

The first week of operation in our study area between South Georgia and the South Orkney Islands went very fast. Systematic surveying, using Hydrosweep, Parasound, and the ship-borne gravimeter and magnetometer complemented by helicopter magnetic (HeliMag) flights as well as oceanographic measurement and biological sampling, controls our daily routine.

The multibeam echo-sounder Hydrosweep DS-2, probably the most challenging and costly system on board of Polarstern is for operations in ice covered regions equipped with specially hardened transducer and they are installed in a special steel frame at the ship's bottom. Since we left Punta Arenas, the system is in operation all the time. The required watch-keeping and continuous post-processing is organized perfectly by our specialists in hydrography. Hydrosweep is used for 3D-surveying of the sea floor topography. The bathymetric charts, derived from these measurements are utilized for the production of thematic maps and for the geo-referencing of observations and measurements collected and used by other marine research disciplines. The structures of the sea floor have substantial influence on physical, biological and chemical processes directly at the sea floor. The Earth's geological history is deeply imprinted in the sea floor. Like the number of tree rings documents the age of a tree, the morphology of the sea floor and the layered sediments tell the age and history of the ocean floor.

Meanwhile we have surveyed with high precision an area of 16,000 square kilometres. Efficient computer systems on board permit a near real time post-processing of the data, and subsequent 3D-visualization of the first results. This enables us to perform in situ planning, based on latest findings in our investigation area. It is always fascinating and challenging to discover so far unknown sub-marine ridges and valleys of immense extension, which are invisible for the human eye. Not only for scientific research but also for the production of official Nautical Charts precise data of the sea floor topography are indispensable. Thus, high precision bathymetry is an important contribution for the safety of navigation at sea.

For this time of the year the weather is relatively good in the "roaring fiftieth" of the Scotia Sea, which is a great advantage for the air-borne magnetic program. Nearly each day helicopter flights were carried out. A large portion of our investigation area is already covered by 16 magnetic lines, placed in East-West direction, and adding up to a total range of 4100 km. Preliminary processing on board prove that the collected data are of excellent quality and accuracy. These first results show further that the tectonic structure of this region is very complex; we do absolutely need for a detailed geo-scientific interpretation data from this systematic survey.

On Tuesday, April 19th a float, built by the US Woods Hole Oceanographic

Institute (WHOI), was successfully launched on the location 44°06'W and 56°06'S. This float collects automatically oceanographic data on vertical profiles through the water column, which are transferred to the tracking station in the US via the ARGOS satellite system. Two days after the launch we received feedback from WHOI that the float is in operation.

A marine geological coring station in the northern part of our investigation area lead to a small interruption of the profiling survey work. At first, a piston core of 23.37 m length was successfully recovered from the seafloor in 3837 m depth. In addition at this site surface sediment samples were taken using the multicorer.

The work program on the geodetic reference station on Signy Island, located 500 km in southern direction is running well. All instruments used for the scientific observations are operational and work perfect. One spare generator is defect, but this does not cause any problems. The weather is fine around the South Orkney Islands, however, the air temperature is decreasing, it just snowed a little bit. This is more agreeable than the rainy weather during the first days on Signy which had caused mud and slippery soil. The winter has announced his arrival with lower temperatures, which are about -5°C during the day. It has snowed and young sea ice is seen on the Factory Cove, at which Signy is located. The two operators on Signy are sending their best wishes to everyone at home.

Despite the daily routine work, there is no boredom on the ship. All members of the scientific party are, beside the watch-keeping, involved in post-processing of the collected data and program planning. Often first results and preliminary scientific interpretations are presented during the regular meeting at 9:00 h in the morning.

Finally, the free time (free watch) is an important part of the life on board. Playing table tennis and performing physical exercises in the gym room is highly recommended as compensation for the lack of mobility during the regular working hours.

Since some days Polarstern is accompanied by albatrosses, petrels and skuas. These huge birds are real artists in sailing in the upwind of the ship. Even today a group of penguins approached the ship and tried to keep up with it.

We hope that the weather conditions will not change until we leave this region. Then we are very optimistic that all scientific groups on board will finish their programs.

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