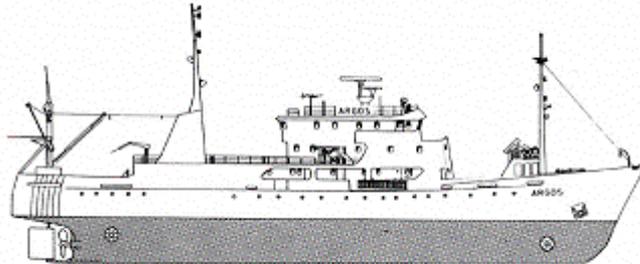


CRUISE REPORT FROM R/V ARGOS



Survey period: 2004-02-16 - 2004-02-23

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

Principal: SMHI

SUMMARY

The expedition was a part of SMHI's regular marine monitoring programme and covered the Skagerrak, Kattegat, Sound and Baltic Proper. Mapping of winter conditions was performed in the Baltic Proper.

This report is based on preliminary, part-quality controlled data.

Signs of the onset of a spring bloom were found in the Skagerrak and Kattegat.

Oxygen concentrations below 2 ml/l were found in the Baltic at depths exceeding 70 to 80 metres.

Hydrogen sulphide was found in the Northern and Western Gotland Basins at depths exceeding 90 to 125 metres.

Surface phosphate and silicate levels in the northern part of the Baltic were above normal values.

Inorganic nitrogen was lower than normal.

The next expedition is scheduled for March 22 to 26, 2004.

PRELIMINARY RESULTS

The cruise, part of SMHI's ordinary monitoring programme, began in Göteborg February 16 and ended in the same port February 23. Mapping of winter conditions was performed in the Baltic Proper. The winds during the expedition varied from weak to fresh mainly from north to west.

The Skagerrak

Surface water temperatures varied between 2 and 5°C, lowest at the coast, highest in the central parts. Surface salinity varied from 26.5 in the coastal area to 34 psu at Å16. Thermocline and halocline were found at the same depth, 5 to 15 meters, shallowest at the coast.

Phosphate concentrations in the surface layer were 0.4-0.5, nitrate+nitrite 5.46-7.0 and silicate 4.5 – 8.5 µmol/l. High concentration of nitrite and nitrate, 1.2 and 10-13 µmol/l respectively, were detected at the stations P2 and Å13, probably of southern North Sea origin. Elevated fluorescence as well as oxygen saturation, indicated the beginning of a spring bloom.

The Kattegat and the Sound

Surface water temperatures were in the range 1.8-2.6°C, which is normal for this time of the year. Surface salinity was normal for the season, ca. 25 psu (in the Sound 9.5). Thermocline and halocline were located at the same depth, 10 to 15 metres.

Phosphate and silicate showed typical winter concentrations 0.4 and 6-8 µmol/l, respectively, while the sum of nitrite and nitrate was below normal, ca. 4 µmol/l. As in the Skagerrak, enhanced fluorescence and oxygen saturation indicated the start of the spring bloom. The bottom water was well oxygenated in the whole area. At the second visit to Anholt E, at the end of the expedition nutrient concentrations were halved and the spring bloom was in full progress.

Baltic Sea

Surface water temperature varied from 1°C in the north to 3°C in the south, typical for the season. Thermocline and halocline were located at the same depth and was found at a depth of 25 to 50 metres in the southern area. In the remainder of the Baltic, stratification began between 60 to 70 metres.

Oxygen conditions were good in the bottom water of the Arkona Basin.. In the rest of the Baltic oxygen concentrations below 2 ml/l were observed at depths exceeding 70 to 80 metres.

The relatively large inflow, in the beginning of 2003 has renewed the bottom water in the Eastern Gotland Basin, where the oxygen minimum now appears between 80 and 90 meters depth. The inflowing water has now also reached the central part of the northern Gotland Basin, where the bottom water now is oxygenated while hydrogen sulphide is present at intermediate levels.

Hydrogen sulphide is found in the remaining parts of the Northern and the whole of the Western Gotland Basins at depths exceeding 90 to 125 metres.

The inflow has uplifted phosphate and silicate rich but nitrate poor bottom water, causing phosphate and silicate concentrations in the surface water of the northern parts of the Baltic to be above normal values. Phosphate and silicate concentrations were ca. 1.0 and 17 µmol/l, respectively, while concentrations of inorganic nitrogen were lower than normal, ca. 3 µmol/l. In the central as well as in the southern parts the levels of all nutrients were lower than normal.

Secchi depth varied between 10 and 15 metres, and no signs of a spring bloom were detected.

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