



RV Meteor cruise M153

TRAFFIC

15.02. – 31.03.2019

from Walvis Bay to Mindelo

3. Weekly report from 10 March 2019



A group of pilot whales is crossing our course.

The third week of our cruise is over. We look back to a so far very successful sampling campaign, and we are looking forward to the last days with full station work until we finish the 2nd leg of the cruise and dock in Walvis Bay.

The sea gets rougher with wind speeds between 5 and 7 Beaufort, sometimes stronger. This means that of the more sensible gears cannot be deployed as specially the higher waves and the swell make them difficult to handle while bringing them out into the water or on board. On the other hand we observe more animals around the vessel. Albatrosses and storm patrols accompany the ship and several schools of pilot whales can be spotted. We also so two humpback whales.

Our Namibian colleagues have adapted to the life on board and are busy with sampling data and water and plankton samples to be analysed at the National Marine Information and Research Center (NatMIRC) and the University of Namibia in Henties Bay.

Our work makes good progress. We have worked up the transect off Walvis Bay and the stations in the northern part of our investigation area. In the next days we will concentrate on the central part of our station net and work along the coast. We could also work up two long-time stations where we deployed drifting sediment traps that stayed in the water for two and four days, respectively. We could also deploy one of the two moored sediment traps that we planned for the northern part of our cruise in Namibian waters.

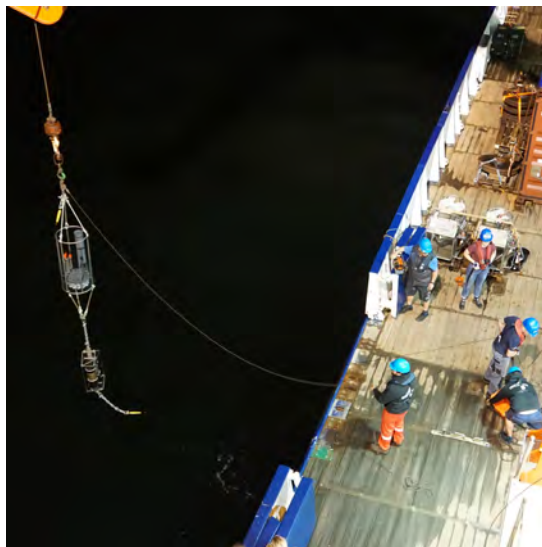


Narrative of the cruise

The first stations in Namibian waters to be worked up were positioned along the so called Walvis Bay transect. It is a series of stations that is arranged perpendicular to the coast and routinely sampled by German, Namibian and other scientists for long-time data collection. The result is a time series ranging back more than twenty years and continuing monitoring cruises performed by South African scientists before Namibia's independence.

About 15 nautical miles off Walvis Bay we deployed a sediment trap that collects downward moving anorganic and organic matter from the water column. These samples will provide information on the quantity and speed and consequently the whereabouts of sinking organic material.

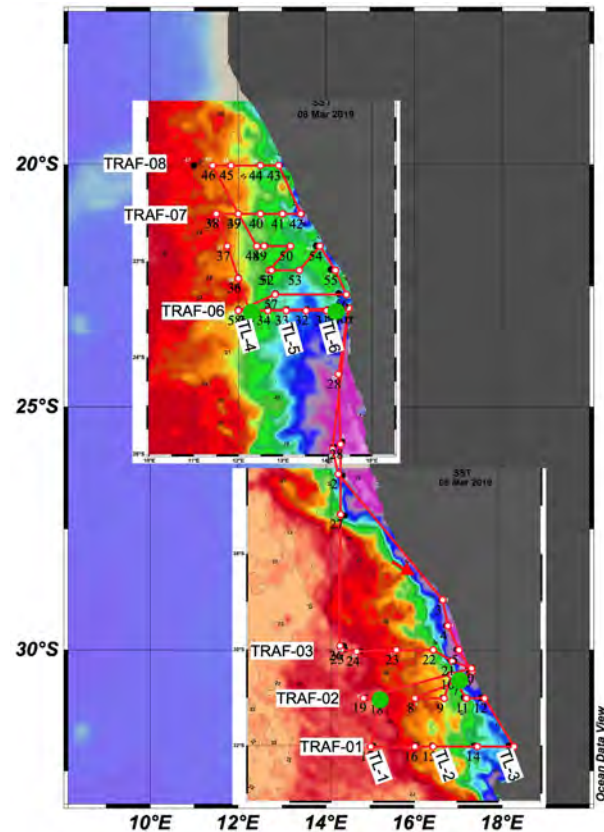
For this purpose several sediment traps are fixed in predefined distances at a rope and then released into the water. An iron wheel of a railway coach serves as weight



to keep the trap at the sea floor. Floating elements along the rope and at top keep the mooring upright in the water column.

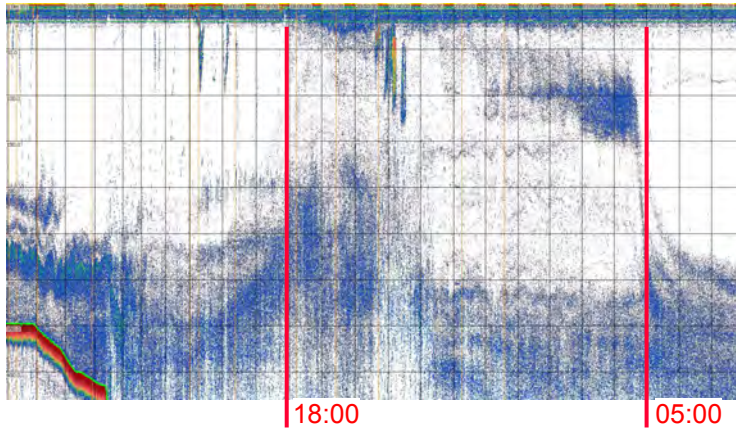
Another moored sediment trap is planned to deploy at the end of the transect at 1900 m water depth. This will be done at the end of the cruise leg shortly before calling again in the port of Walvis Bay. Both traps will be recovered together with the two traps from the south on the next cruise into the area in the frame of the TRAFFIC project. This is foreseen for the austral winter 2020 producing a time series of 18 months.

With naked eyes we can observe the big difference in the plankton composition between northern and southern Benguela upwelling systems. While in the south we mainly found larval and juvenile halfbeaks and anchovies e.g. in the surface catches with the neuston catamaran, in the northern part the main species are sardines and blenniids. With the big multi-net we catch high amounts of krill that performs vertical migrations on a daily rhythm. During the day the organisms are in greater depths of 300 to 500 meters. During



Sea surface temperature in our investigation area based on data from NOAA, processed by our South African colleague Tarron Lamont, DEA, Cape Town.

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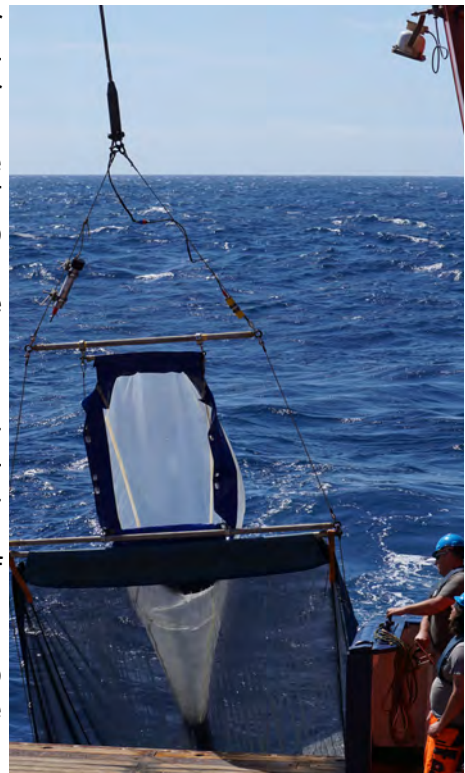
night krill but also other species such as the mesopelagic fishes raise to the surface for feeding. This can be nicely observed with an echo sounder mounted at the ship's keel. Krill is mainly distributed along the shelf edge and slope. At dusk it moves to the surface, before dawn its back in greater depths of 300 m again.

Also the catches with the RMT (Rectangular Midwater Trawl) have changed completely. They reveal more biomass and are more diverse. The so-called midwater fauna, occurring between 200 and 1000 m water depth, is composed of many fish and krill species, that have adapted to the diel vertical migrations. The RMT works better at night when the animals are not able to see the big net and avoid it. During daytime there is still some few light one or two hundred meter depth that the fish can detect the big dark shadow of the net and escape.

The catches comprise large amounts of so-called mesopelagic fishes in high diversity. This fish group probably forms the largest fish biomass in the ocean of several



hundreds of million tonnes. They are food for many top predators like tuna fishes, seals, whales and sea birds.



Because of the large biomass mesopelagics have come into the focus of several fishing countries. They are seen as an important source for fish meal and could substitute other species like anchovies. However, our

knowledge of the biology, ecology and their importance in the marine food web is scarce. The fishes are getting more and more attention in research project, and is also an important part in our TRAFFIC project.

We are now preparing for our last stations and docking in Walvis Bay. Part of the scientific crew will leave the ship. Only a reduced crew will continue until Mindelo.

With windy regards from 21° S/14° E

Werner Ekau and all cruise participants

