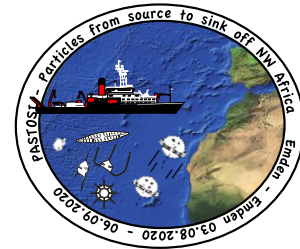




R.V. METEOR
Cruise M165 (GPF 18-1_18)
03.08.2020 - 06.09.2020
Emden - Emden



3th Weekly report, 17th – 23th August 2020

This week started with a transit from Las Palmas to our research area near the shelf-break north-west off Cape Blanc. In contrast to our transit to Las Palmas on Friday and Saturday which was quite "shaky" as a result of strong headwinds, the RV. METEOR now softly "surfing" on the waves southward. The winds blowing strongly from the North-East were not only beneficial for a fast return to our research area, they also caused the coastal upwelling off Cape Blanc to increase in strength. Satellite images of sea surface temperatures and chlorophyll-a concentrations (see State of the Ocean, <https://podaac-tools.jpl.nasa.gov/soto/>) revealed the appearance of a new small active upwelling cell in an ideal location to start our drifting trap plankton succession survey. In this survey we planned to follow the phyto- and zooplankton production succession as well as the forming of aggregates/marine snow in an active upwelling cell over a period of several days. This allows us better understand the formation and sinking behavior of marine particulate organic matter.

On Monday afternoon, we were able to resume station work. After characterization of the water column at several stations along the onshore-offshore transect we headed eastwards towards the newly formed upwelling cell which we reached in the morning twilight. There we released our drifting trap, wished it a safe trip and promised it to be back the next day.



Deployment of the drifting trap



Deployment of the moored sediment trap

Due to the shortness of working days, we immediately went southwestwards to the location of our second moored sediment trap. This mooring is operated as long-term monitoring station since 2002,

with two traps collecting sinking material at 1263 and 2168 m water depth. Also on this location, an exceptionally fast recovery resulted in having both traps and the releaser safely on deck safely at 15:13. Fortunately, the 5 months longer than expected stay in the water column had not caused damage that was impossible to repair by our skilled technicians which resulted that the mooring could successfully return to the ocean on Friday afternoon.

From Tuesday on, the afternoons, evening as well as nights were filled by deploying the CTD/Rosette and in-situ pumps with which we collected both particulate organic matter (POM), as well as dissolved organic matter (DOM). We furthermore, investigated if the bottom nepheloid layers and sediments in this region contain microplastics. For this we developed a sampling procedure that minimizes the risk of contamination during sampling, e.g. by avoiding the wearing of plastic derived clothing (e.g. fleece jackets) and minimizing air-exposure during harvesting of samples. Surface sediments collected by multi cores are immediately covered by contaminant free lids when arriving on deck and are successively frozen. Back in Germany the cores will be subsampled in clean environments to further minimize the risk of contamination by plastic aerosols.

Every day in the early morning hours we returned to the drifting trap that transmitted its actual position through Iridium and AIS senders. After recovery, characterization of the water column with CTD and an underwater particle camera system, the trap was placed back into the water for another day of sampling. At the fourth sampling day, the trap was "trapped" in a newly developed local eddy that transported it towards very shallow waters. Therefore, after four days of sampling the trap was recovered from the waters in the active upwelling to be replaced in more offshore located upwelling filaments for a new survey.

Next week we will continue station work along an onshore-offshore transect west of Cape Blanc before we will start our long transit back to Germany.

on behalf of the M165 cruise participants
met beste groeten van de blauwe oceaan

Karin Zonneveld