

The geophysical and bathymetric survey program in the central Scotia Sea is now entering the fourth week. The weather again was very friendly. However, the meteorological high, especially at the beginning of the week, which had an extension from the South Atlantic to the Weddell Sea, created large fog banks and clouds in our area. Thus the numbers of helicopter flights remain very small this week. But as a whole, the airborne magnetic program was very successful, especially considering the actual time of the year.

The biological program on this expedition focuses on the cosmopolitan genus *Phaeocystis* that has a wide global distribution. It is one of the very few colony-forming members of the Prymnesiophyceae and part of the marine phytoplankton. It was intended to isolate the colony-forming prymnesiophyte *Phaeocystis antarctica*. This was done due to plankton net sampling and with a membrane pumping system that gave the opportunity to take samples at any time. After several microscopic sessions, which are still on going, a good amount of samples could be obtained. The main target for the next days will be the safe return with these samples to Germany.

Within the marine geological program two additional core stations in the southern part of the working area were recovered. At both locations piston corer, multicorer and CTD were deployed. Again the praxis proved that a sophisticated pre-survey with Parasound and Hydrosweep is the optimal presupposition for the selection of a coring location and for an optimal core recovery. Also this time the piston core recovery was 20.71 m and 22.01 m and thus as good as expected. The results of the Parasound measurements are not only utilized for sediment coring site selection but for the spatial visualization and data analysis using Geographic Information Systems (GIS) also. On the base of a network of densely spaced parallel profiles the two-dimensional Parasound profiles can be utilized for spatial qualitative and quantitative determination of sediment layers. With this procedure, conclusions can be drawn about past sediment deposition, accumulation processes and palaeocurrent development.

The bathymetric survey program in the central region was terminated in the night from Thursday to Friday. The multibeam data measured along the 27 profiles that were arranged in N-S direction cover the full area of approx. 55.000 square kilometres. For the multibeam data post-processing and the correction information about the sound velocity profile is needed. For this purpose, an XBT survey program was initiated and executed along with the multibeam measurements. The XBT (Expandable Bathythermograph) measures in the water column the temperature down to maximal 1800 m depth. In combination with additional data about salinity and depth, a sound velocity profile can be determined and used for refraction correction of the slant sonar beams.

In the course of our survey program we have discovered a large number of remarkable sub-marine features. Beside the 50 km wide central graben,

described in an earlier Weekly Report, several submarine volcanoes, ridges, seamounts, and valleys were discovered. But the most exceptional discovery is located in the northern part of the working area. The discovery took place on Sunday, the 8 May. The discovered submarine volcano has a relative height above the surrounding region of more than 1200 m. The circular basis of the seamount has a diameter of more than 12 km. The top of the seamount is relatively flat and smooth. Most impressive is the 200 m deep crater with a diameter of 1 km. The flanks are very steep, the slope are generally more than 20°.

Also during this week some evening lectures for crewmembers and scientists took place. These interesting presentations with many photographs from Antarctica were well attended. A special event was the First-Aid training course, offered by the ship's doctor. During three evenings more than 10 participants could renew their knowledge in theoretical and practical lectures and training. All participants enjoyed very much this training course.

During the night from 12 to 13 May the last N-S going multibeam profile was recorded. After completing this net of densely spaced parallel lines we have fully covered the entire region with high accuracy, and thus reached our target. For the purpose of crosschecking and final adjustments of the gravity and magnetic surveys, we placed a diagonal profile over the area, crossing all survey lines. At the end of this profile the last geological station was taken. After this we directly sailed towards Signy Island to pick-up our two colleagues and to dismount the tracking station.

However, remote satellite pictures have shown that the sea ice from the Weddell Sea has reached nearly the South Orkney Islands. Thus we had to save some time in case of difficult ice situations on the way to Signy.

About the last activities during our cruise I shall write in the next report after our arrival to Bahia Blanca.

Best regards from everyone on board and the scientific cruise leader
Hans Werner Schenke