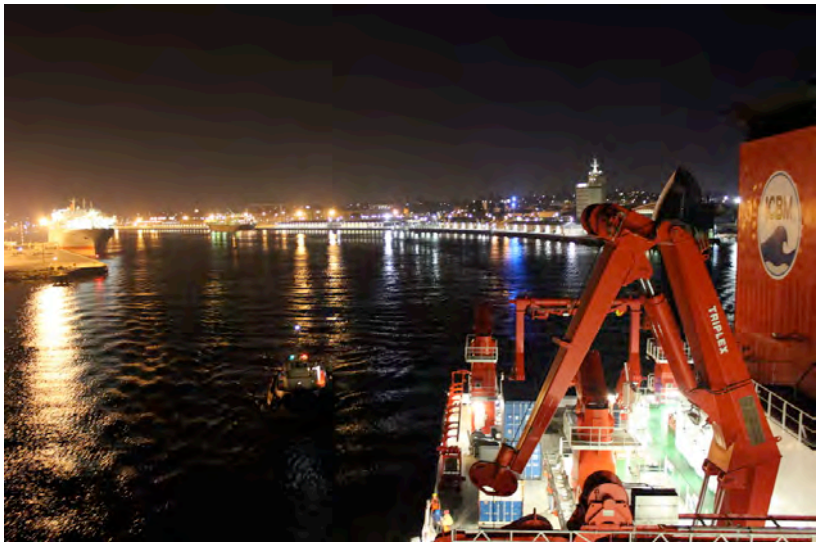
SO258 Leg 1
INGON
Weekly Report No. 1
(06.06. – 11.06.2017)

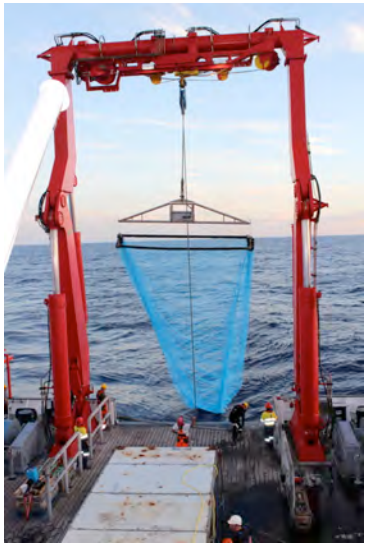
R/V SONNE
22°12´S / 102°30´E

R/V SONNE cruise SO258 is part of the research project INGON, which is a collaboration between the Alfred Wegener institute Helmholtz centre for polar and marine research (AWI) and the GEOMAR Helmholtz centre for ocean research Kiel. Using the example of the Indian-Antarctic Breakup c. 150 m.y. ago, SO258 INGON aims to investigate magmatic and tectonic processes that trigger the breakup of continents and the formation of ocean basins. This is not only an important topic in basic research contributing to a better understanding of the Earth system but also provides important data on the relations between magmatic and volcanic activity and their influence on environment, climate, and ecological systems. To reach these goals, GEOMAR will conduct volcanological-geochemical investigations on the first leg of SO258 in the central Indian Ocean. These investigations will be continued on SO258 Leg 2 by complementary geophysical studies (seismic, magnetic, gravity). In addition, on leg 1 biological studies by the University of Tübingen and partners will be carried out which focus on the ability of deep sea fish, squid, and shrimp to see bioluminescent light in the darkness of 500 - 1,000 depth.

Cruise SO258/1 started in Fremantle, close to Perth, which is located at the southwest coast of Australia. On June 5th, in the course of an Open Ship the citizens of Perth and Fremantle had the opportunity to visit the SONNE and get an insight into current research. The vessel, as well as the presentations of the different scientific working groups, met very good response among the 3.200 (!) visitors and Australian media.



R/V SONNE leaving the port of Fremantle on the evening of June 7th. (Photo: Nina Furchheim)



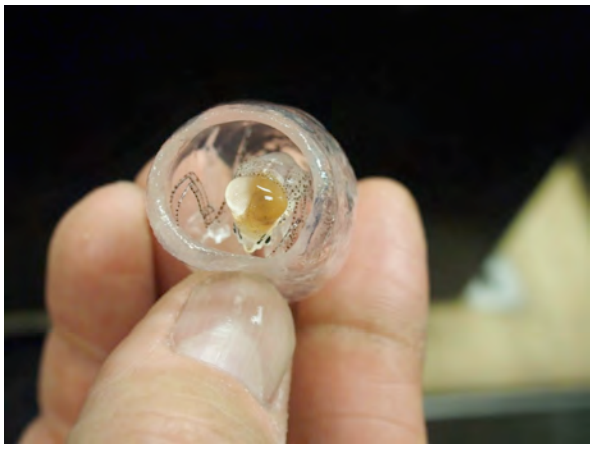
Tucker trawl deployment. (Photo: Nina Furchheim)

In the morning of June 6th, the SO258/1 scientific party embarked R/V SONNE. In total the group counts 33 scientists and technicians from 10 different countries (Australia, Great Britain, U.S.A., Switzerland, France, Taiwan, Canada, Russia, Norway and Germany). After the arrival of all containers on board, the vessel left Fremantle in the evening of June 7th to head to its first working area. The first priority on the transit was to set up all biological laboratories and to carry out a dry run of the biological experiments since the first part of the cruise is, besides underway mapping, exclusively dedicated to biological work. Geological sampling will not start before the end of next week. Before the setup of all laboratories and equipment, two internal meetings were held so that all participants had a chance to get to know each other and learned about the planned work. Soon enough the new Trucker-Trawl

net (with an opening area of 45 m^2) was mobilized and tested. It weighs approximately 1 t and is deployed over the stern of the vessel. A special feature of the net is that the opening can be opened and closed at depths by a control box. Although dry runs with the opening system were successful, the control box did not work during the first trawl on Friday evening as the net was still closed when it came on board and therefore caught only small amounts of krill.

On June 10th, two more trawls were carried out approximately 500 nautical miles (nm) off the west coast of Australia. To avoid previous problems, the net was deployed open this time and was initially lowered to 700 m depth and then raised in steps of 50 m every 30 minutes. After 3 to 5 hours the net was recovered on deck. Both catches were highly successful and yielded different and rare species of fish, squid, octopus and shrimp. The last trawl was brought in after sunset, avoiding bleaching of the fish and shrimp eyes in order to allow biochemical and physiological experiments on the visual systems. In addition, samples from many different species were collected and preserved for molecular-biological, and morphological work in the respective home labs.

Biologists and geologists have a first look at the outcome of the first trawl. (Photo: Nora Krebs)



Deep sea crab inhabiting an empty mantle of a thaliacea. (Photo: Nora Krebs)

In the upcoming week we are planning to run more trawls and to deploy TV landers. The latter will be lowered to several 1.000 m depth and will hover above the ocean floor for several hours to document the deep sea fauna in its natural environment. There are still approximately 1.100 nm to sail until we reach the first geological working area. En route we will conduct more trawls, and carry out bathymetric mapping of the ocean floor and sediment echo-sounding profiling.

Until now the weather has been mostly sunny and warm. Only on Saturday we passed a low pressure area and the weather turned cloudy and a bit rainy. All cruise participants are doing well and send greetings to everybody at home.

Reinhard Werner, Jochen Wagner and the scientific party of SO258/1