

# SO 262: Expedition MANGAN 2018 with RV SONNE

Weekly report No. 1 (2<sup>nd</sup> to 8<sup>th</sup> of April 2018)

Expedition MANGAN 2018 is the ninth cruise of the BGR to the German license area for the exploration of manganese nodules. RV SONNE cruise SO 262 has three major aims. Firstly, a new prospective manganese nodule field in a water depth of 4100 meters and with a spatial extent of 900 square kilometres will be explored in the eastern part of the license area. Secondly, the BGR plans to recover at least 10 tons of manganese nodules for metallurgical experiments at pilot plant scale. Thirdly, in preparation for a disturbance experiment scheduled for April/May



2019 in the German license area, high-resolution baseline environmental data are required specifically from the test area. The investigations include (i) detailed studies of the benthic biodiversity, (ii) measurements of metal concentrations in (sub)bottom waters, (iii) the mooring of three ADCP current meters for analysis of the bottom current regime until April 2019, and (iv) the mooring of a sediment trap for one year in order to determine background particle fluxes in this mesotrophic part of the Pacific Ocean. Furthermore, we plan to continue our time series sampling for biodiversity analyses in two reference areas, for which annual samples have already been collected between 2013 and 2016.

In the course of the economic evaluation of the third prospective manganese nodule field, we will use a box corer to sample the seafloor according to a statistically representative selection of sites and we will determine the total mass of nodules and its metal inventory. Concurrently, the efficiency and general applicability of the statistical method for the exploration of nodule fields will be evaluated. The results of this cruise will enable us to evaluate the nodule resource as a potential metal deposit. Another focus of this exploration campaign is the study of the diversity of the benthic fauna by the German Center for Marine Biodiversity Research (DZMB) in Wilhelmshaven. Environmental investigation is an essential part of the contract with the International Seabed Authority (ISA) and a prerequisite for granting a potential future exploitation license.

Besides the eleven cruise participants from the BGR, seven biologists of the DZMB, a geologist of the Jacobs University Bremen, two biologists from the Heriot Watt University in Scotland and two trainees of the ISA arrived safely in Guayaquil (Ecuador). On Monday 2<sup>nd</sup> April, the arrival of our containers with equipment in Guayaquil was checked and we discussed the schedule for port operations with the captain. During the following days, the entire scientific crew carried out the loading work and started to install themselves in the laboratories. On Friday 6<sup>th</sup> April, the expedition with RV SONNE started from the port of Guayaquil one day later than originally planned at 23:30 with good weather conditions. We are currently on transit to the eastern part of the German license area, where we are

estimated to arrive on 13<sup>th</sup> April. The delay in departure was caused by a late delivery of fuel to the ship.

On Sunday 8<sup>th</sup> April, the crew and scientists congratulated our captain Lutz Mallon with his 60<sup>th</sup> birthday.

With best regards from RV SONNE,  
Carsten Rühlemann



Foto: A. Vink

Bunkering of fuel in the harbour of Guayaquil by two of 22 tank trucks in total



Foto: S. Sturm

Birthday boy Lutz Mallon