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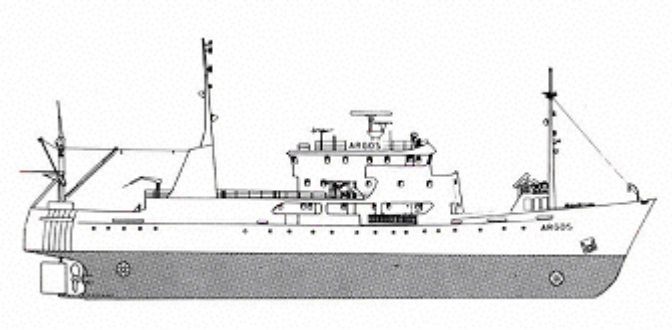
CRUISE REPORT FROM R/V ARGOS



Survey period: 2010-06-28 - 2010-07-03

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

Principal: SMHI

SUMMARY

The expedition was part of SMHI's regular marine monitoring programme and covered the Skagerrak, the Kattegat, the Sound and the Baltic Proper.
Data presented in this report have been subject to preliminary quality control procedures only.
Surface water temperatures were normal in the Skagerrak and Kattegat, but above normal in the Baltic Proper.
Nutrient concentrations were normal in the whole investigated area.
In the main part of the Baltic Proper oxygen concentrations below 2 ml/l were observed at depths exceeding 70 to 80 meters. Hydrogen sulphide was found, in the Western Gotland Basin, deeper than 70-80 meters. In the Eastern Gotland Basin hydrogen sulphide began at depths between 125 and 150 meters.
A plankton bloom was ongoing in the Baltic Proper, while it was almost over in the Skagerrak and Kattegat areas.
A more detailed report on the algae situation can be found at:
http://www.smhi.se/oceanografi/oce_info_data/reports/havmiljoarkiv/oce_reportarchive10.html

Next expedition will take place July 19- 24.

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PRELIMINARY RESULTS

The cruise, part of SMHI´s ordinary monitoring programme, began in Göteborg on June 28 and ended in the same port July 3. The winds during most of the expedition were weak to moderate. Scientists from Lund University sampled dissolved organic material with the aim was to provide origin, e.g..terrester or aquatic production.

The Skagerrak

Surface temperatures were normal for the season and varied between 14.9-17.0^{o}C. Surface salinity was normal in the main part of the area between 24 and 30 psu. However, close to the Swedish coast it was below normal, ca. 20 psu. Thermocline and halocline were well developed and found at depths between 10 and 20 metres, with the exception of the southeastern part, where the thermocline was found at 40 metres and the halocline was very weak.
Nutrient concentrations in the surface layer were normal throughout the area. Inorganic nitrogen components were consumed (< 0.10 µmol/l), phosphate concentrations varied between 0.03 to 0.04 µmol/l and silicate between 0.3 and 1.0 µmol/l.
In the western parts marked fluorescence peaks were found at a depth of 20 metres.

The Kattegat and the Sound

Also here, surface water temperatures were normal, just above 17°C. Surface salinities were somewhat below normal in the northern Kattegat, 16.6 psu, while they were normal in the central and southern parts, between 15.5 and 17.4 psu, in the Sound 8.25 psu. The halocline and thermocline were found at 10 to 20 metres depth.
Nitrogen and phosphate showed normal concentrations, inorganic nitrogen was below detection limit while phosphate, in the Kattegat varied between 0.03 and 0.05 µmol/l, in the Sound 0.18 µmol/l. Silicate concentrations were somewhat below normal in the Kattegat, just around detection limit <0.1 µmol/l, while the concentration in the Sound was about 8.25 µmol/l. A marked fluorescence peak was found a depth of 15 metres in the Sound.
The lowest oxygen concentration was recorded in an intermediate layer in the Sound, 2.50 ml/l at a depth of 20 metres, corresponding to a saturation of 37 %.

Baltic Proper

Surface temperatures were above normal for the time of year, and varied between 16.2° and 18.2°C. The halocline started at 50 to 70 metres in the central Baltic and in the Bornholm Basin, and at 40 metres in the Arkona Basin. The thermocline was found between 5 and 10 metres.
All nutrients showed, in the surface layer, normal concentrations for the season. Phosphate varied between 0.06 and 0.16 µmol/l, the sum of nitrite and nitrate under the detection limit (< 0.10 µmol/l) throughout the study area. Silicate levels varied between 7.2 and 8.7 µmol/l.
Fluorescence measurements, combined with oxygen supersaturation, indicated that an algal bloom was underway from the surface down to 10-15 metres depth, although part of the supersaturation can be explained by a fast temperature increase. Marked fluorescence peaks were found at depths between 15 and 20 metres in the Eastern and Western Gotland Basins.
In the western part of the Arkona Basin, the oxygen concentration in the bottom water was only 1.37 ml/l, while the eastern part was well oxygenated (4.5 ml/l). In the remainder of the Baltic Proper, oxygen concentrations below 2 ml/l were found below 70 to 80 metres. Hydrogen sulphide was found from 80 metres in the Western Gotland basin, while in the East Gotland Basin, hydrogen sulphide started below 125 and 150 metres.

PARTICIPANTS

Name		From
Lars Andersson	Chief scientist	SMHI Oceanographic laboratory.
Kristin Andreasson		-”-
Johan Håkansson		-"-
Sari Sipilä		-”-
Ann-Turi Skjevik		-"-
Bodil Thorstensson		-”-
Mikael Ekvall		Lund University

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