This week the station work at Manihiki Plateau was finished by several dredge hauls at the Suvorov Trough, a major fault zone passing from NW to SE through the High Plateau, and a final coring station in the southernmost part of the Manihiki Plateau. The Suvorov Trough is a continuous 8-12 km wide trough with seafloor lying at approximately 4,500 m, and mostly steep flanks with relief of up to 1,000 m. The unusual, for this region, Russian name of the trough derives from a nearby atoll that was discovered in 1814 by the crew of the Russian ship „Suvorov“. On the previous cruise SO193 we already learned that lithified sediment outcrops mainly make up the flanks of the Suvorov Trough. At the western flank of a presumably tectonically formed, east-west striking ridge, however, we dredged in 2007 olivine-rich mafic rocks. These rocks are of great interest to us because they represent relatively unmodified parental melts and therefore may provide information on nature and depth of the magma sources of the Manihiki lavas. Accordingly the major target of dredging at the Suvorov Trough was to recover an as wide as possible spectrum of rocks from this ridge structure.

A dredge full to the top was the culmination of rock sampling on SO225.

In total, we carried out five dredge hauls at this ridge over the Christmas days. They recovered, besides the inevitable lithified sediments, a great variety of lavas and volcaniclastic rocks and again - as surprisingly as fortunately - fresh volcanic glass. Notably, each dredge returned different rock types, although all dredge hauls were conducted relatively close to each other. This observation supports our hypothesis that intense tectonic processes affected the area leading to the uplift of this ridge. Besides dredging, we closed some gaps in the available multi-beam map of the Suvorov Trough. By this, we hoped to identify further (tectonic?) structures to be sampled, but unfortunately did not make a strike.

After the final, full dredge at Suvorov Trough, which was the last dredge of the cruise, R/V Sonne sailed southeast for the final coring site on High Plateau. This station was quite important as it represents the southernmost location of our N-S-striking coring
transect across Manihiki Plateau. We hoped to be more successful than on the previous coring stations further north on High Plateau. At the beginning, however, coring did not look promising. Both, multi-corer and gravity corer certainly gained sediments but overall sediment recovery was rather disappointing. Apparently, sampling of sediments in this area is as difficult as further to the north. Nonetheless, the paleoceanography group made a final attempt with a 15 m long piston corer - and had success! A more than 12 m long undisturbed sediment core returned, a great achievement in this rather un-sampled ocean area and hence, the culmination of SO225 sediment sampling.

The sampling stations of SO225 at the Manihiki Plateau (POZ/yellow = coring station, ROV/red = sampling profile using the remotely operated vehicle ROV Kiel 6000, DR/red = dredge station).

After a final CTD deployment, R/V Sonne started the almost 2,000 nm long transit to Auckland, which will be interrupted halfway for mapping of the active submarine volcano Monowai. The first days of the transit were spent to prepare samples and to write reports - duties which will be continued during the forthcoming week along with packing of the equipment and cleaning of the labs.

And then of course there was Christmas. As still parts of the Suvorov Trough had to be mapped with our echo-sounding devices, station work was interrupted and we took the chance during profiling to celebrate Christmas jointly. On Christmas Eve, sausages with potato salad and mulled wine, a traditional German meal, was served, followed by the opening of Christmas presents. Afterwards we spent a pleasant evening on deck in the balmy tropical night. On Christmas Day we had a banquet with the traditional roasted goose with that our cook has again surpassed himself. After a short lunch break, the Christmas celebration was over and we continued dredging.

All SO225 participants send cordial greeting from the SW Pacific and wish to you a Happy New Year!

Reinhard Werner