

ANT XXIII/7 Weekly Report No. 4 (Cape Town - Cape Town)
11 September 2006 - 17 September 2006

A medical emergency interrupted our scientific programme on Monday morning. A cruise participant suffered from a heart attack and had to be admitted to a hospital as quickly as possible, according to the ship's doctor. Initially we tried to have the patient transported by air from King George Island, located just off the tip of the Antarctic Peninsula, to Punta Arenas (Chile). But flight connections to King George Island in winter are very sporadic depending on good weather conditions. Because of unstable weather conditions we decided to steam into helicopter distance to the next harbour - Ushuaia (Argentina), just 80 nautical miles north of Cape Horn. Because of intense snow showers pilot, doctor and patient made it to Ushuaia only the second time around, where the patient was admitted to the hospital Friday evening in stable conditions. The return of the helicopter to Polarstern was delayed by bad weather until Saturday evening. Now we are steaming south again and hope to reach our next research station Monday night.

In conjunction with the oceanographic measurements, the biologists on board are collecting zooplankton from the water column: They use a multiple closing net down to a depth of 2000m in order to catch organisms at various depths, and their catches comprise of a great variety of animals, but mainly copepods (small crustaceans between 1 and 10 mm in size). Copepods occur in large numbers throughout the world oceans and play a fundamental role in marine food webs: They feed mainly on phytoplankton and are in turn the food for fish, squid and even some whales. We have also caught, albeit in small numbers, some juvenile krill, jellyfish, as well as pelagic snails and arrow worms. Our net hauls provide important information on the distribution and species diversity of zooplankton in the different water bodies we encounter in this part of the Southern Ocean.

Another research emphasis is to investigate the different life cycles and survival strategies of the dominant copepod species. Polar regions are characterised by large seasonal variations in both sea ice cover and food availability. Winter sea ice and low or almost no primary production in the water result in there being a scarcity of food and so copepods have developed different strategies to survive the dark season. Some species undergo annual vertical migrations to depths of over 1000 meters where they overwinter. During this phase they do not feed but rely on the energy reserves, which they have accumulated during the food rich summer months. They only return to the upper water column during spring after the sea ice has melted and primary production has begun. However, many copepod species remain active during the dark winter months and simply change their feeding habits. During spring and summer they will consume phytoplankton but revert to feeding other small animals, sea ice organisms or detritus, which are dead organic and inorganic particles. Additional experiments in cold laboratories of Polarstern are also expected to shed more light into the food requirements and feeding behaviour of the various copepod species we

catch during the expedition.

Another important habitat in polar regions is the sea ice itself. In the next "Weekly Report" the sea ice biologists will provide more information on how organisms live, proliferate and survive this fascinating habitat.

Best wishes from all participants of the cruise,

Yours Peter Lemke
Polarstern, 57°46'S, 58°32'W