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Slowly we move from the central Weddell Sea to its northwestern corner. We feel that autumn approaches, the days become shorter and storms are passing by. Sunshine is rare. However, sea ice is still out of sight in spite that we know from satellite images that it is not far away.

The work on board is dominated by deep-sea biology in the framework of the ANDEEP project. Tonight we finished the 10th ANDEEP station. An essential instrument to take samples during the biology stations is the box corer. The one we use was developed in the 70's to be able to collect a sample of the sea floor with a defined area. At that time, first quantitative studies were done in the deep sea, especially on the continental slope. The objective is to relate parameters such as density (the number of individuals), species richness, and diversity (the distribution of species among the individuals) to an area, typically a square metre. In that way one can characterise the general structure of the assemblages in a study area.

The big advantage of the box corer over other grabs developed in the early 20th century for work in shallow water is that the box corer can cut out a cube of sediment vertically and thus preserve the surface. A van Veen grab, for example, works rather like a hopper, closing from the sides, with the sediment not being taken down to a constant depth and the surface being pulled down and disturbed by the closing jaws. When the box corer is working properly, the possibility is very high that what we see on deck is identical to what the sea floor looks like in the depth. With a bit of luck, we may discover some sessile animals on the undisturbed surface covered by an 8-10-cm layer of clear overlying water.

A special feature of the box corer is the division into 25 subcores with a surface area of 10x10 cm. In that way, a sample can be divided among several scientists. For example, along with the fauna, sediment can be taken for chemical (metals and organic compounds) or sedimentological (grain size, water content) investigations at the same time, always from a defined area. Thus the precious time on board can be used more efficiently. The sample for the infauna, usually consisting of 10 subcores (0.1 m©˜) can be removed in small portions and processed very gently. Instead of emptying the box from the top with a shovel, taking the risk of destroying small animals, the sediment can be pushed out of the subcore from the underside with an extruder, and the desired quantity, usually the upper 10 cm, cut off without touching the delicate surface. In a sieve the fine mud is gently separated from the animals and coarser sediment grains.

The animals sorted from a box corer sample belong to the so called macrobenthos, organisms living in or on the sediment (benthic) that are too large to pass through a sieve with a 0.3-mm mesh size, i.e., they remain in the sieve, while the even smaller meiobenthos passes through). In the deep sea, where most animals are smaller than in shallow water, macrobenthic organisms generally are not much larger than 1 cm. Another important in---

strument, which we use, is the multicorer. It will be in the focus of our next report.

The ANDEEP stations are located along a transect across the Weddell Sea from the east to the west. To the south of this line are the major water mass formation areas where warm and salty water masses coming from the north are transformed into cold Weddell Sea Bottom Water which after fur---ther mixing with adjacent water masses fills the deep basins of the world ocean. To quantify this water mass formation process, the physical oceanog-raphers measure CTD profiles along this transect in 30 nm distance.

With the best regards from all on board
Brigitte Hilbig und Eberhard Fahrbach