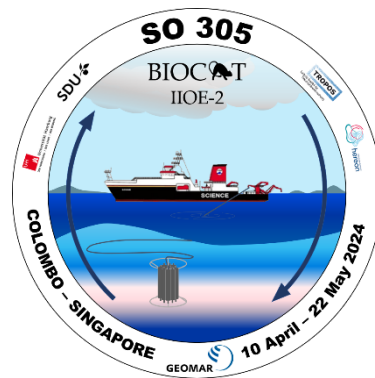


R/V Sonne, 14 April 2024



1st weekly report (9 - 14 April 2024), R/V Sonne voyage SO305 BIOCAT-IIOE2, Colombo (Sri Lanka) - Singapore

Climate change and environmental pollution are current changes in the Earth system that also have a strong impact on the sensitive ecosystems of the ocean. Oceanic areas such as the Bay of Bengal are particularly exposed to the effects of human activities such as extensive air pollution, warming and an increased input of nutrients (eutrophication). The resulting consequences for the ecosystems and the associated microbiological processes in the Bay of Bengal cannot be predicted, partly because there have been no corresponding measurements to date. In addition, the Bay of Bengal has a unique, distinct oxygen minimum zone (OMZ) in water depths of 100 - 500 m, which can only be found in a few other oceanic regions.

The overall aim of the BIOCAT project (Biogeochemical/Atmospheric Processes in the Bay of Bengal) is therefore to quantify the main microbiological processes in the water column and the ocean-atmosphere exchange in order to assess their impact on the OMZ of the Bay of Bengal. For this purpose, we are conducting the measurement campaign SO305 with the research vessel Sonne within the framework of BIOCAT, which covers the most important processes of the carbon and nitrogen cycle as well as the physical processes in the water column. The oceanic measurements are supplemented by an intensive atmospheric measurement programme to investigate the effects of atmospheric inputs on the processes in the water column. During SO305 BIOCAT, the GEOMAR Helmholtz Centre for Ocean Research Kiel, the University of Hamburg, the Leibniz Institute for Tropospheric Research (TROPOS, Leipzig), the Helmholtz Centre Hereon (Geesthacht), the University of Oldenburg and the University of Southern Denmark (SDU, Odense, DK) are working together. During SO305 BIOCAT, a team of 39 scientists, students and technicians will take measurements in the water column and in the atmosphere at around 40 stations and seven 24-hour stations along the route from the equatorial eastern Indian Ocean to the central Bay of Bengal. The results of SO305 BIOCAT will contribute to a significantly improved assessment of the future impacts of global climate change and pollution on the ecosystems and OMZs of the Bay of Bengal. BIOCAT is financially supported by the Federal Ministry of Education and Science (BMBF) and is coordinated by Prof Dr Hermann Bange (GEOMAR, Kiel). It is a contribution to both the MARE:N programme of the German Federal Government and to the international programmes IIOE2 (2nd International Indian Ocean Expedition: iioe-2.incois.gov.in) and SOLAS (Surface Ocean - Lower Atmosphere Study: www.solas-int.org).



On the evening of 13 April, we left Colombo 2.5 days late due to the delayed delivery of the containers. The transit to the first station at $1^{\circ}\text{S } 88^{\circ}40'\text{E}$ is used to set up the laboratories, set up instruments and complete a test station. We plan to start regular station work on the morning of 17 April. We will report the first (preliminary) results in the following weekly reports.

Despite the unforeseen waiting time, the mood on board is very good and we are looking forward to the next six weeks of the SO305 BIOCAT sun voyage.

I would also like to take this opportunity to thank Captain Tilo Birnbaum and the crew of the Sonne as well as the German Research Vessel Control Centre in Hamburg for their uncomplicated cooperation and great support!

Herman W. Baug

and the scientific party of SO305.

At $05^{\circ}\text{N } 19^{\circ}\text{N}$, $80^{\circ} 04' \text{ E}$.