

# M188

Walvis Bay - Walvis Bay  
March 7 - April 13, 2023

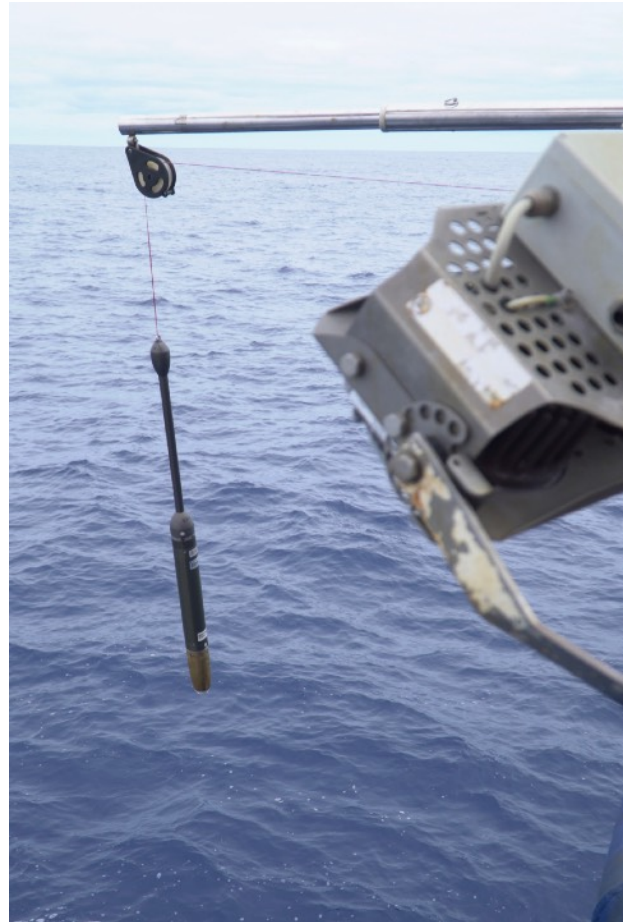
4<sup>th</sup> Weekly Report  
(March 27 - April 2, 2023)



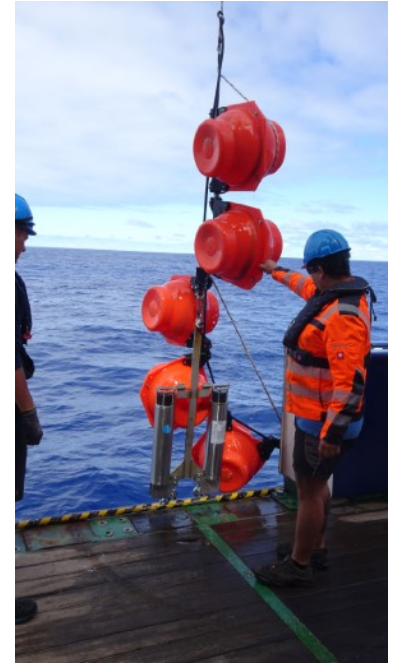
We spent the first few days of last week with several time series stations to study the internal tides emanating from Walvis Ridge and to observe possible interactions with eddies. The stations were located in north-south direction, along the east side of the same eddy where we had deployed the gliders and drifters last week. The first station was close to the center of the eddy, then the southernmost station was already outside. The drifters circled the eddy about halfway during this time. The gliders stayed near the drifters for the first few days, and are now moving back into the center of the eddy, crossing it on the easter side to meet the Meteor.

On the way back to our mooring in the north, we made a longer transect with the underway CTD. At a ship speed of 5 knots, a free-falling CTD probe was repeatedly lowered into the water at the stern of the Meteor. The probe is connected to the ship by a thin rope and is retrieved by an electric winch after a few minutes of fall. In this way, 56 profiles were measured along a way from the edge to the center of the eddy.

On Friday morning, the recovery of the first of our moorings began. Weather conditions were ideal and the top float was spotted within minutes after release. In total, we will recover two long-term moorings and five pressure inverted echo sounders (PIES) on this cruise, that were deployed in April 2021 on Sonne cruise SO283. The moorings are at a depth of about 5000 m and are equipped with current meters, ADCPs, and temperature/salinity recorders to measure energy fluxes from internal waves. The retrieval of the 5000 m long mooring with more than 20 individual instruments took 4 hours and proceeded without any problems. The data return is very good, except for a single temperature logger, all instruments were recovered in good condition. The PIES are relatively small instruments by comparison, that measure the pressure and travel time of a sound signal to the sea surface and back at the seafloor. The speed of sound in water is strongly related to temperature, and the



*Fig. 1: Free-falling CTD (underway CTD) probe for measuring temperature and salinity profiles while the ship is moving (Photo: B. L. Duong).*



*Fig. 2: Mooring recovery with an ADCP in a large buoyancy sphere (top left), and the acoustic releases with small buoyancy spheres (top right). Bottom: Recovery of an inverted echo sounder (PIES). All in the best weather conditions. (Photos: A. Welsch and C. Mertens).*

measured travel time is thus a measure of the stratification of the water column. Bottom pressure provides information about current strengths and tides. Of the five PIES deployed, we were also able to successfully recover three devices this week.

Best wishes from the scientific party of M188 to all families, friends, and colleagues on shore.

Christian Mertens  
(University of Bremen)