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Thorstensson

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Oceanographical Laboratory

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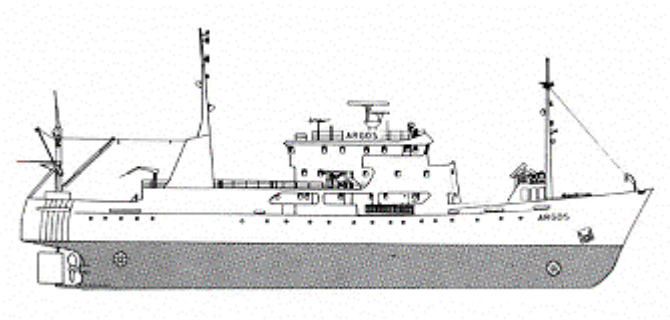
CRUISE REPORT FROM R/V ARGOS



Survey period: 2004-09-20 - 2004-09-24

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

Principal: SMHI

SUMMARY

The expedition was part of SMHI's regular marine monitoring programme and covered the Skagerrak, Kattegat, Sound and Baltic Proper.
Data presented in this report have been subject to preliminary quality control procedures only.
In the central Kattegat, oxygen concentration near the seabed was not particularly low. An oxygen concentration below 2 ml/l was measured in Skälderviken however.
In the Baltic Proper, oxygen concentrations below 2 ml/l were found at depths exceeding 60 to 70 metres. Hydrogen sulphide was found at BY15 (Gotland deep) below 230 metres, in the western Gotland Basin at depths exceeding 70 to 80 metres, and in the Bornholm Basin near the bottom at the stations BY4 and BY5 (~90 metres).
A fresh inflow of saline water was observed at BY1. A thin layer near the bottom had relatively high salinity and higher oxygen concentration.

The next expedition is scheduled for 18th – 23rd October 2004.

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PRELIMINARY RESULTS

The cruise, part of SMHI´s ordinary monitoring programme, began in Göteborg on September 20th and ended in Västervik on September 24th.
During the expedition winds were strong with direction varying between south and west. Wind speeds above 20 m/s in the Skagerrak, together with a hurricane forecast for the latter part of the week led to the decision to not sample the Å-section across the Baltic Current.

The Skagerrak

Surface water temperature was 16°C at P2 in the southern Skagerrak, which is warmer than normal. The temperature was constant down to 50 metres. Surface salinity at P2 was higher than normal, 32.6 psu. There was no thermo- or halocline. At Släggö, near the coast mid way up the Skagerrak, surface water temperature was 15.3°C and surface salinity 27,3 psu. This is within normal limits. Phosphate concentration at P2 was 0.34µmol/l, which was higher than normal. Otherwise nutrient concentrations in the surface were normal for the season: nitrate 0.1-0.2 µmol/l; silicate 0.9-1.7 µmol/l. Both the vertical phytoplankton trawl and chlorophyll fluorescence indicated an algal bloom at Släggö.

The Kattegat and the Sound

Surface water temperatures were fractionally more than 15°C in the Kattegat Proper and between 14 and 14.5°C in the Sound. Surface salinities decreased from 25 psu in the northern Kattegat to 18.6 psu at West Landskrona. The salinity in the Sound was higher than normal. The thermocline and halocline began at 15 metres at Fladen and 7 metres in the Sound.

Phosphate concentrations in the surface water varied between 0.07 and 0.18 µmol/l, nitrate concentrations between < 0.1 and 0.3µmol/l. The lower nutrient concentrations were sampled in the southern Kattegat. Silicate concentration was about 3µmol/l in the Kattegat and 7-8 µmol/l in the Sound. The chlorophyll fluorescence was relative low without pronounced maxima.
The bottom water oxygen concentration in the Sound was 2.6 ml/l, which corresponds to 42% saturation. In the Kattegat, concentrations were generally above 3 ml/l. The lowest value was 1.4 ml/l, measured in Skälderviken.
No CTD cast was taken at Anholt East due to a hydraulic failure.

Baltic Proper

Surface water temperature varied between 12.9 and 15.0°C, which is typical for the time of year. This temperature extended down to 20 - 30 metres. The thermocline was between 20 and 40 metres deep. In the eastern Gotland Basin the thermocline was pronounced, with a change of 10°C in 10 metres. The halocline began at 20 to 40 metres in the southern Baltic and at 50 to 60 metres in the remainder of the Baltic.
Surface phosphate concentrations were higher than normal: 0.15-0.40µmol/l.Nitrate concentration was normal, below the detection limit of 0.1 µmol/l. Surface silicate concentrations were between 8.4 and 10.5µmol/l. These were higher than normal for the season in the western and eastern Gotland Basin and normal in the southern Baltic
At BY1 there was a thin bottom layer several metres wide, which had a higher oxygen content than normal and had a salinity of 18 psu, indicative of a salt water inflow. Consultation with SMHI's Oceanographic Laboratory confirmed that an inflow to the Baltic had occurred between the 15th and 23rd of August.
Oxygen concentrations below 2 ml/l were measured at depths exceeding 60 to 70 metres.
Hydrogen sulphide was found at BY15 (Gotland deep) below 230 metres, in the western Gotland Basin at depths exceeding 70 to 80 metres, and in the Bornholm Basin at the bottom at stations BY4 and BY5 (~90 metres deep).

PARTICIPANTS

Name		From
Bodil Thorstensson	Chief scientist	SMHI Oceanographic lab.
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Johan Håkansson		-”- -”-
Sari Sipilä		-”- -”-
Ann-Turi Skjevik		-”- -”-

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
- On way data of temperature and salinity from a depth of ca. 4 m.
- Monthly average plots for selected stations
- Profiles for selected stations