

	<p>SO225 MANIHIKI II Weekly Report No. 1 (19.11. – 25.11.2012)</p>	 <p style="text-align: center;">R/V SONNE 10°13,6'S / 165°52,0'W</p>
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The starting point of R/V SONNE expedition SO-225 was the port of Suva on Viti Levu island (Fiji). After 48 hours of travel the first group of scientists, engineers, and technicians from Germany arrived safe but somewhat tired in Suva in the late evening of Saturday the 19th of November. There, the unloading of nine containers with scientific equipment for SO-225 and the mobilization of the remotely operated vehicle ROV Kiel 6000 kept us busy during the following days. In the evening of November 19th, the remaining scientists arrived in Suva, finally completing the scientific party of the SO-225 expedition. In tropical heat and occasionally heavy rain showers we managed to finish all port related cruise preparations on time thanks to the excellent support from the SONNE crew. Approximately one hour after a test program of the ROV Kiel 6000 was successfully completed, RV SONNE left Suva and headed towards the Manihiki Plateau, located ~1.000 nm to the northeast of Fiji in the area of the northern Cook Islands.



Views of Suva/Fiji upon departure of R/V Sonne.

RV Sonne cruises SO-224 and SO-225 are part of the cooperative project MANIHIKI II between GEOMAR and the Alfred Wegener Institute for Polar and Marine Research (AWI), funded by the German Ministry of Education and Research (BMBF). This multidisciplinary project continues previous research at the Manihiki Plateau conducted since 2007 (SO-193) on morphological, volcanological, geochemical, and geochronological studies and is now broadened by geophysical and paleoceanographic research foci.

But why do we study the Manihiki Plateau located far away in the Pacific Ocean? The Manihiki Plateau is a approximately 120 Mill. years old submarine lava plateau, approximately equal in size to France. Besides the significantly larger Ontong Java Plateau and the somewhat smaller Hikurangi Plateau it is one of the three "Large Igneous Provinces" (LIPs) in the Southwest-Pacific. LIPs represent the largest volcanic events on Earth. Some scientists assume that these three LIPs formed synchronously at the same

time. If this were the case almost one percent of the Earth's surface would have been covered by lava within a few million years only. To date, however, very little is actually known about these huge magmatic events. It is, for example, still unclear, if the plateaus are the result of a single or multiple magmatic events, how long the volcanic activity lasted, what their causes and effects on the environment are, and how the Plateaus are internally structured. The Manihiki Plateau is predestinated to shed some light into these questions because SO-193 revealed up to 2,000 m thick lava sequences exposed along fault zones, allowing unique insights into the plateau's interior. Its location at the southeastern margin of the West Pacific Warm Pool also defines the Manihiki Plateau as a key area for a better understanding of the Pacific Ocean paleoceanography and its effects on the global climate.

On the preceding RV SONNE SO-224 expedition, scientists from the AWI conducted an extensive geophysical program. We are very grateful to our colleagues who have laid lots of data and information to our disposal which are a perfect base for the investigations scheduled on the SO-225 cruise. SO-225 focuses on the stratigraphically controlled sampling of the igneous successions of the Manihiki Plateau. This challenge will be accomplished by using the ROV Kiel 6000 that can operate down to 6,000 m water depth. Coring of deep sea sediments and sampling of the overlying water column will add to the program. The integration of scientific results from SO-224 and SO-225 with existing data from the Manihiki, Hikurangi, and Ontong Java Plateaus will contribute towards a better understanding of the origin and effects of volcanic mega events, the formation of large igneous provinces, and the paleoceanography and paleoclimate of the equatorial West Pacific.

The four days of transit to the Manihiki Plateau were used by the scientists to accommodate on board, to unpack the equipment, and to setup the labs and the ROV Kiel 6000. In the evening of November 25th, we finally reached the southwestern margin of the Manihiki Plateau, which rises here about 1,000 m above the surrounding 5,000 m deep seafloor. Now we are close to our first sampling station, where we will core sediments and take water samples from tomorrow morning on. On the following day we will deploy the ROV Kiel 6000 for the first time on this cruise. We really look forward to start the sampling soon after the long-lasting and complex preparations.

All cruise participants are doing well, enjoy the excellent food and the pleasant atmosphere on board, and send greetings to everyone at home.

For all cruise participants
Reinhard Werner

Links:

SO-193: <http://www.geomar.de/forschen/fb4/fb4-muhs/projekte/so193-manihiki-projekt/>

SO-224: (http://www.awi.de/en/research/research_divisions/geosciences/geophysics/projects/marine_geophysics_margin_basin_plateaux/manihiki_ii/)

SO-225: <http://www.geomar.de/forschen/expeditionen/detailansicht/exp/current/315731/>