

RV SONNE Expedition SO-306
COWIO (Port Louis, 08.08.2024 – Durban, 09.09.2024)

4th weekly report

This week began with impatient waiting. We knew that our research permit for Mozambique had been issued on Friday, but one additional letter was still missing ... So, we used the Monday to examine a circular structure with a small elevation in the center at 1600 m water depth with the video-guided box corer. This structure lies on the same fault line as the already discovered Mtwara mud volcano, but unfortunately the inspection with the box grab could not provide any clear indications of the genesis of this structure.

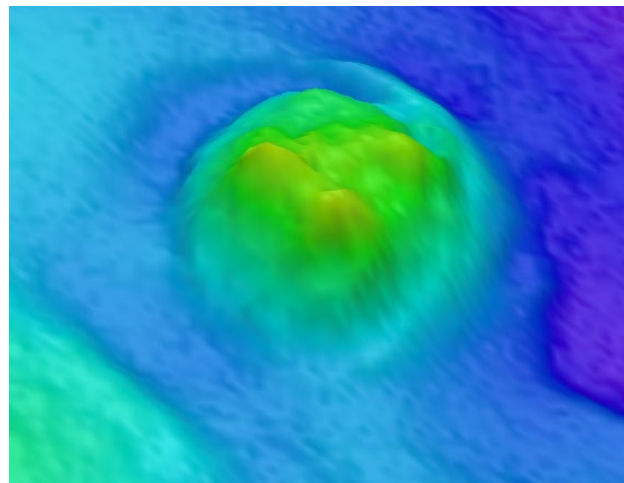
On Tuesday we started a new attempt with the ROV. This time we were aiming for the steep walls of a canyon. We were able to dive to the bottom of the canyon with the ROV, but due to the very strong currents it was not possible to work in a controlled manner and, thus, we unfortunately had to end the dive. Fortunately, the missing letter for the research permit for Mozambique arrived together with the end of the dive and we were finally able to set off south with a two-day delay. The two days in transit to the next working area were used by everyone to process and archive samples - and of course to start writing the cruise report for the first two working areas.

On Thursday evening, we arrived in the new working area not far from the mouth of the Zambezi River- knowing well that Friday would be our only working day in this area, as the weather forecast for Saturday predicted winds of over 7 and waves up to 5 meters high. After a CTD cast to obtain a new sound profile and a multi-net deployment, the hydroacoustic survey of the new working area began.

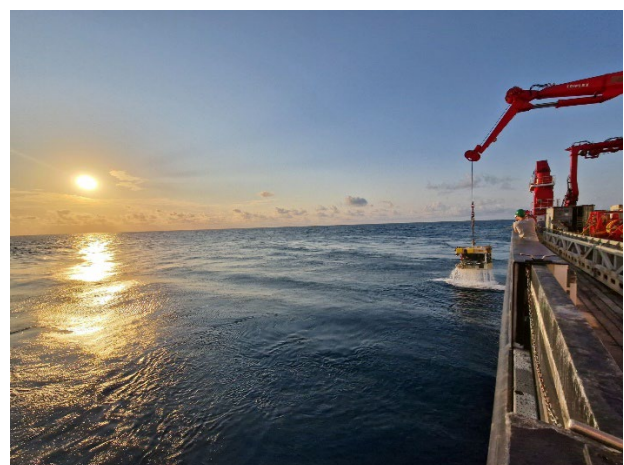
The next morning the result of mapping was somewhat sobering: again, no clear coral mounds, just a few small elevations arranged in lines. A clear case for the video-guided box corer. As it slowly drifted across



A web-logbook for this expedition can be found here
<https://www.marum.de/Logbuch-SO306.html>



The 80 m high Mtwara mud volcano off Tanzania
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Shortly before sunset, the ROV returns from its dive
(© MARUM – Center for Marine Environmental Sciences,
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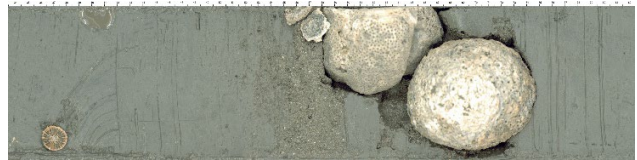
the seabed, we couldn't believe our eyes: there were chimneys everywhere, like those found on mud volcanoes. At the end of the day, after another dive with the ROV, the evidence was overwhelming: a deep structure in the Parasound data, countless chimneys on the seabed and, last but not least, bacterial mats - we had discovered another mud volcano. And even if the structure is not a coral mound, cold-water corals are still widespread here. So, after a slow start, this day turned out to be an all-round successful working day.

This meant that we had exhausted the 'good weather time window'. The following night was already quite uncomfortable and on Saturday, we only made slow progress southwards against the wind and sea. On Sunday evening we arrived in the next working area off Limpopo Bay.

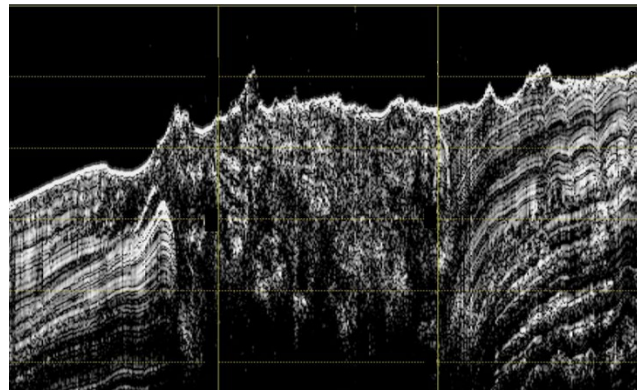
Despite the bad weather, the mess room was well visited, which shows that (almost) everyone was coping well with the ship's bumpy movements.

Best wishes from on board on behalf of all participants!

Dierk Hebbeln



Shallow-water corals in a deep-sea sediment core – obviously part of a slump body (image height: 12 cm)
(© MARUM – Center for Marine Environmental Sciences, University of Bremen)



Parasound-Profile through the mud volcano off the Zambezi mouth (© MARUM – Center for Marine Environmental Sciences, University of Bremen)



Bacterial mat surrounded by cold-water coral rubble on the newly discovered mud volcano off Mozambique
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