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Oceanographical Laboratory

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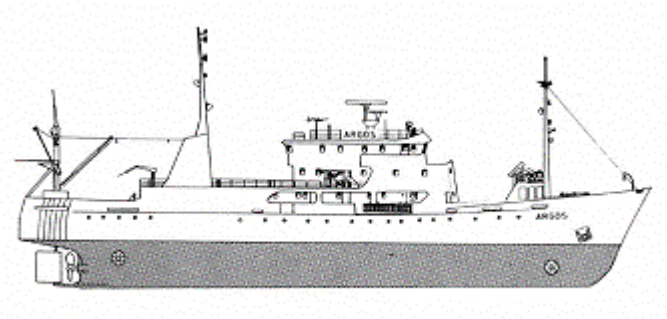
CRUISE REPORT FROM R/V ARGOS



Survey period: 2003-11-10 - 2003-11-15

Survey area: The Skagerrak, the Kattegat, the Sound, and the Baltic Proper

Principal: SMHI

SUMMARY

The expedition was performed within SMHI's regular marine monitoring programme and covered the Skagerrak, the Kattegat, the Sound and the Baltic Proper. A hydrographic survey of a bank in the Baltic was carried out as part of SEPA "Offshore Banks´ project".

This report is based on preliminary data.

The sum of the nitrate and nitrite concentrations were lower than normal in almost all areas, while the phosphate and silicate concentration was generally normal for the season.

At W Landskrona in the Sound, the oxygen content was below 2 ml/l from 15 metres, down to the bottom at 50 metres. The same low oxygen concentration was found from 70-80 metres in the whole Baltic, with the exception of the Arkona Basin. Hydrogen sulphide had disappeared from the Fårö Deep. It was however present in the northern and western Baltic from 90 metres and deeper.

The next expedition is scheduled for November 30th to December 12th.

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PRELIMINARY RESULTS

The cruise, part of SMHI´s ordinary monitoring programme, began in Göteborg November 10th and ended in Kalmar November 15th.
During the expedition a hydrographic investigation of Knoll´s bank in the Baltic was completed. There were moderate, mainly southeasterly winds during the expedition. There was no rain, but most days were cloudy. Air temperature was 6-8ºC.

The Skagerrak

Surface water temperature was 9.6°C in the central Skagerrak and almost one degree lower closer to the coast. The salinity of the surface water in the central Skagerrak was 33 psu and slightly lower than normal at P2 in the south, 24 psu. The silicate concentration at P2 was higher than normal, 5 µmol/l, compared with the value 1.1 µmol/l at Å17.
Nutrient concentrations in the surface layer were higher than the summer level, which is normal for the season. An exception was the phosphate concentration in the central Skagerrak. It was lower than normal, 0.08 µmol/l. At the coastal stations the concentration was about 0.30 µmol/l. Nitrite + nitrate concentrations varied between 0.4 (at Å17) and 1.3 µmol/l (at Å13).

Kattegat and the Sound

Surface water temperatures were between 7.6°C at Anholt E and 8.5ºC at Drogden in the Sound. The thermocline and halocline were found at 10-15 metres. At W Landskrona the halocline was particularly strong because of an increase of salinity from 8 psu to 30 psu between 10 and 15 metres. This pronounced stratification caused a worse oxygen situation than normal. Throughout the water column, from 15 metres to the bottom at 50 metres, the oxygen content was less than 2 ml/l. The oxygen saturation was 27 % at 15 metres (1.65 ml/l). The lowest saturation in the Kattegat, 64 %, was at Fladen, 20 metres. This corresponds to 3.87 ml/l.
The nitrate concentration in the Kattegat was still below the limit of detection, 0.1 µmol/l. The phosphate concentration was 0.17 µmol/l. These values were normal for the season. At W Landskrona the corresponding concentrations were 0.5 and 0.25 µmol/l respectively, which is below average.
The silicate concentration in the Kattegat was 4.5 µmol/l and in the Sound 8.7 µmol/l.

Baltic Sea

The surface water temperature varied between 7.3 and 9.6ºC, the lowest being found at the Karlsö and Fårö Deep, the highest in the Arkona Basin. The thermocline was located at a depth of 30-40 metres. In the southern Baltic the halocline was also at 30-40 metres, while in the remainder of the Baltic it was found at 50-60 metres.
The nutrient concentrations of the surface water were rather low throughout the area. Phosphate concentrations varied between 0.18 and 0.31 µmol/l. The sum of nitrite and nitrate was lower than the detection limit (<0.1 µmol/l) in almost all the eastern and western Gotland Basins and between 0.2-0.3 µmol/l in the southern Baltic. Silicate concentration was between 5.7 and 10.8 µmol/l, where the highest value was measured in the northeastern Baltic.

At BY29 it was higher than normal. The salinity at BY 29 was slightly lower than normal: 6.31 psu, and was the lowest value found on this cruise. The highest salinity,8.27 psu, was observed at BY 1.
Oxygen concentrations below 2 ml/l were found throughout the Baltic except in the Arkona Basin at depths greater than 70-80 metres. Between 175-200 metres in the Gotland Deep there was a layer rich in oxygen with a concentration of 2.3 ml/l. Below this the water was hypoxic again.
In the northern and western Baltic there was hydrogen sulphide below depths of about 90 metres. I.e. at the Landsort Deep the water mass between 90 and 440 metres contained hydrogen sulphide.

PARTICIPANTS

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Sara Johansson		-"-
Hans Olsson		-"-
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Plots

Click on the button to open appendices.
Note that this will only work when connected to Internet!

APPENDICES

- Track chart
- Table over stations, parameters and sampling depths
- Map showing bottom oxygen concentrations
- Monthly average plots for selected stations
- Profiles for selected stations