

SO 262: Expedition MANGAN 2018 with RV SONNE

Weekly report No. 2 (9th to 15th of April 2018)

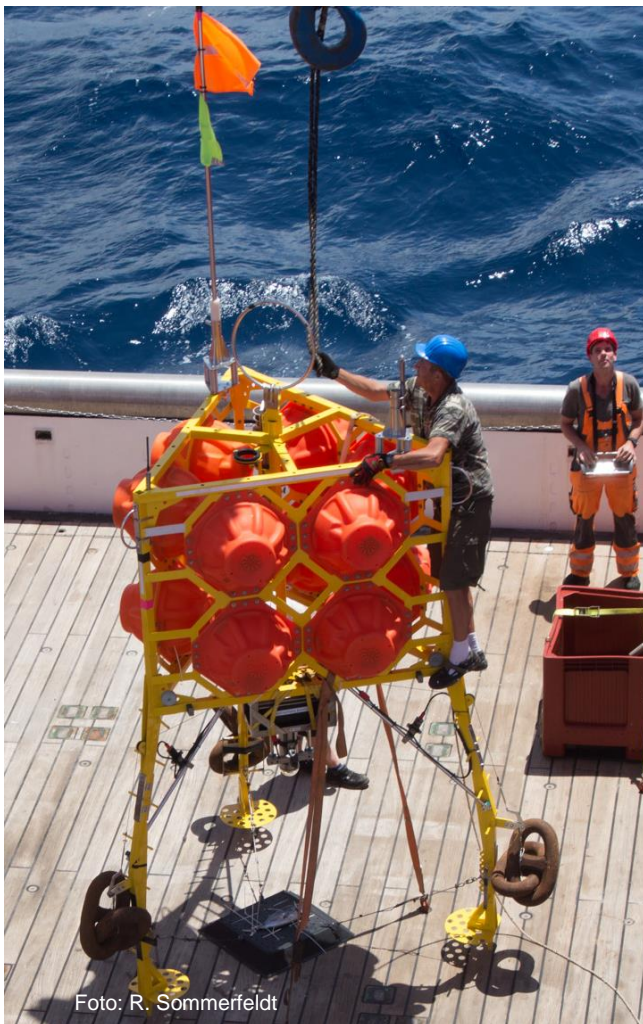
Since RV SONNE left the harbour of Guayaquil on April 6, we sailed under very calm weather conditions for about 4500 km into the Eastern German license area. During transit we set up our different laboratories, and mounted and checked the sampling and measurement devices. During daily science meetings, several interesting talks were given by cruise participants on different topics related to our exploration work such as biodiversity assessment methods, the 2019 collector component test, plume dynamics and the modelling of spatial Meiofauna distribution. We arrived in the first



working area on Friday at 6.30 pm according to plan. The deployment of a full water depth CTD / rosette water sampler down to 4100 m started our 30 days working program. Besides water samples taken throughout the water column, a high-resolution camera was mounted on the frame to observe the occurrence and distribution of different particles sizes throughout the water column. Preliminary results from the particle sizer (LISST-100X) based on water from the Niskin bottles show an overall extremely low particle abundance, with a significant increase at depths between 1700 and 800 m, below the oxygen minimum zone. We are now working in an area that is planned for a collector component test to be conducted in April 2019. For the assessment of possible impacts on the Meiofauna during these experiments, 25 Multicorer stations will be taken during our cruise in order to sample the seafloor and obtain biological baseline data as background reference.

On Saturday, we deployed two moorings with ADCP current flow sensors and turbidity meters close to the test area. These instruments will record the velocity and direction of bottom currents and the concentration of suspended particles for a time period of one year. These are fundamental parameters required to realistically model the drift of a suspension plume formed during the collector test and later on during mining. Furthermore, a lander equipped with a camera recording scavengers that live at and close to the seafloor was deployed for a period of 24 hours and 150 two-minute videos were taken. The bait was a little tuna fish that was bought on the fish market in Guayaquil. This morning we used the multinet to sample the plankton throughout the water column. Interestingly, also in the oxygen minimum zone between 100 and 800 m, some living organisms were found. One part of the exploration regulations issued by the international seabed authority is the acquisition of data regarding the biodiversity of benthic and pelagic organisms. During this night we will deploy two dredges to obtain large amounts of Mn nodules from the seafloor. In total, about 10 tons of nodules will be collected during the cruise, which are required at a later stage for metallurgical experiments.

With best regards from RV SONNE,
Carsten Rühlemann



Preparation of the Anonyx lander for mooring on the seafloor



Tuna fish during and after serving as bait