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Oceanographical Laboratory

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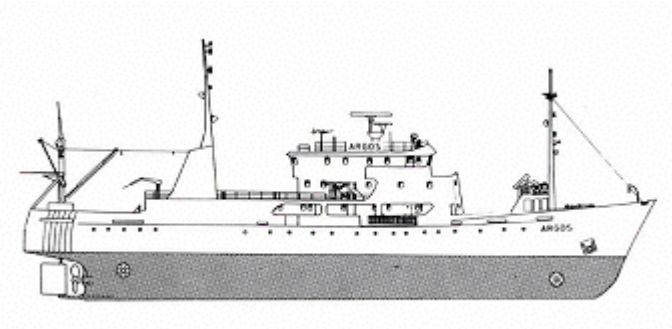
CRUISE REPORT FROM R/V ARGOS



Survey period: 2006-03-26 - 2006-03-31

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.
Data presented in this report have been subject to preliminary quality control procedures only.
Surface water temperatures were lower than normal throughout the study area.
Phosphate and silicate values in the surface water of the southern Baltic remain higher than normal.
Nitrate concentration of the Arkona Basin was at the limit of detection. This is lower than normal.
Phosphate and silicate concentrations in the Kattegat and Sound were also showed higher than normal (for the season). The low nitrate concentration was normal. In the Skagerrak, phosphate and silicate concentrations were higher than normal.
In the Baltic Proper, oxygen concentrations below 2 ml/l were found at depths exceeding 70 to 90 metres. Hydrogen sulphide was found in the bottom waters of the Eastern and Western Gotland Basins from 125-145 meters.
In the Baltic, plankton activity was low. No real algal bloom could be seen in the Kattegat. In central Skagerrak high chlorophyll fluorescence was measured at a depth of 20 meters.

The next expedition is scheduled for April 23 to April 29, 2006.

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PRELIMINARY RESULTS

The cruise, part of SMHI´s ordinary monitoring programme, began in Karlskrona on March 26th and ended in Göteborg on March 31st. During the first days the winds were moderate to fresh. For the remainder of the expedition they were moderate or weak. Wind direction varied between southeast, south and southwest. The weather was sometimes foggy.
Because of a complaint from Yrkesfiskarna (professional fishermen's association) of poor fishing in the vicinity of the Chinese ship, the Tu Shan Hai, which recently sank north of Bornholm, the water column downstream of the wreck was sampled from the surface to the bottom at 66 metres. Reports said the ship was loaded with potash (Potassium Chloride, KCl). The result of sampling showed high nitrite concentrations from 50 metres to the bottom. The remaining nutrients, pH, oxygen and salinity were normal.

The Skagerrak

Surface water temperatures were below normal in almost all the investigated area. They varied between 1.3 (Släggö) and 3.4°C (P2). Surface salinities were relatively low and varied between 22.9 to 28.5 psu, lowest in the northeast, highest in the central Skagerrak. The halocline and thermocline was found at a depth of 10 metres.
Phosphate and silicate concentrations (0.2-0.4 µmol/l and 2.6-4.8 µmol/l, respectively) were higher than normal, except for at Släggö,. Nitrate concentrations were normal, at between 0.9 and 3.6 µmol/l. Chlorophyll fluorescence was high in central Skagerrak at a depth of 20 metres.

The Kattegat and the Sound

In the Kattegat, surface water temperatures were also below normal, around 1.9 °C, and in the Sound 2.4°C. Surface salinity in the Kattegat was 19-20 psu and 13 psu in the Sound, suggesting inflow towards the Baltic. As in the Skagerrak, thermo- and halocline were at 10 metres.
Phosphate and silicate concentrations of the surface layer were higher than normal for the season in the Kattegat and in the Sound. Phosphate concentrations were 0.2 and 0.4 µmol/l respectively and silicate 5 and 10 µmol/l, respectively. Nitrate was near the limit of detection (<0.10 µmol/l) and somewhat higher in the Sound, 0.4 µmol/l.
Bottom water was well oxygenated. The lowest oxygen value in the bottom water was measured at W Landskrona in the Sound, 5.8 ml/l corresponding to a saturation of 81%.

Baltic Proper

Surface water temperature varied between 0.8 (NW) and 1.6°C (SE). This is slightly below normal for the season. Thermocline and halocline were found at the same depth. In the deeper basins, stratification began at 50 to 70 metres. Surface phosphate concentrations in the southern parts were significantly higher than normal, and slightly higher than normal in the Gotland Deep. Phosphate concentration varied between 0.5 and 0.7 µmol/l. Silicate concentrations were also above normal in the southern parts, and close to normal in the rest of the Baltic. They varied between 11 and 15 µmol/l. Nitrate concentrations in the surface were normal in the western and eastern Gotland Basins, between 2.5 and 3 µmol/l. In the Bornholm Deep (southern Baltic) the nitrate concentration was 1.4 µmol/l and decreased towards the west, to be lower than normal at Arkona with a concentration near the limit of detection, 0.1 µmol/l.
In the Arkona Basin, oxygen conditions were good. In the remainder of the Baltic Proper oxygen concentrations below 2 ml/l were found at depths exceeding 70 to 90 metres. Hydrogen sulphide was found in the deep waters of the Eastern and Western Gotland Basins from 125-145 metres.
Phytoplankton activity was very low and Secchi depths up to 11 metres were measured in the western and southeastern parts. In the Arkona basin, Secchi depths were 7-8 metres and there was some chlorophyll fluorescence.

PARTICIPANTS

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Bodil Thorstensson	Chief scientist	SMHI Oceanographic lab.
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Sari Sipilä		-“-

APPENDICES

Plots

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

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