

# FS METEOR Expedition M151 ROV Test und ATHENA

(Ponta Delgada, 06.10.2018 – Funchal, 31.10.2018)

Find a Web-Logbook for this Expedition

<https://www.marum.de/Entdecken/Logbuch-METEOR-151.html>

<http://planeterde.de>



## 2. Weekly Report (08.10.2018 – 15.10.2018)

The second week of our research cruise was affected through very unfavorable weather. According to our initial planning we would now already study and sample the Atlantic Seamount four degrees further south of the Azores likely heading tomorrow towards the Hyeres Seamount. Instead, we completed an intensive substitute program near the Azores.

Leslie, the tropical hurricane moved slowly through our planned working area in the South, while in the North of the Azores several low-pressure systems with resultant cold fronts had subsequently developed. Hiding in the lee of the islands, we searched during the last five days for occurrences of cold-water corals. First, we investigated in depth the region of Mar da Prata near the island of Sao Miguel. Here, we spotted numerous fossil coral deposits along the continental slope between 900 and 400m water depth. Measurements of salinity and temperature revealed the presence of Mediterranean seawater at these depths. Another substitute working area was the Albatroz Seamount between the islands of Sao Miguel and Pico. Here, we found fewer corals. Due to the severe weather and a technical defect, it was not possible to conduct a ROV dive.

Since Friday we are working at the Acor Bank, a deep sea plateau that extends south of the island of Pico. Our Portuguese partners have provided us with valuable information and maps in order to work in the substitute regions.

During the weekend a stable high established in the area. Hence, we deployed in addition to grab sampler and the CTD rosette, also gravity corer and multicorer to sample sediments for paleoceanographic studies.

Unfortunately, the discovery of reef-like structures has yet not been successful. Since we are still waiting for spare parts for the ROV, we will continue to work in close vicinity of the island of Sao Miguel and only with the arrival of the spare parts will we make our way to the Great Meteor Seamount.

Although the weather was not kind to our plan, we are very satisfied with more than 42 successful stations, including grab sampler, CTD rosette, multi-corer, and gravity corer.



*The grab sampler is the most used device aboard the METEOR during the first week of the ATHENA cruise.*



*Chief Scientist Norbert Frank, co-Chief Scientist Dierk Hebbeln and Marina Parra Carreiro e Silva discuss the sampling strategy.*

The documentation of all living organisms from the grab samples took place directly on board and revealed the biodiversity in the study areas. This also allowed for an accurate classification of the habitats in which we have discovered corals.

Moreover, the first results on the dynamics of the water masses in the region Mar da Prata are available and at the coral occurrences of the José Gaspar volcano first samples have been taken for genetic studies.

At all CTD stations, water samples were collected from different depth levels using the Niskin bottles. Water will be investigated from the surface, the intermediate depths and also from the bottom. The goal is to investigate trace elements, the age of the water (via  $^{14}\text{C}$ ) as well as the provenance of the water via neodymium and uranium isotopes. Therefore, samples are treated in the laboratories of the RV Meteor to acidify or sterilized and packed for shipping.

As soon as possible, we will head south for the Atlantis Seamount.

All cruise members are well and excited to continue our search for living and fossil cold-water coral deposits.



*Fossil corals from a grab sampler of the location Mar da Prata.*



*Leon Hoffman documents the biological yield of the grab samples.*

In the name of everyone I am sending our best regards from the subtropical Atlantic.

Norbert Frank  
Chief Scientist