

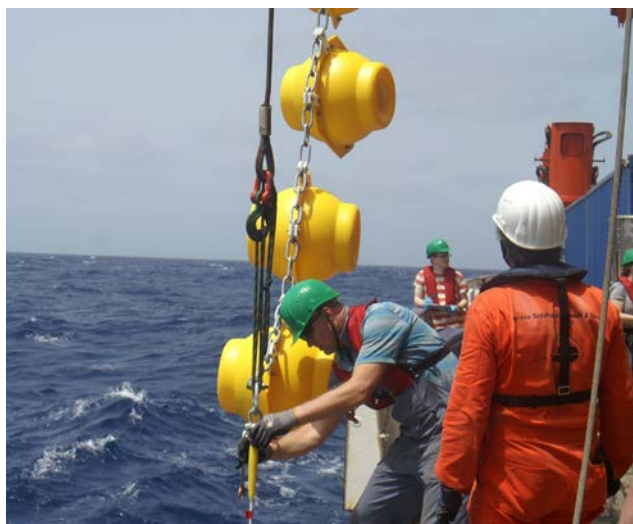
Meteor cruise 97: Oxygen Supply Tracer Release Experiment SFB754

1st Weekly report for the Meteor cruise M97

Mindelo (Cape Verde) – Fortalzea (Brazil), May 25 – June 28, 2013

This Meteor cruise is one component of the collaborative research project SFB754; Climate – Biogeochemistry interactions in the tropical ocean, funded by the German Science Foundation (DFG). This project is particularly interested in the areas of low oxygen concentrations that are found in the eastern part of the tropical oceans. Relevant for this project are, for instance: How does subsurface dissolved oxygen in the tropical ocean respond to variability in ocean circulation and ventilation? What is the role of zooplankton in the biogeochemical cycles, and, in particular, how important is the diurnal migration of zooplankton for transport of organic matter? With cruise M97 we attempt to provide more data to be able to answer these and other questions relevant for the dynamics of the Oxygen Minimum Zone in the Tropical North Atlantic.

The cruise started in the evening of Saturday May 25; we left Mindelo on the island of Sao Vicente as the sun was slowly setting over the Cape Verde Islands. Our goal was the Cape Verde Ocean Observatory (CVOO) about 60 nautical miles NE of Mindelo. On this position we have conducted regular ship-based measurements, and maintained a mooring, since 2006. Our aim for the first part of the cruise was to deploy a new mooring that has a profiler in the top 150 meters of the water column. This element measures $p\text{CO}_2$, oxygen, salinity, temperature etc. and can send the data back to Kiel in real time.



Gerd Niehus (GEOMAR) and Peter Hadamek (Meteor) on deck during mooring deployment at the CVOO station.

We also managed to service the surface element in the already existing mooring at the CVOO site; a swivel leading to the telemetry-buoy was damaged and needed to be replaced. By very carefully and skillful maneuvering by Meteor's captain Michael Schneider up to the mooring position, we could bring the surface element on deck and to exchange the swivel. Now, also this mooring can send data back to Kiel in real time.

An interesting aspect of the first day at sea was the presence of a TV team that was filming material for ZDF – “Das blaue Sofa” – a literature show that has the Atlantic as a theme for a show in the end of August. Apart from mooring work we also conducted CTD/water sampling and zooplankton sampling on the CVOO site. After 24 hours of intense science work at the site, we returned to Mindelo for exchange of scientific crew; early in the morning of the 27th; the team from ZDF and six scientists that worked on the moorings left the ship, and 7 new scientists joined the Meteor for the rest of the cruise.

The Meteor was soon enough ready to leave and headed out into the fresh trade winds that wiped through the channel between the islands. We now had one day of steaming to the area south of the Cape Verde islands where we released a tracer in the oxygen minimum zone from the RV Maria S. Merian in December. Our goal is to map out the horizontal distribution of the tracer as well as we can. To our joy we did find the tracer already at the second CTD station. This was very good for us, since this is the first confirmation that the tracer release in December was successful.

We are now working with an intense set of CTD stations with the aim to map out the tracer distribution, but also to map out hydrographic features and the oxygen distribution of the area.



The Meteor is leaving Mindelo for the second time in three days. This time we will be at sea for about one month.

The mood of the scientist and the crew is excellent, and after a few days we are all well into the routine with regular CTD casts, and some plankton nets in between.

In the name of all the participants, best regards from the Meteor,

Toste Tanhua

Meteor, Sunday June 2, 2013