SO270 MASCARA

Weekly Report 1 – 05th to 07th Sept. 2019

The expedition started with the embarkation of the scientific team in the harbor of Hongkong on the 5th of September. We experienced a very friendly welcome by the crew of RV SONNE and were greatly supported during loading and unpacking of our scientific equipment – in total six containers, which were shipped from Germany.

After the first night on the ship, we left harbor on the 06th of September 2019 at 10:00 local time heading for our working area the Saya de Malha carbonate bank. The Saya de Malha bank is part of the Mascarene Plateau, a large carbonate platform in the southwestern Indian Ocean. Onboard RV SONNE there are 37 scientists from 8 institutes in 6 different countries. With more than two weeks of transit ahead, we have plenty of time to set up the labs and to install our scientific instruments. Besides that, scientific presentations and discussions will help us to initiate the collaborative scientific work.

Fig. 1: RV SONNE leaving the harbour of Hongkong. Photo O. Eisermann, CEN, Uni Hamburg

Only few data exist from the Saya de Malha carbonate platform; and no intensive geological investigation has been done so far. The scientific aims of this research cruise and of the project MASCARA are therefore as follows:

1. Revealing the sedimentary platform architecture as well as characterizing the sea floor. Both will be achieved by means of 2D reflection seismics and hydroacoustic investigations. We aim on testing the hypothesis that the Saya de Malha carbonate platform was shaped not only by past sea-level fluctuations but strong contour currents along the platform flanks. With this regard we will look for carbonate drift deposits which are valuable archives of past environmental conditions. Such drifts could develop along the outer flanks of the platform as well as in the interior.

2. Characterization of the sedimentary processes under the influence of internal waves, which e.g. could alter platform development by increasing the nutrient flux. Besides sedimentological investigations, ADCP, hydroacoustics and seismics will help to decipher the sedimentary imprint of these waves. In addition, ROV and OFOS will allow for direct observation of the sea floor.

3. Investigation of the distribution, the ecology and the habitats of benthic and planctonic foraminifera; as well as their paleooceanographic application;

4. Biogeochemical investigations of the water column and the seafloor surface sediments. The Saya de Malha carbonate platform is under the influence of different surface- and intermediate water masses with strong gradients. By means of CTD and chemical analyses, we will investigate how the carbonate production is affected by the mixing of southern hemisphere waters and nutrient enriched northern hemisphere water masses.

We will also use the long transit over the Indian Ocean to investigate micro plastics and pollutants in the sea water.

All onboard are fine and we're looking forward to the start the scientific work.

Sebastian Lindhorst, Chief Scientist

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