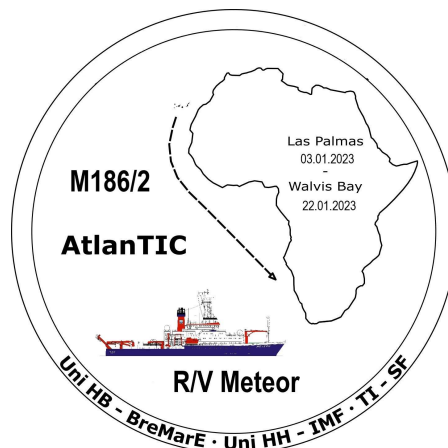


## Third Weekly Report of the Research Cruise M186/2 with R/V METEOR for the period of 16th to 22nd January 2023



During the third week of our research and training cruise, we continued the regular sampling programme in the morning between 06:00 and 09:30 a.m. from Monday, 16th of January, to Wednesday, 18th of January 2023. At each station, we started with an Isaacs-Kidd Midwater Trawl (IKMT) before sunrise, followed by two Multinet hauls, one with 200  $\mu\text{m}$  mesh size for mesozooplankton and another one with 55  $\mu\text{m}$  mesh size for microplankton, before we closed the stations with CTD casts during daylight.

For the final AtlanTIC station on Wednesday evening, we reversed the sequence of gears so that the CTD cast could be conducted before sunset. Instead of the IKMT trawl, we again deployed the Multinet for mesozooplankton to a deeper maximum sampling depth of 1500 m.

Last week, we reported in detail on phytoplankton research. This week, we will focus on animals. With the IKMT, we sample the mesopelagic fauna. The mesopelagic realm includes the intermediate depth layers of the ocean from about 200 to 1000 m depth. It is also known as the twilight zone, as sun light penetrating into the ocean is no longer strong enough at that depth to fuel photosynthesis. Hence, all organisms living in this zone are dependent on food particles – living or dead – sinking down from above. Many mesopelagic animals have developed large eyes to efficiently utilise the poor light conditions to find prey or mates. The IKMT is towed with a speed of 2.5 to 3 knots behind the vessel in order to catch more mobile animals, such as lantern fish, which can easily evade slower nets. The depth of the net is continuously monitored hydro-acoustically via a Posidonia transponder attached to the net.

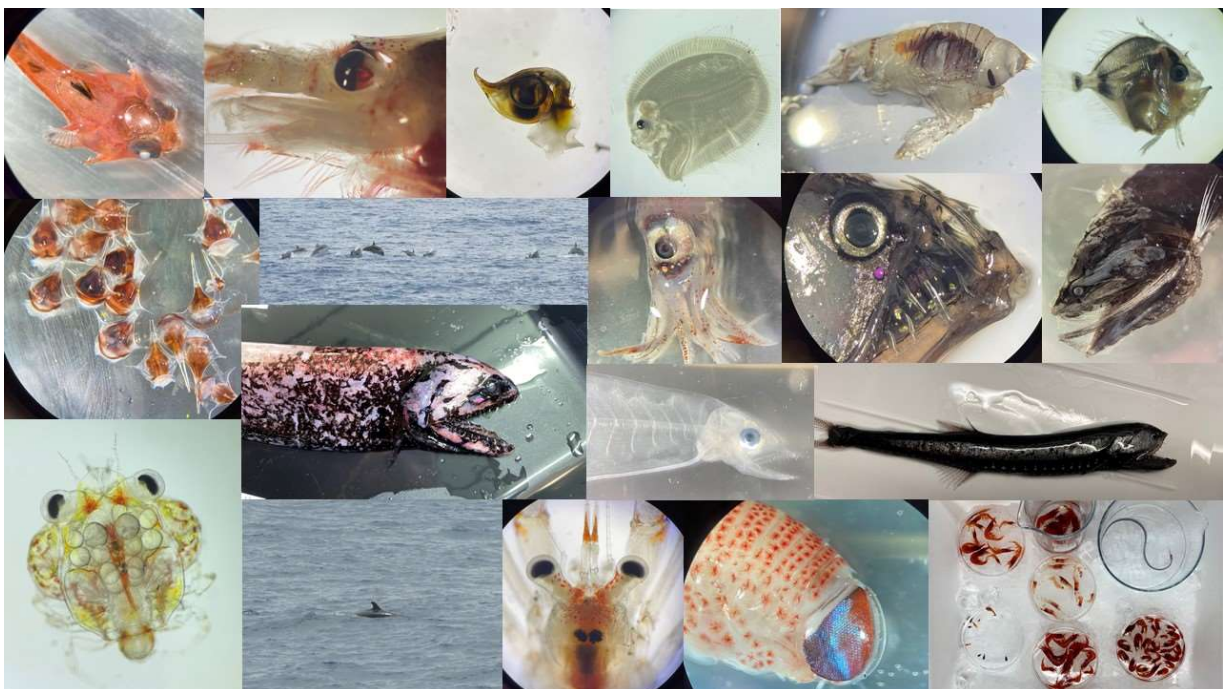


Fig. 1: Selection of animals that we found during M186/2 (Fotos: Jan Zimmermann).

In the wet lab on board, the IKMT catches were immediately transferred to dishes cooled in ice to sort out the organisms to taxonomical groups. Thereafter, mesopelagic fishes and invertebrate animals were separately identified – if possible – to species level. A large collection of organisms was sampled for molecular genetic analyses.

Station work finally ended on Thursday, 19th January, at 19:00 with the deployment of the last of eight Argo Floats for the German Federal Maritime and Hydrographic Agency (BSH). Argo floats are drifting autonomously in the ocean and measure temperature and salinity at different depths. The data are transmitted via satellite and provide insight into the status of the ocean even at times and in locations, when and where no research vessel is available. This initiative is part of an international coordinated programme, to which many nations contribute.

On Friday and Saturday, the last two days at sea, we packed our expedition equipment and cleaned the laboratories. Moreover, the students wrote their project reports and presented their results in talks and self-produced videos.

We are looking forward to reaching the port of Walvis Bay on Sunday morning, but – at the same time – are sad that our short voyage will already end after 19 days.

We would like to thank Captain Korte and the entire crew of R/V METEOR for their very friendly, highly professional and competent support of the scientific programme. Their dedicated efforts contributed significantly to the success of the research cruise. We are grateful to German Research Fleet Coordination Centre (LDF) for the organisational support during the planning and implementation of the cruise, and we would like to thank the German Research Foundation (DFG) for funding the research cruise.

On behalf of all cruise participants, we send best regards from R/V Meteor.

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