

R/V METEOR

M174 "N-Amazon"

Las Palmas - Emden, 12.04. - 30.05.2021



4th Weekly Report
26.04. - 02.05.2021

A week full of new findings and diverse experiments lie behind us. A total of 14 stations were worked on, plus six more stations during the transit from Las Palmas to the mouth of the Amazon. We planned the trip in such a way that besides the normal stations, which cover a large working area on the shelf and offshore, so-called process stations were to be worked on. This type of studies mainly considers the temporal evolution of processes within a water body. In order to identify the best position of such process stations, satellite images have to be sighted and own data of the station work have to be evaluated; because our research program has clear demands on the conditions we want to find at process stations. The most important issue is the developmental stages of plankton communities and their activity in terms of nutrient uptake, nitrogen fixation, or species composition. The physical structure of the water column, salinity and stratification also play a role. Drifting then allows us to follow the "aging" of the river water plume.



Deployment of the drifter. Foto © N. Fröhberg

We processed the first process station of 48 hours' length directly in the outflow of the Amazon in only 30 meters deep water. The water here was highly stratified, very rich in sediments, and had a salinity below 10 PSU at the surface. The water body was marked with a "drifter" that floats upright and carries equipment to measure currents and record temperature and salinity data. It was deployed during calm weather (see photo). The measurement program carried out near the drifter included microstructure measurements of the water column every two hours, every four hours the CTD was run and nutrient samples were taken. In between, there were several other sampling and instrument deployments, especially of the multinet and the multicorer.

Throughout, we monitored - at times somewhat anxiously - whether the drifter would migrate into shallow water and possibly need to be recovered before the station program was completed, or whether the water depth would remain adequate. Fortunately, and in line with our expectations, the drifter meandered with the tides from shallow to slightly deeper water and back, shifting north overall.



Fishing boat and drifter. Foto © N. Fröhberg

Thus, all instruments could be driven close to the drifter without any problems and we were able to record a comprehensive picture of the physical mixing processes, the plankton communities and their matter turnover. We were even able to obtain sediment pore waters, which we hope will also allow us to assess the role of sediments in nutrient turnover. A few fishing boats were spotted nearby (see photo), but none made any moves to curiously approach our equipment.



Murky water and rainy clouds at the drifting station

First data show us that this first process station was a success, which is also due to the professional support of the crew on deck and on the bridge (and nothing works on board without a machine anyway). But before this first process station ends, the second one must be planned and its position determined. Our Brazilian observer on board is of help to us in many ways, as he assists with nautical charts of the area and agrees to the minor relocations of the originally planned stations. So we have already started the next 48 hours process station just in time for the 1st of May and are curious what it will bring in terms of findings. This time we will focus on a situation with considerably lower turbidity and species-rich diatom communities, which provide a perfect basis for the reproduction of zooplankton.

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Link to the cruise blog: <https://www.io-warnemuende.de/fs-meteor-m174-2021.html>