

ARK XXI/1b  
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The first part of this leg has come to an end. On Saturday morning we left the oceanographic transect in Fram Strait and steamed towards Spitsbergen. In the evening we reached the Isfjorden and the group of geologists and new chief scientist Peter Lemke came on board by helicopter. Material from the deep-sea biology group was flown to Longyearbyen. Early on Sunday morning, the deep-sea biologists and myself disembarked to return to Germany.

During this short leg, we investigated the microbial-in-situ methane production in the upper ocean and the microbial oxidation in the whole water column. During the winter expedition in Storfjorden in 2003 an extended methane anomaly was detected with concentrations considerably exceeding the normal background values of <5 nM. The clear increase in concentrations from the sea surface to the sea floor suggests a release of methane from the seabed during resuspension events of sediments. However, the concentration of the carbon isotope  $^{13}\text{C}$  in the methane indicates that it originated from recent bacterial activity in the water column. During this cruise it was confirmed that the presence of the methane anomaly in Storfjorden occurs also during summer. However, in contrast to wintertime the maxima are detected in the upper water column confirming that the methane originated by bacterial activity in the water column.

From the Storfjorden we steamed to the oceanographic section in Fram Strait along  $78^{\circ}50'\text{N}$ . Seven moorings with current meters as well as temperature and salinity sensors were recovered and redeployed. The instruments had worked perfectly. The data were read from the memories and have now been processed. Two inverted echo sounders with pressure recorders were also recovered and redeployed. The data of bottom pressure and travel time of sound to the sea surface which they recorded will allow variations of the volume and heat transport through the Fram Strait to be estimated. Temperature measurements with the CTD (conductivity, temperature, depth) sonde indicate that the upper layers of the Westspitsbergen Current continued to warm as was observed during recent years. However, in contrast to last year, the intermediate layer cooled again. The oceanography work will be continued during the next part of the leg.

The deep-sea biologists can look back on very laborious days. In rapid succession, water samples from the CTD/rosette, bottom samples from the multicorer and hauls with the Agassiz trawl were collected in the "Hausgarten". All the samples had to be processed with great care. Three moorings with sediments traps were recovered and redeployed. Landers that were used with traps, colonisation experiments and simulated foodfalls, were recovered and deployed. The deployed foodfall lander, which should have been recovered in September by our deep-sea biologists who will shortly join the French research vessel ATALANTE, came prematurely to the surface and had to be redeployed. Only one mooring, which was deployed next

to a flume experiment, did not release. The ROV VICTOR6000 on board ATALANTE will be used to investigate why the releasing procedure failed.

Water and bottom samples continued for the other groups carrying out bio-geochemical, bio-optical and biological measurements. Birds and marine mammals were counted.

A short and very work-intensive cruise came to an end and it is time to express my sincere gratitude to all the crewmembers and the scientists who worked hard to be effective and successful. As usual, it was a pleasure for me to observe the professional and hearty cooperation of all on board.

I leave here with my best wishes and with the best regards from all on board  
Eberhard Fahrbach