	SO233 **Walvis II** **Weekly Report No. 2** **(19.05. – 25.05.2014)**	 **R/V SONNE** 29°08´ S / 02°31´ E

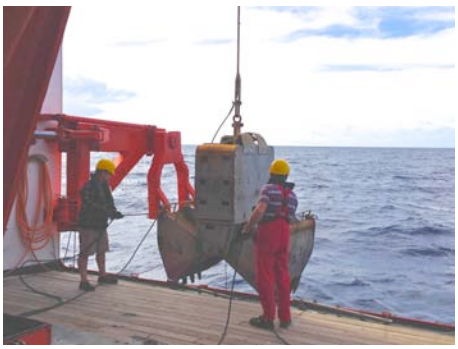
The last week was filled with variety and some excitement. After leaving Cape Town in stormy weather, we had a couple of beautiful sunny and warm days that allowed us to carry out successful deployments of the multi-corer, TV-grab and dredge. During work at one station on the Walvis (whale) Ridge, we were appropriately accompanied by a school of whales for about a half hour. Unfortunately the good weather didn't last. To avoid the worst of the bad weather and high swells, we gave up work in the southernmost part of the study area and cruised several hundred kilometers northwards. Due to the 5-6 m swell and high winds from one of the storms, it was impossible to work for 24 hours and many scientists spent much of the time in their bunks. Things have calmed down again, but a large storm with up to 8 m swell is awaited for Tuesday.

At the beginning of the week, we reached the southernmost end of the Walvis Ridge. We began our work with a successful multi-corer sampling of deep-sea sediments on the floor of the abyssal plain at about 5000 meters depth. After mapping the bathymetry (depths) of the southwestern edge of the Walvis Ridge, we dragged a chain-sack dredge along one of the steepest parts of the slope. The dredge is essentially a steel box with teeth on the front, much like a shark's mouth, and a chain sack is attached on the back opening without teeth. The dredge is dragged behind the ship with a winch. As the dredge scrapes along the sea floor, it scoops up rock samples that are collected in the chain sack and sediments in pipes on the inside of the dredge. All dredges recovered material from the sea floor. Recovered volcanic rocks will be analyzed for their chemical content and age dated in order to obtain information about the age and origin of the Walvis Ridge. The biologists on board collect organisms attached to the rocks and from the sediments.

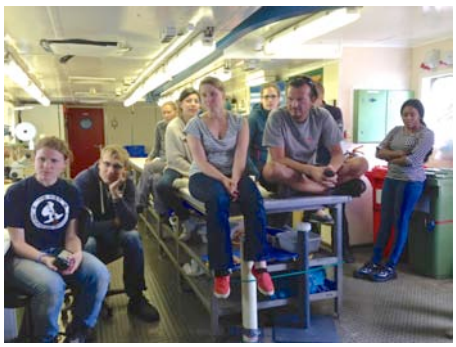
The first structure on the Walvis Ridge that we sampled was a guyot seamount. Guyots are seamounts (under sea mountains) that have step sides and a relatively flat summit. These usually represent volcanoes that once formed ocean islands. After the volcanoes become extinct, the waves erode the islands to sea level, forming a flat top on the volcano. As the crust beneath the volcano cools, the guyots subside and the former wave cut top of the guyots drop beneath sea level. We mapped and sampled numerous guyots on the Walvis Ridge that rise ~3700 meters above the abyssal plain located at a depth of ~5000 meters. The guyots indicate that there was an archipelago in this area tens of millions of years ago. We will determine the exact age when we date the recovered samples. The ridge in this area appears to have formed through the coalescence of former volcanoes, most of which are now guyots.

After successfully deploying the multi-corer and dredge, we deployed the TV grab on top of a guyot seamount. The TV grab is essentially a huge set of steel shovels with teeth like those on a bulldozer shovel. The shovels can be closed hydraulically to scoop up rocks or sediment on the seafloor. The TV grab has a camera attached so that it is possible to see the seafloor and what is sampled. We collected sediments from the top of the guyot. The sediments consisted of beautifully white sand consisting primarily of foraminifera but with lots of shells of several species of pelagic pteropod snails, a main energy source for baleen whales. Foraminifera are single-celled organisms generally smaller than a millimeter in size and have complex shells made of calcium carbonate. They are generally benthic (live on the seafloor) but some are planktonic (live in the water column). At the base of the foraminifera sand was a layer consisting of broken shells of bivalves (*Limopsis* sp.), snails (*Janthina janthina* and others), few hexacorals and stylasterids and a large number of brachiopods dominated by the terebratuloid species *Stenosarina crosnieri*. This species has not been previously found in the southeast Atlantic Ocean.

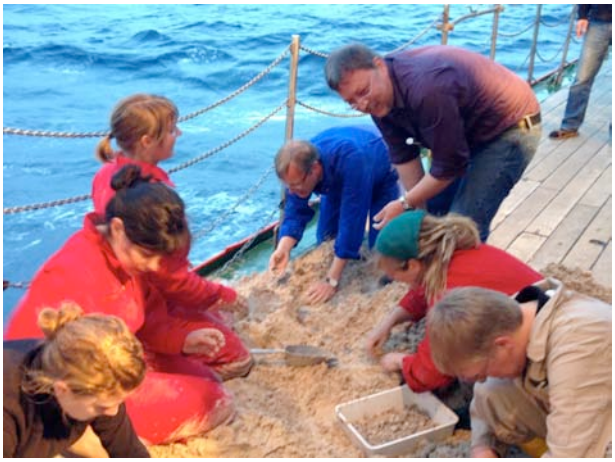
Kaj Hoernle (chief scientist SO233) and the cruise participants



TV grab being deployed from the Sonne with open shovels and back on board with closed shovels and full payload of sediments. (photos: Kaj Hoernle)



Scientists and system operator fascinated by pictures of the seafloor from the video camera on the TV grab. (photo: Kaj Hoernle).



Not only children like to play in the sand. Scientists searching the sediments from 1100 m depths recovered by the TV grab for organisms, such as deep-sea snails and bivalves. (photo: Kaj Hoernle).

The deepest sediment layer sampled by the TV-grab contained numerous shells of the brachiopod species *Stenosarina crosnieri* as well as fragments of corals, snail, and bivalve shells (photo: Carsten Lüter).

Whales accompany R/V Sonne (photo: Oliver Meyer).