



Cruise start in the southern Indian Ocean

The Arabian Sea has been within the focus of international marine research for decades. This is due to the strong oxygen minimum in the water column, which makes this region a hotspot of the nitrogen cycle in the ocean. At water depths of 100-1200 m, oxygen concentrations become so low that various nitrogen compounds are used as an energy source instead of oxygen. Gaseous nitrogen (N_2) escapes from the ocean together with greenhouse gases such as nitrous oxide (N_2O). The research program "Biogeochemistry of carbon and nitrogen in the Arabian Sea: a contribution to the International Indian Ocean Expedition 2" was set up for this purpose.

With the aim of investigating the processes in the oxygen minimum zone of the Arabian Sea on different time scales, 33 researchers have come on board led by the Universität Hamburg. The participating institutes are the Eberhard Karls University of Tübingen, the Leibniz Center for Tropical Marine Research, Bremen, the Helmholtz Center Hereon, Geesthacht, the GEOMAR Helmholtz Center for Ocean Research Kiel and the Leibniz Institute for Baltic Sea Research in Warnemünde. The plan is to take on six more colleagues from the National Institute of Oceanography (NIO), Karachi, and then begin the joint research campaign.

In the run-up to the cruise, the previous research cruise SO 302 had to be canceled due to the security situation in the western Arabian Sea. As the research cruises SO 302 and 303 were combined both logistically and in terms of personnel, the canceled cruise SO 302 could be taken over by SO 303 with relatively few organizational problems. This meant that all participants were able to board the ship in Mauritius on January 6 as planned and start on January 7. However, the complicated situation in the Red Sea and the western Arabian Sea had disrupted the container logistics, so that all seven containers for the SONNE 303 research cruise were initially unloaded on La Réunion and had been waiting there since 28.12.23 for their onward transport to Mauritius. On January 6, six of the seven containers reached Mauritius and five could be loaded on January 7. RV SONNE then had to leave her berth and went to the roadstead off the port of Mauritius. Here we were able to unload the five containers that had already arrived and set up our deck preparation and laboratories.

However, two containers were still missing, one on Mauritius and one on La Réunion, both with important scientific equipment including all hazardous goods. From our waiting position in the roadstead in Mauritius, we were able to follow the arrival of the container vessel *Boston Trader* on January 11th, which was carrying our dangerous goods container from La Réunion. The container vessel then moved into a waiting position right next to us to get a place to unload at the container terminal in Mauritius (Photo 1). As the container terminal was very busy also due to an approaching cyclone and there was therefore no berth available, the *Boston Trader* left the roadstead off Mauritius in the night of January 12th with the destination La Réunion. According to ship tracking, a port call was announced there on the morning of January 13th. In the meantime, thanks to the excellent coordination of the ship's command and the port agency, we were able to load the last remaining container on Mauritius at very short notice during a brief port call on the afternoon of January 12th and then also steamed towards La Réunion to seek shelter from the cyclone "Belal" southwest of the island. Contrary to the announcement, the container on the

Boston Trader could not be unloaded on La Réunion on 13.01. because the port was closed. At the moment we are southwest of La Réunion in order to escape from the approaching cyclone "Belal". As our alternative region is currently outside the EEZ of La Réunion (France) and Madagascar and the weather is still reasonably acceptable, we are using today to carry out the first functional tests in the water with some of our equipment.



Photo 1: The container ship (background) with our missing container on board is already eagerly awaited by the crew in the harbor area of Port Louis.

On board we are in very good mood. We are using the time to prepare for the upcoming research activities and for regular meetings to discuss ongoing research projects, students' planned theses and modern analytical methods.

We very much hope that we will be able to pick up the remaining dangerous goods container as soon as possible after the storm has passed and then begin the transit to the working area off Pakistan and welcome our Pakistani colleagues on board.

With best wishes from board to all those at home

At Sea, 14.01.2024

Birgit Gaye
Chief Scientist