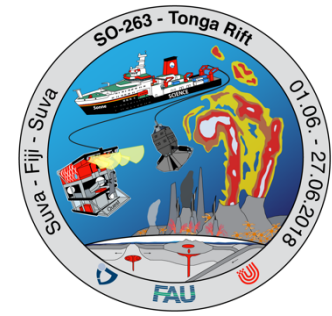


2.Weekly report RV Sonne SO263

Expedition TONGARIFT

04.06. to 10.06.2018



After the winch tests were ended on June 4th RV Sonne started working in the northern Tonga island arc. The two known areas with hydrothermal activity on the volcanic structure of Niua were studied with vertical CTD stations and tow-yos and hydrothermal plumes were detected in the water column. The cruise continued with sampling of volcanic rocks using the TV grab which was also done during the night. The first dive at Niua South hydrothermal field was cancelled because of technical problems with the ROV. Instead additional CTD and TV grab sampling of water and rocks was carried out. A first successful dive in the crater of Niua South showed large sulfide mounds with up to ten meter high chimneys that were largely extinct. However, we found one smoker with boiling fluids where we sample both fluids and sulfide. All together we have carried out 10 vertical CTD and Tow-yos, 26 TV grab, and three ROV dives so far on this cruise that yielded fluid and biology samples as well as some 93 rock and sulfide samples. The most spectacular samples are three large pieces of extinct chimneys with chalcopyrite, sphalerite, pyrite, bornite, barite, and arsenosulfides. Today ROV QUEST 4000 dives for the first time at Niua North where several craters emit sulfur and carbon dioxide and where sulfur blocks with several meters thickness lie on the seafloor. Here we observed a rich hydrothermal fauna with crabs, mussels, snails, shrimp, and tube worms. The sampling of fluids, precipitates and fauna as well as associated rocks was continued. Meanwhile all groups on board have material and work on their samples. We hope we can develop a routine of diving during the day and TV grab stations and bathymetric surveying during the night.

Best wishes from the crew and the scientists,

Karsten Haase