

ANT XXIII/5 Weekly Report No. 6 (Punta Arenas - Cape Town)  
15 May - 21 May 2006

This week we continued our work along the southern Walvis Ridge. The key question we are addressing with our research is: What kinds of processes in the deep earth are responsible for forming the Walvis Ridge - a giant range of mountains and seamounts? Since these processes act very slowly - on the order of millions of years - they are difficult to observe today. The windows into the past are on one hand, the rocks emplaced on the surface to form the Walvis Ridge. While on the other hand is the shape and deeper structure of the ridge. Volcanic material is not only erupted on the surface, but crystallises also in the deeper crust before reaching the surface. As with our research on the Discovery Seamounts, combining results should help to establish which of the existing theories on mantle processes best explains the Walvis Ridge.

At the beginning of the week a seismic profile was acquired across the ridge to determine the thickness of the oceanic crust. The normal thickness is around 6-7 km. Our nine ocean bottom seismometers recorded the signals, which are generated every 60 seconds by airguns towed by the research vessel. After terminating this line, the bottom stations will remain for another week on the seafloor. We hope that the instruments will record small earthquakes during the next 14 days, which might provide evidence for ongoing submarine volcanic eruptions. Approximately 80 km north of our line such signals were accidentally recorded by another experiment six years ago. Such submarine eruptions are rarely observed, since there are not enough instruments installed on the seafloor to record them.

Afterwards the geophysical programme continued along Walvis Ridge to find suitable locations for future deep drill holes. We use an 800 m long streamer and the airguns for this type of experiment. However, we conducted this experiment several hundred kilometres away from the ocean bottom seismometer so as not to disturb their recordings.

As we approached Walvis Ridge at the beginning of the week the petrologists attempted unsuccessfully to sample an isolated seamount flanking Walvis Ridge to the south. Later in the week a second station was attempted during the transit to the first seismic profile searching for suitable drilling sites. Only remnants of a coral reef that was alive million years ago were in the dredge bag. At the third and fourth dredge station, today, Sunday, we recovered the first basaltic rocks during this cruise from Walvis Ridge. We hope that the dredges in the next 2 days will be as successful.

On Friday we celebrated our "Bergfest" with a barbeque on the working deck. Half of our cruise is over!! One of the scientists trained for many months for a marathon that took place in the Thuringer Wald on Saturday. Nevertheless, she managed to run a distance of 42 km in our fitness room at the same day. She was joined by another female scientist, who cycled in parallel almost 100 km on a training bicycle.

With kind regards on behalf of all cruise participants,

Wilfried Jokat

21. May 2006

Position 31°41'S 002°05'E, +17°C