

# SONNE 303

## BIOGIN – IIOE2

La Réunion – Colombo, 23.01. – 19.02.2024

### 4. Weekly Report

29.01.-04.02.2024



## Sampling South of the Equator

In this week, we have worked our way from 15°S to 1°S and sampled a total of ten stations. The CTD profiles show us decreasing oxygen concentrations within the oxygen minimum during the northward journey as well as decreasing water depths from 1000 m to 750 m of the core of the oxygen minimum. Four of the stations were dedicated exclusively to the physical oceanographers, who investigate the mesoscale changes in the current and water mass distribution in the equatorial region at 0.5 to 1° intervals. At the six other stations, in addition to the CTD profiles, water samples were taken and analyzed for our standard variables of trace gases, nutrients, isotopes of reactive nitrogen, alkalinity, dissolved inorganic carbon, oxygen, chlorophyll and suspended matter. DNA and RNA samples were also taken. At our focus stations at 5°S and 2.5°S, additional water samples were taken to determine nitrous oxide formation, nitrification and nitrogen fixation. At almost all stations, the multinet and the much smaller Apstein net were used to sample plankton at different water depths. Some of the plankton samples were studied under the microscope directly on board. Multicorers and gravity corers have been successfully deployed at every station to date, following a thorough hydroacoustic survey of the region. The core yield is up to approx. 7 m in length.

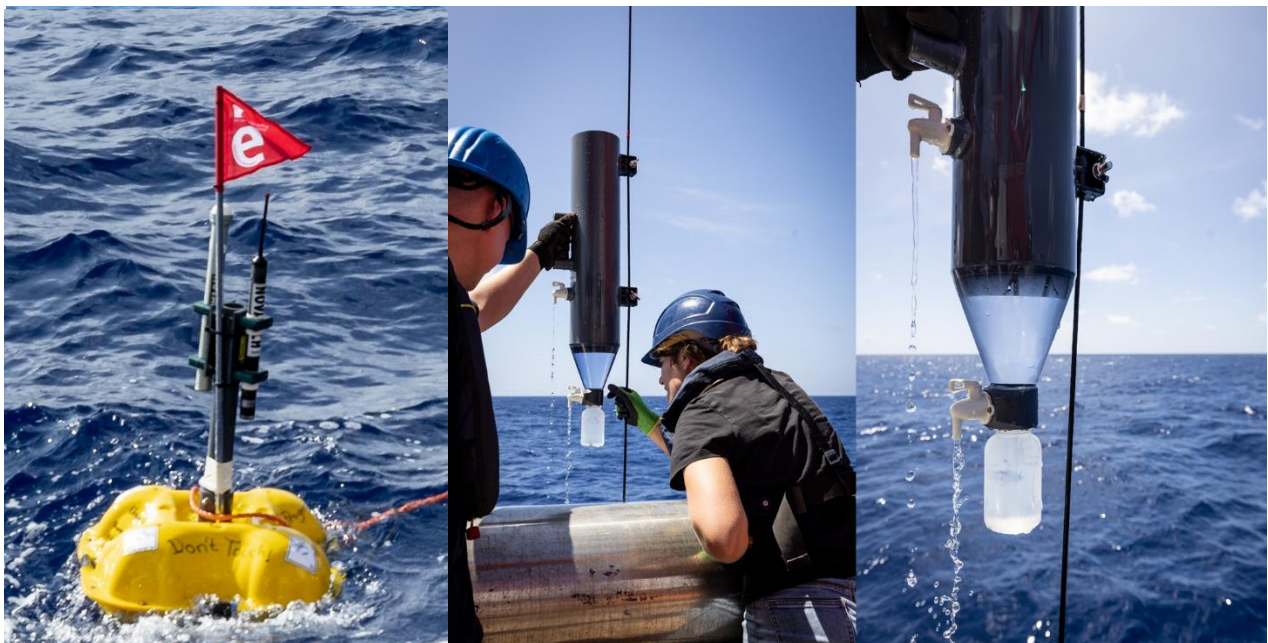


Photo 1: Use of a drift system to investigate particle transport in the water column.

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In order to specifically sample sinking particles, drifters were deployed at the stations at 5°N and 2.5 °S, which drifted in the water for 24 hours during the entire station work. The drifters consist of a surface buoy with an iridium transmitter, which can be used to localize the system and observe the drift movement (Photo 1). The sediment traps each have a collection cup under a funnel and seven to eight sediment traps per drifter were deployed between 50 and 600 m water depth. Once all the work on the focus stations had been completed, the drifter was returned and taken on board. So far, an increase in the number of particles collected from south to north has been observed along the entire route. The samples are analyzed directly on board for active and passive particle transport (Photo 2).



Photo 2: Fecal pellets (passive particle transport) and copepod nauplii from a drifter sample.

We are currently on our way to the focus station directly on the equator, which we will reach early Monday morning.

The work has gone very well in the meantime and the atmosphere on board is, as always, very good on the voyage so far.

Best wishes from on board to all those at home

Birgit Gaye  
Chief Scientist