

1. Weekly report of Maria S. Merian Expedition MSM127

Las Palmas - Las Palmas (Gran Canaria)

18.03. – 20.04. 2024

On Monday, March 18, 2024, the research vessel Maria S. Merian left the port of Las Palmas on schedule at 8:30 a.m. and set course for the working area on the continental slope off Mauritania between 16° and 20° N. The scientists had arrived safely on board the day before, and an advance team was able to install and test the MeBo 70 seabed drilling device successfully with the comprehensive support of the crew. The team is made up of scientists from MARUM, University of Bremen, from AWI in Potsdam, and from IMROP in Mauritania, an engineer from Bauer Maschinen supports the MARUM MeBo Team.



Photo: Leaving the port of Las Palmas

The Mauritanian continental margin is one of the core regions of the Bremen Cluster of Excellence “The Ocean Floor - Earth’s Uncharted Interface”. Related to the concentrated bioproductivity triggered by the eastern boundary current upwelling system and due to high sedimentation rates, the Mauritanian continental margin hosts the largest known coherent cold-water coral mound province in the Atlantic Ocean and provides high-resolution paleoarchives of NW African climate variability. It allows to trace the impact of sea level

changes on methane seepage and offers an ideal testing ground for investigating the applicability of proxies for marine biodiversity in the past, and examining the robustness of proxy records in terms of space and time. The Bremen Cluster expedition MAURIBO primarily aim at obtaining long sedimentary records by using the Bremen sea floor drill rig MeBo70, complemented by additional water, particle and surface sediment sampling and gravity coring, done mainly during MeBo maintenance times between the deployments.

The transit to the first working area took 48 hours, the multibeam and parasound survey started immediately to explore the suitability of the upper continental slope southwest of Cape Blanc for a drilling location. The uniform stratification here indicates an undisturbed stratigraphic sequence from late Quaternary sediments, preliminary investigations on a nearby gravity core suggest a temporal resolution of around 30 cm/1000 years. However, rough weather conditions with waves up to 5 m high did not allow the deployment of MeBo70. Therefore, the accompanying investigations of the water column and the surface sediment in the area of the first drilling location began. Due to deteriorating weather conditions, the night was used for another EM122 and Parasound survey in the area of the next two drilling positions, which are positioned above and below a headwall of a submarine landslide and are supposed to help understanding the trigger of these mass movements in connection with thick deglacial diatom horizons. On Friday March 22nd the sea had calmed down enough for MeBo70 to be used for the first time. A well with 17,6 m penetration, but a poor recovery due to the high sand content of the sediment. A second drilling downslope at a water depth of 971 m was started this Sunday, but will probably last until Tuesday night.

We received a very friendly welcome from Captain Maaß and his crew and got excellent support in our work. The weather is fine now, and the mood on the ship is excellent!

Best regards from the Maria S. Merian

Torsten Bickert

24. März 2024