

# FS METEOR Expedition M151 ROV Test und ATHENA

(Ponta Delgada, 06.10.2018 – Funchal, 31.10.2018)

Ein Web-Logbuch zu dieser Expedition gibt es auf  
<https://www.marum.de/Entdecken/Logbuch-METEOR-151.html>  
<http://planeterde.de>



## 1. Weekly Report (03.10.2018 – 07.10.2018)

The cruise 151 of the German research vessel RV Meteor carries the acronym ATHENA and will leave Ponta Delgada (Acores) on Monday 08 October 2018. The goals of our journey are to search and sample recent and fossil cold-water corals along a chain of seamounts south of the Acores Islands. These corals provide the opportunity to reconstruct the temperature- and ecosystem dynamic of the upper intermediate waters (i.e. the thermocline) through times of natural climate change.

Through the study of the chemical composition of the calcareous hard parts of such corals, as of surrounding sediments and seawater, we will investigate the physical and chemical properties of water masses in the past. Preliminary studies have shown that massive changes have occurred since the last ice age within our research area. Coral ecosystems have likely been far more abundant and the water in which they dwelled must have been much colder.

These observations and hypothesis on coral ecosystem dynamics and climate driven water mass changes will be tested with the samples collected during this cruise.



*The team around Prof. André Freiwald inspects the coral rubble and living organisms recovered with the grab sampler*



*Frau Prof. Dorothee Dzwonnek (DFG) is informed by Prof. Dierk Hebbeln (MARUM) about actual results.*

To prepare the cruise a small team of researcher has started working on Meteor on the October 03 2018. The remotely operated vehicle SQUID (MARUM) was installed and the Laboratories were set up. Everything went smoothly with the excellent help of the crew.

On October 06 2018 we were visited by a delegation of the German Science foundation (DFG) to join our planned test dive searching for cold-water corals along the slopes of the Acores Island Sao Miguel. Unfortunately, we had to cancel the deployment of the ROV during the short 24h test cruise due to rough weather conditions. Yet, following upon a detailed mapping of the volcanic crater of José Gaspar, the grab sampler was deployed several times. The collected samples provide important new constrains on the coral ecosystems distribution along the crater slope. At the base of the slopes sandy mud

containing only few broken coral fragments was found. Further up in 340 m water depth a variety of larger coral fragments including a living organism appear. Finally near the crater rim, the mapping had revealed a small notch of solely a few meters widths. Thanks to the perfect positioning of the ship we were able to deploy the grab sampler into an active ecosystem (if not reef) of mostly *Eguchipsammia* c.f. *cornucopia* corals. A part from the grab sampling, we also collected seawater samples for geochemical analysis. In the night of Saturday we proceeded with a detailed echo-sounding of the seafloor and water masses west of the José Gaspar volcano. With respect to the discoveries made so far and regarding the still uncertain weather conditions we will start our cruise M151 with a dive to the José Gaspar volcanic crater on Monday. Then we will steam straight south to reach the Great Meteor Seamount as soon as possible, hoping that the tropical storm Leslie takes a more north-easterly trajectory.



Online weather monitoring (windy.com) showing the Hurricane Leslie and a further depression in the northeast



M151-2 deployment of the CTD with a lucky moment of sunshine

With the arrival of a few more scientists our team is now complete and we are eager to sail tomorrow.

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

A handwritten signature in blue ink, which appears to read 'Norbert Frank'. The signature is written in a cursive, flowing style.

Norbert Frank  
Chief Scientist