

Weekly Report No. 4 (29.11. - 5.12.2004)

The investigations on, within and underneath the ice floe continued throughout the week. Meteorologists installed their masts with various sensors, the ice biologists drilled ice cores, and the divers -after producing a sufficiently large hole through the ice- inspected the ice from below and collected first planktonic organisms. All groups on the ice were closely followed by curious emperor penguins, who a new penguin species, tried to make contact by calling us, and then moved on after they did not get an appropriate answer.

The investigations from the oceanographers continued as well. On Polarstern's starboard side CTD's were lowered regularly into the icy water. This instrument measures conductivity, temperature, and depth and the data are used to interpret exchange of water masses. At the same time water samples can be taken from different depths with 24 bottles each of 12 liters volume. The water is divided up for an array of biological, chemical, and physical analyses.

In an area of varying bottom topography water mass densities are different between adjacent water bodies. Therefore, a tight knit grid of measurements helps to elucidate time and area dependant processes of water mass formation in the Weddell Sea. Since the deep water of the Weddell Sea is the main component of Antarctic Bottom Water, which disperses through the world ocean, the significance of its production is of global importance. In addition to the measurements from the

drifting ship, a larger area around Polarstern is investigated by means of a mobile winch. This set-up (Heli-CTD) can be transported by helicopters to distances 150km away from the ship. It is deployed on ice floes and can measure water mass characteristics down to a depth of 2000m. New measurements of sea floor topography from our Russian colleagues help to characterize and quantify different pathways of water flow, since the denser and heavier waters preferably disperse through depressions and channel like structures which in our study area are mostly unknown.

During the first days of the week our floe took a drift due North with a speed of 0.5 knots (equals half a mile per hour). However, after performing a narrow loop we were going back into the opposite direction on Wednesday, forced by strong winds between wind force 6 and 7. These conditions resulted in a rapidly widening crack within our floe. Thus part of our equipment and one person were found to be on a separated floe from where the ship was anchored. In spite of unfavourable flight conditions our helicopter crew was able to safely return the scientist and his equipment back to the ship. The break up of our floe continued on Friday and Saturday with the result that all working groups had to move closer together.

A completely new experience for Polarstern also took place: Our Brazilian colleague, Joao Marcelo Absy, got married via satellite phone in distant South America (witnessed by an authorized representative of his). During a small ceremony our ship's captain presented a unique marriage certificate to the newly wed. The kitchen

staff prepared a superb wedding cake, which the groom had to cut without the help of his new wife.

Despite the decreasing size of our floe all groups are working hard and we hope that with calmer weather our floe will remain intact.

In the name of the expedition members I am sending warm regards back home.

Michael Spindler