West and Central Africa to South America.

For this purpose, air samples were collected 24 hours a day using a high volume air sampler. In this collector, particles up to a size of 10 μM are collected separately on quartz fiber filters and the pollutants in the gas phase on two sequential polyurethane foams. In order to prevent contamination with exhaust gases from the own ship, the sample collector was set up in the front part of the ship on the 2nd deck, the so-called "heli deck", at the railing. The loaded samples were then wrapped in aluminium foil in the laboratory, minimizing any contamination, and stored in the refrigeration room at $-20\text{ }^{\circ}\text{C}$.

Pollutants in surface water were collected using a passive sampling device. Thin silicone rubber plates were continuously exposed to the surface water of the Atlantic Ocean. This passive sampling of POPs in surface water was running several days before the samples could be stored in the cold store at $-20\text{ }^{\circ}\text{C}$, minimizing any further contamination during packing.



Figure 1: Marco Wietzoreck from MPI for Chemistry in Mainz exchanging the filter at the air sampler.

Following an old sailor tradition we had a visit of Neptune on Wednesday, who took our still unbaptized comrades into the alliance of the southern hemisphere seafarers. This was for all a welcome break which brought a lot of fun.

On Thursday evening we reached the EEZ of Namibia and arrived Saturday on schedule at Walvis Bay harbor. Here our colleagues will go on board.

Last week's weather did not exactly spoil us. It has become much cooler and the sun has become scarce. Despite the relatively strong swell the atmosphere on board is very good and we are looking forward to the time of intensive scientific research.

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