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Oceanographical Laboratory

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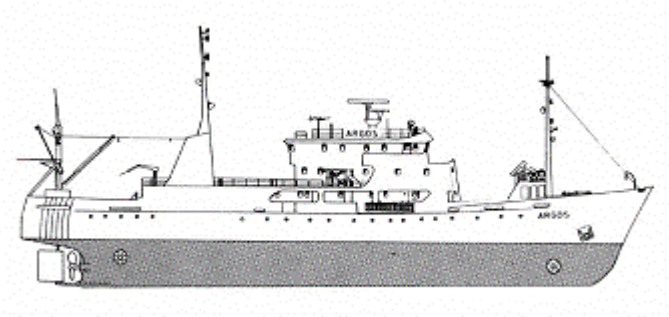
CRUISE REPORT FROM R/V ARGOS



Survey period: 2003-08-24 - 2003-08-29

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

Principal: SMHI

SUMMARY

The expedition took place within SMHI's regular marine monitoring programme and covered the Skagerrak, the Kattegat, the Sound and the Baltic Proper.

This report is based on preliminary data.

Nutrient concentrations were normal for the season in all areas.

At the coastal station Släggö, in the Skagerrak, the bottom water oxygen concentration was less than 2 ml/l. This was worse than normal.

From 70-90 metres in the Bornholm Deep (BY 5), the Norrköping Deep (BY 32) and in the eastern Baltic the oxygen concentrations were lower than 2 ml/l. Hydrogen sulphide was established at the Fårö Deep (BY 20) and in the western Baltic (BY 32).

The next expedition is scheduled for September 22 to 27.

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PRELIMINARY RESULTS

The cruise, part of SMHI´s ordinary monitoring programme, began in Göteborg August 24th and ended in Lysekil August 29th.
During the first part of the expedition there were moderate northerly winds. The weather was sunny with an air temperature just below 20°C. In the middle of the week there was a storm warning. The strong winds were northerly as well and brought chill air. The temperature decreased to 13°C. Because of the storm warning at the southern part of Gotland, it was not possible to sample at the Karlsö Deep. A safer route was chosen through the Kalmar Sound, especially when Argos was lightly fuelled. One day later the wind had abated.
Samples for the EU-project HABILE were taken at Fladen, Anholt E (twice) and BY5.

The Skagerrak

Surface water temperature varied between 17.0°C (Å17) and 18.0°C (Å 15) in the Skagerrak. At the coastal stations the temperature was 17.5ºC.
The salinity of the surface water varied from 29.5 psu at Släggö to 32.6 psu at Å 17 in the central Skagerrak. The thermocline and the halocline were found at a depth of 10-15 metres.
Nutrient concentrations in the surface layer were still low, which is normal for the time of year. Phosphate concentration varied between 0.05 and 0.14 µmol/l and silicate between 0.9 and 3.8 µmol/l. The concentration of nitrite and nitrate was below the detection limit, 0.1 µmol/l.
The oxygen concentration of the bottom water at Släggö was below 2 ml/l and corresponded to a saturation of 28 %, which is worse than normal. The Secchi depth of the Skagerrak was especialy large. At the coastal stations it was 16 metres and decreased further out in the Skagerrak.

The Kattegat and the Sound

The surface water temperatures were 18.8°C at Fladen and some tenths lower in the southern Kattegat and at W Landskrona. The measurement at Drogden showed only 13.4°C.
The surface water salinities at Anholt E and W Landskrona were higher than normal, 25.6 and 20.4 psu respectively. The thermocline and the halocline were found at a depth of about 5 metres.
Surface nutrient concentrations were low, which is normal for the season. The phosphate concentration was 0.05-0.13 µmol/l. The silicate concentration in the Sound was lower than normal, 4 µmol/l (N.B. correlation with the high salinity), while the values of the Kattegat, 1.7-2.4 µmol/l, were high but not abnormal. The sum of the nitrite and nitrate concentration was below the limit of detection, <0.1 µmol/l.
The oxygen saturation of the Kattegat was somewhat worse than normal. The lowest value (32 % saturation) was measured at Anholt E at a depth of 50 metres, and corresponded to 2.2 ml/l.

Baltic Sea

Surface water temperature varied from 18.4ºC at Arkona to 16.7°C in the Hanö Bight. The thermocline, which was strong, was located at a depth of about 20 metres in the whole Baltic area, with

exception of the southwestern part, where it was shallower. The halocline was located at a depth of 15-30 metres in the southern Baltic, and at 60-70 metres in the central parts of the Baltic Proper.
Surface nutrient concentrations were low in the whole area. The phosphate concentration was 0.06-0.12 µmol/l and the silicate concentration varied between 8 and 9 µmol/l. The sum of nitrite and nitrate was lower than the limit of detection (0.1 µmol/l).
Bottom water with an oxygen concentration below 2 ml/l was found from 90 metres at the Bornholm Deep (BY 5), from 70 metres at the Norrköping Deep (BY 32) and from 80 metres in the eastern Baltic. At the Gotland Deep (BY 15), however, it existed only as an intermediate layer down to 150 metres. From 175 metres and deeper the oxygen concentration had increased to 2.5 ml/l.
Hydrogen sulphide was measured from 125 meter at the Fårö Deep (BY 20) and from 100 metres at the Norrköping Deep (BY 32).

PARTICIPANTS

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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