RV SONNE cruise SO299
DYNAMET

06.06. – 29.07.2023
Townsville (Australia) – Singapore

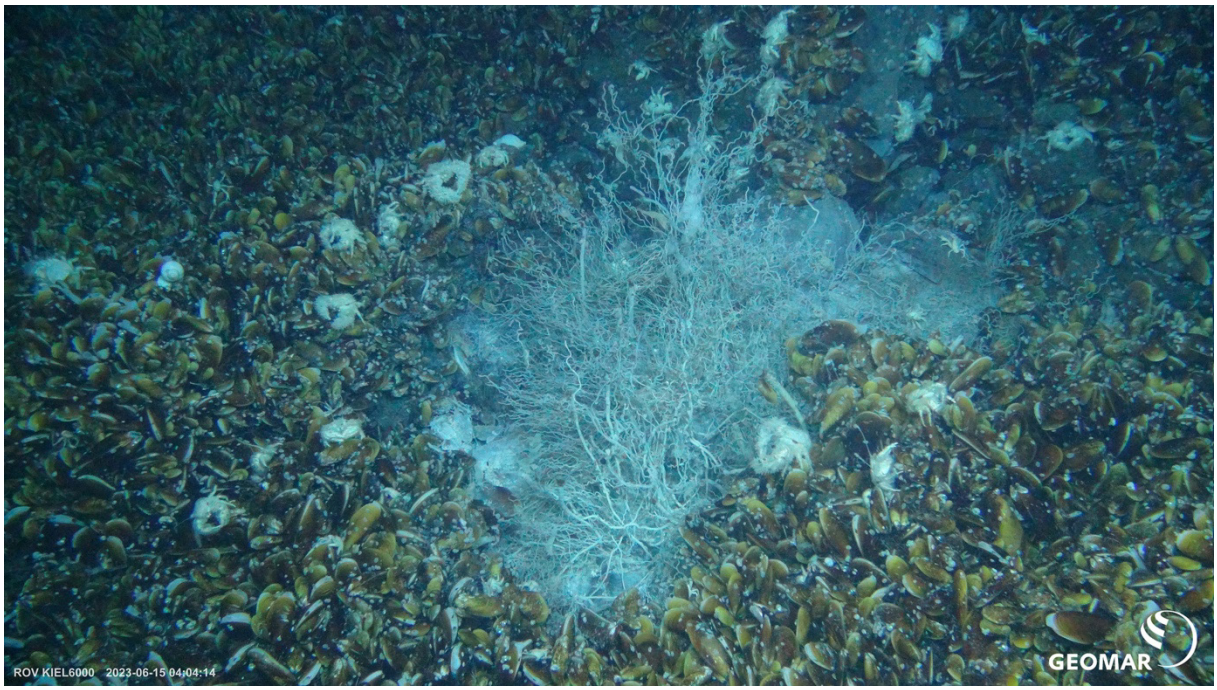
Weekly Report No. 2
12.-18.06.2023

At sea, 3° 19'S, 152°35'E

From Sunday, 11 June, to Monday, 12 June, we crossed the Solomon Sea but were unable to collect any hydroacoustic data due to the fact that our research permit has unfortunately still not been confirmed formally. This is a pity as the seafloor of this 35-41 million year old backarc basin has hardly been mapped previously. On Tuesday afternoon we finally reached our actual working area and after many phone calls and emails we finally and very timely received the long-awaited confirmation of our research permit at around 2 pm. Big thanks at this point to the team at the German Embassy in Canberra, Australia, and the German Research Vessel Coordination Centre (LDF) for their efforts in this matter.

Deployment of an OBMT station. Picture: Philipp Brandl.

We activate the hydroacoustic systems of the FS SONNE immediately and start surveying the seabed. We spend the rest of the day and Wednesday with further mapping and the deployment of the first ocean bottom seismometer (OBS) and ocean bottom magneto-telluric (OBMT) devices between the islands of Lihir and New Ireland. Thursday finally saw the first razor-sharp view of the seafloor by means of the diving robot ROV Kiel 6000 on the western flank of Conical Seamount, filling us with joy. This joy changed to pure excitement when after just two hours a new hydrothermal field was discovered on the seafloor. It shows an unbelievable biodiversity over several hundreds of metres with clam fields, barnacles, shrimps, crabs, microbial mats and even tubeworms. The field is characterised by low fluid temperatures and a diffuse discharge of fluids. It is thus not surprising that the highest temperature measured at one of the vents is only just below 30°C. Due to the incredible distribution of clam beds at this hydrothermal field, the decision is made to name it the "Karambusel" hydrothermal field; "Karambusel" means mussel in Tok Pisin, the main Creole languages of Papua New Guinea.



Tube worms, clams and crabs at a vent in the Karambusel hydrothermal field. Picture: GEOMAR/ROV Kiel 6000.

During the night we deploy the heat flow probe of the Federal Institute for Geosciences and Natural Resources (BGR) or map the seabed with the ship-based EM122 multibeam echo sounder and the Parasound sub-bottom profile. On Friday, we deploy the remaining OBS and OBMT instruments on the seabed. The second dive with Kiel 6000 follows on Saturday, this time on the south-eastern flank of the Conical seamount. Our petrologists are pleased with the yield of rock samples, which suggest a new story about the formation of this volcano. On Sunday, a third dive follows at the so-called Edison Seamount, from which hydrothermal activity and clam fields have already been described previously. The observations from the dive at Edison, however, rather indicate that the hydrothermal activity is decreasing here, because large areas of the mussel fields have died off. For the coming week we are planning further dives with the ROV Kiel 6000 as well as deployments of the video-guided grab.

All participants are well and the interaction between science and ship continues to be excellent.

On behalf of all participants, greetings from aboard the RV SONNE,

Philipp Brandl
Chief Scientist