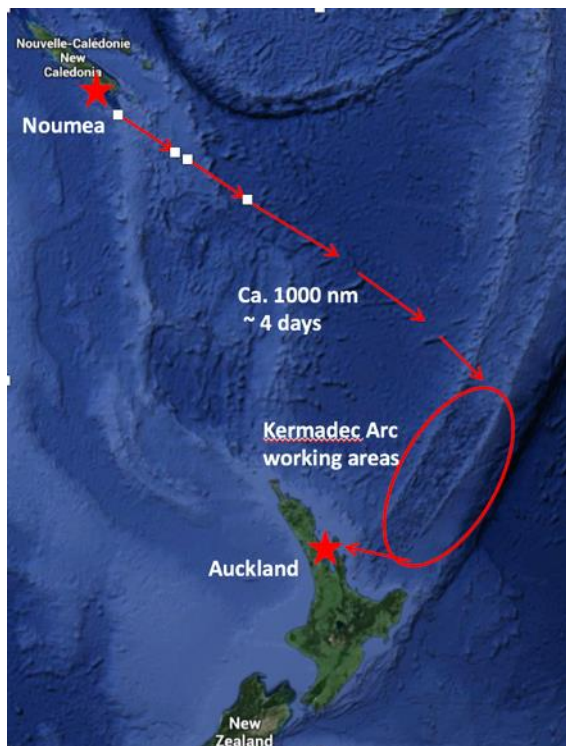


SO253 1. Weekly Report 20.12. – 25.12.2016

The topic of research cruise SO253 is hydrothermal processes at the Kermadec Arc. The selected working areas lie in the southern and middle Kermadec Arc, in which about 18 highly active hydrothermal systems exist. Four main working areas were chosen in different water depths between ca. 1600 m and 200 m to undertake detailed studies of hydrothermal material fluxes.



The cruise started on 20 December 2016 in Noumea, New Caledonia, with the setup of the ROV Quest (MARUM, Univ. Bremen) on the working deck of RV Sonne and the embarkment of the scientists in the morning of the 21st. The last containers were loaded and debarked and the scientists started to organize their laboratories. In the evening the last missing piece of equipment was finally delivered by airfreight from Sydney, and so we were ready to sail on time at 9 a.m. on the 22nd. We left the port of Noumea with nice weather, calm sea and a beautiful scenery and headed for Raoul Island on the Kermadec Arc, somewhat north of our working areas, to complete and improve existing bathymetric maps. The transit time was further used to continue setting up the labs and to test equipment and methods, and on the 23rd a meeting

with presentations and discussions of the goals, work programs and methods of the different disciplines involved in the cruise took place in order to allow optimized coordination and cooperation. However, the relatively strong swell forced several scientists to reduce their activities for a while because of seasickness. Since we were still on transit on the 24th, we could interrupt the preparation work in the afternoon for a festive get-together with coffee and cake. The shipping company Briese had sponsored bags with Christmas presents for every cruise participant and the little gifts that the scientists had brought were distributed among the science and ship crews via a Secret-Santa game. We used the evening of the 24th for a little Christmas party in the hangar.

On the 25th only the excellent Christmas menu and the salutation “Merry Christmas” reminded us that it was still Christmas, something you can easily forget in the summerly weather and the busy atmosphere on board. In the morning, we ran the first station with CTD and rosette water sampler to record a sound profile as a preparation for the subsequent mapping, to test the device and to take seawater for tests of analytical methods and other preparation work. Meanwhile all groups are well prepared for the first stations and sampling. The mapping of the Kermadec arc north of our working areas ended in the morning hours of the 26th with



a swath above our first working area Macauley Cone, a rather shallow (200-400m) hydrothermally very active volcanic cone with a crater filled with hydrothermal solutions and flanks covered densely with vent mussels. After a major part of the day has been used for diverse tests of the ROV to prepare it for its deployment on the next day, we are now running a CTD Tow-yo to follow the hydrothermal plume leaking out

of the crater and assess its extension. During the night, mapping profiles will be used to search for more hydrothermally active sites, and a vertical CTD station and a station with in-situ pumps for the filtration of particles will be done, so that we can expect plenty of samples for most of the working groups within the next hours.

Our science team, which is a group of geochemists, geologists, geophysicists, biologists, microbiologists, technicians and a journalist recruited from Jacobs University Bremen, University of Bremen, the MPI Bremen, University of Oldenburg, University of Hamburg, University of Münster, the project executing organization PTJ and our New Zealand partner institutes GNS Science and University of Otago as well as SB Roscoff (France) und NOAA (USA), is comfortable on board. We send our regards and wish everyone a Happy New Year 2017!

On behalf of all cruise participants
Andrea Koschinsky (Chief scientist SO253)

