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Oceanographical Laboratory

2005-11-18
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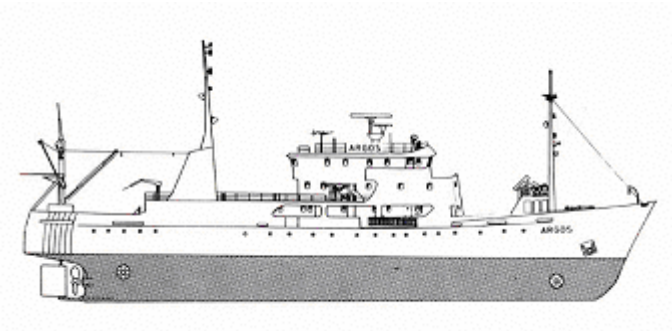
CRUISE REPORT FROM R/V ARGOS



Survey period: 2005-11-14 - 2005-11-18

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

Principal: SMHI

SUMMARY

The expedition took place within SMHI's regular marine monitoring programme and covered the Skagerrak (one station only due to gales), Kattegat, Sound and Baltic Proper.
Data presented in this report have been subject to preliminary quality control procedures only.
In the weather forecast there was a strom warning, so no sampling was performed in a greater part of the Skagerrak.
Surface water temperatures were normal, except in the southern Skagerrak, Kattegat and the Sound, where the temperature was some degrees higher than normal. The concentrations of phosphate and silicate in the southern Skagerrak were higher than normal. High ammonia values were found there as well.
In the Arkona and Bornholm Basins, phosphate- and silicate concentrations in the surface water remained high. In the Sound concentrations of phosphate and silicate were lower than normal.
Oxygen concentrations below 2 ml/l were observed in the bottom water at depths exceeding 60 to 70 metres in southern Baltic and in the Karlsö Deep, exceeding 90 metres in the northern part and 80 metres in the eastern Baltic Proper. Hydrogen sulphide was found below 80 metres in the Bornholm Basin, from 60 metres in the Hanö Bight, from 80 to 90 metres in the western Gotland Basin, and from 100 to 150 metres in the eastern and northern Gotland Basin.

The next expedition is scheduled for December 4 to 15, 2005.

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PRELIMINARY RESULTS

The cruise, part of SMHI´s ordinary monitoring programme, began in Gothenburg on November 14th and ended in Karlskrona on November 18th. In the weather forecast for the Skagerrak the first day there was a gale warning, so sampling was done only at station P2. The other parts of the Skagerrak were cancelled for the duration of the expedition. The same weather affected the CTD-station at the Lasö-E buoy, as the CTD is unmanageable when the wave height exceeds 5 metres. No CTD observations were made until Sound. On the first day the wind was 20 m/s from WSW. The next day the wind speed varied between 10-16 m/s. During the latter part of the expedition the wind came from the north and moderated.

The Skagerrak

Surface water temperature was higher than normal, 12.4 °C at P2. The thermocline began at 40 metres near the coast.
The nitrate+nitrite concentration of the surface water was 1.5µmol/, while the nitrite concentration was 0.3 µmol/l. Ammonia was found with high concentrations throughout the water column, about 1-2 µmol/l. Phosphate- and silicate concentrations at P2 near the coast were higher than normal, 0.7 µmol/l and 5.5 µmol/l respectively.

The Kattegat and the Sound

Surface water temperatures varied between 10.5 and 11 °C, which was some degrees higher than normal. The thermo- and halocline in the Sound was found at 7-8 metres and some metres deeper in the Kattegat. In the Sound the salinity of surface water was higher than normal at 23 psu.
The phosphate- and silicate concentrations in the Sound had decreased to 0.2 and 3.2 µmol/l, respectively. This is lower than normal rather than higher. In the Kattegat the corresponding values were 0.13-0.25 µmol/l for phosphate and 2.0-3.1 µmol/l for silicate.
Anholt E had the lowest nitrate concentration in surface water, 0.2µmol/l and Fladen the highest at 0.7µmol/l.
The lowest bottom water oxygen concentration was 4.3 ml/l found at W Landskrona. This corresponds to a saturation of 71%. This is a higher saturation than normal.

Baltic Proper

Surface water temperatures were within normal variability for the latest decade and varied between 6.1 °C at Landsort and 10.5°C at Arkona. The thermo- and halocline in the southern and western Baltic Proper began at 25-35 metres, in the eastern and northern Gotland Basin at 40 to 60 metres, except at Landsort where it was just 10 metres from surface.
In the Arkona and Bornholm Basins the phosphate and silicate concentrations were still high, about 0.6-0.7 and 12.5–15 µmol/l respectively. In the remainder of the area the surface nutrient concentrations were normal for the season i.e. phosphate 0.2-0.6 and silicate 4.8 – 14 µmol/l. The concentrations of nitrite and nitrate in the surface water varied between 0.5-1.5µmol/l throughout the Baltic Proper. Landsort Deep had the highest concentrations of all these nutrients outside of the southern Baltic Proper. Secchi depths of 5 – 7.5 metres were measured at a few positions.
Oxygen concentrations below 2 ml/l were found at depths exceeding 60-70 metres in the southern Baltic Proper and in the Karlsö Deep, from 90 metres in the northern and from 80 metres in the remainder of the Baltic Proper. Hydrogen sulphide was found from 80 metres in the Bornholm Basin, from 60 metres in the Hanö Bight, deeper than 100-150 metres in the eastern and northern Gotland Basins and from 80 to 90 metres in the western Gotland Basin.

PARTICIPANTS

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Bodil Thorstensson	Chief scientist	SMHI Oceanographic lab.
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Hans Olsson		-”-
Sari Sipilä		-’’-
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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