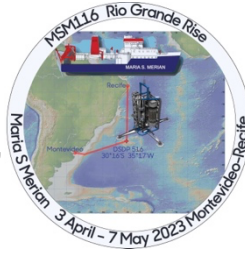


FS MARIA S MERIAN

MSM116 "RIOGRANDERISE"
03.04. - 07.05.2023



2. Weekly Report
10. - 16.04.2023

After the events of last week, we finally left the area early in the morning on Monday. After a CTD/Rosette station, we had chosen a nearby elevation that might be shallow enough for MeBo sampling as our first alternative for our MeBo deployment. We were aided in our search by existing seafloor mapping efforts, which have now surveyed nearly 25% of the seafloor in detail using multibeam echo sounding techniques, and are supplemented with satellite data. These large datasets are freely available (e.g., at <https://www.gebco.net> and <https://www.gmrt.org>). We were able to use a copy of the GMRT/GeoMapApp database that was made available to us prior to the cruise for such purposes. This location was visited in 2018 by the US research vessel Nathaniel B. Palmer for hard rock analysis and dating, but due to the Easter holidays there was no further information from our American colleagues until later. After mapping with our parasound system, it unfortunately turned out that there is too little or no sediment on this volcanic uplift at an accessible depth for the MeBo.

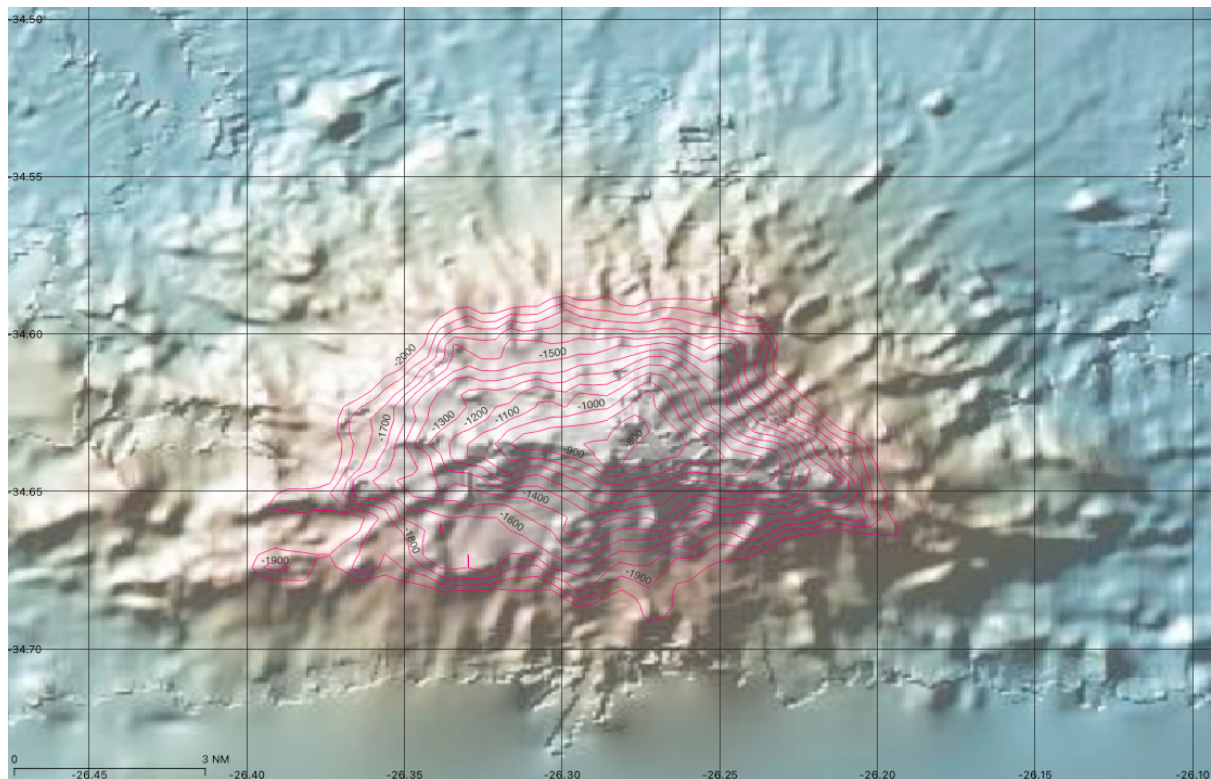


Figure 1: Submarine Elevation (from <https://www.gmrt.org> under CC Attribution 4.0: Ryan, W. B. F., S.M. Carbotte, J. Coplan, S. O'Hara, A. Melkonian, R. Arko, R.A. Weissel, V. Ferrini, A. Goodwillie, F.Nitsche, J. Bonczkowski, and R. Zemsky (2009), Global Multi-Resolution Topography (GMRT) synthesis data set, *Geochem. Geophys. Geosyst.*, 10, Q03014, doi:10.1029/2008GC002332.)

Other options further south were unfortunately not feasible due to high waves and winds. Therefore, we headed north since Tuesday, aiming for the Bahia seamount chain and Stocks Seamount. This transit was on our general track to the destination port. Stocks Seamount is named after Theodor Stocks, who made many observations in the Atlantic during the Meteor Expedition of 1925-1927. We finished the approximately 1250 nautical mile voyage from about 34.5°S to 14°S early in the morning on Sunday, passing the archipelago Islas de Martim Vaz and Trindade along the way. The journey into the tropics was clearly noticeable by changes in air and water temperatures (see figure 2).

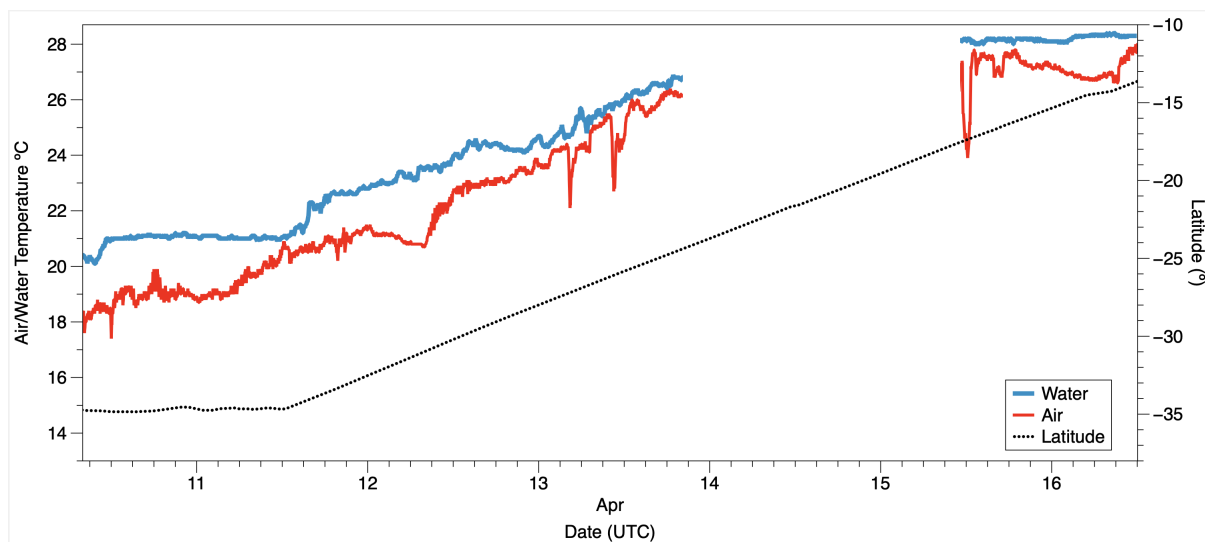


Figure 2: Latitude, air(red)- and water temperature (blue). Data gap = Passage through EEZ around Islas de Martim Vaz. Source: MARIA S. MERIAN DSHIP.

The seawater is also impressively clear. This observation confirms satellite images of chlorophyll concentration, which predict very oligotrophic conditions for this area, with very low plankton input. The long transit is filled with various activities, including a guided tour of the impressive engine rooms and ship facilities by the lead engineer.



Figure 3 (H. Pälke): Impressions of the transit to the north, as well as from the tour through the engine room of the MARIA S. MERIAN.

While mapping one of the seamounts of the Bahia seamount chain we could already identify a first sediment-covered possible MeBo location, so we are cheerful. During a CTD in 4800m water depth on Sunday noon a group of curious fish visited us.

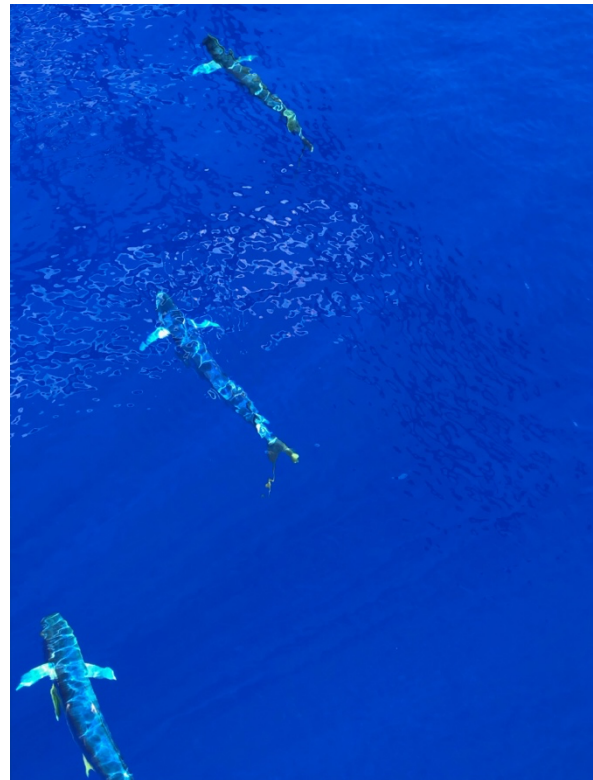


Figure 4(U. Röhl): Visit during our CTD Activities on 16.4.2023.

Currently (afternoon + evening of Sunday) we are covering remaining distance to Stocks Seamount, where after a short mapping we may be able to plan our first MeBo deployment on Monday.

All aboard are doing well, and we continue to enjoy the excellent hospitality, and greet those back home.

On behalf of the MSM116 team, we extend our warmest greetings to you

Heiko Pälike
(Universität Bremen / MARUM)

Our Logbook is here:

<https://www.marum.de/en/Discover/Ship-s-Log-MSM116.html>