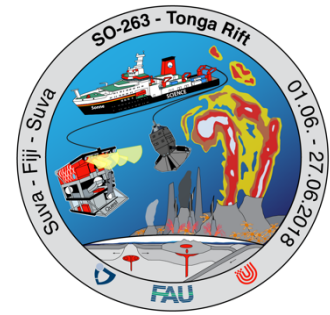


3.Weekly report RV Sonne SO263

Expedition TONGARIFT

11.06. to 17.06.2018



Meanwhile RV Sonne reached the third working area at Niuatahi volcano that has a caldera with a diameter of about 8 km and represents one of the largest known submarine calderas. Today ROV QUEST carried out the tenth dive of this cruise on the SW rim of Niuatahi caldera and the 90th station. Niuatahi shows several hydrothermally active areas along a large fault of the caldera rims and we were able to sample fluids, sulphides, and fauna at several black smokers and diffuse vents. Additionally, we recovered numerous dacitic lavas from different regions on this volcano that will help determining the evolution of this unusual caldera. Before RV Sonne had finished the work at Niua volcano where very good samples for all groups on board were taken. After the sampling of Niua we sampled the southern slope of the rifted Tofua island arc where we collected 20 rock samples stratigraphically at depths between about 2000 and 1400 m. Most of these lavas contain large crystals of olivine, ortho- and clinopyroxene which is distinct from the lavas from the currently active island arc. We hope to be able to determine the early stage of magmatic evolution of the Tonga island arc. Twelve TV grabs on five volcanoes of the active island arc yielded andesitic to dacitic lavas that will provide insights into the magmatic evolution and slab components affecting this region. On Friday the 15th of June the ROV crew had a day for maintenance of the vehicle and we started sampling volcanic glass along the Northeast Lau Spreading Centre (NELSC) using the wax corer at six deployments. The containers are filling with sample material and slowly we begin with packing and organizing the transport of the material because the work on board will end in about one week.

Best wishes from the crew and the scientists,

Karsten Haase