Bengt Yhlen

Swedish Meteorological and Hydrological Institute
Oceanographical Laboratory

990525
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CRUISE REPORT FROM R/V ARGOS

Survey period: 990516-990521

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

Principal: SMHI

SUMMARY

The expedition was performed within SMHIs regular marine monitoring program. Surface water temperatures as well as all nutrient concentrations were normal for the season in all areas. In the Skagerrak and in the Kattegat, the spring bloom was over. An ongoing spring bloom was observed in the northwestern part of the Baltic.
Oxygen concentrations below 2 ml/l were found in the deep water at depths exceeding 70 metres in the whole Baltic Proper. Hydrogen sulphide was detected from 87 meters in the Bornholm Basin and in the eastern Gotland Basin, at depths greater than 140 to 150 meters.

A detailed algal situation report is available on http://www.smhi.se/sgn0102/nodc/reports/

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PRELIMINARY RESULTS

The expedition, which was a part of SMHI's ordinary monitoring programme, began and ended in Göteborg. A part from the ordinary work E. Sahlsten, Göteborg University, collected samples for quantifying algae cells (*Micromonas pusilla*) and algae virus.
A high pressure during the expedition gave weak winds with varying direction.

The Skagerrak

Surface water temperatures was highest (9.3°C) in the eastern part and lowest (7.9°C) in the central part of Skagerrak, which is normal for the season. A pronounced halocline was situated at 10 meters depth in the eastern part. In the central parts the surface salinity was high and the halocline thereby weaker. The nutrient concentrations in the surface water were normal for the season in the whole area. The phosphate concentration was about 0.1 µmol/l. The silicate concentrations varied between about 2.7 µmol/l in the low salinity water in the east (P2 and Å16) and 1.4 µmol/l in the central part (M6). The silicate concentrations outside the Jutlandia coast (HS5) were below the detection limit (0.2 µmol/l). The concentrations of inorganic nitrogen varied between 1 and 3 µmol/l with the highest concentrations in the high saline water. The spring bloom had ended. High chlorophyll fluorescence was only observed at depths greater than 30m in at station P2 and 20m at station HS5.

The Kattegat and the Sound

Surface water temperatures were normal for the season, almost 10°C. During the expedition the surface temperature raised with 2°C at station Anholt E. The halocline was situated at 10-15m depth. The nitrate concentrations were below detection limit (0.1 µmol/l) in the eastern Kattegat. The other nutrient concentrations were low, which is normal for the season. The spring bloom had ended. Fluorescence maximum was recorded in the halocline, that is, in the boundary between the nutrient rich bottom water and the surface water.
The lowest oxygen concentration, 4.7 ml/l corresponding to saturation 66%, was measured at station W Landskrona in the Sound.

The Baltic Sea

Surface water temperatures varied between 6 and 8°C; coldest in the eastern Gotland Basin, which is normal. The halocline was situated at about 40m in the Arkona Basin, about 60m in the Bornholm Basin and about 70m in the other parts. The spring bloom had ended in the whole area except in the north western part (BY31, BY32) where small fluorescence peaks was registered in the surface water and with an oxygen saturation exceeding 120%.
All nutrient concentrations in the surface water showed normal values for the season. The nitrate concentration was below the detection limit down to the halocline in the whole area. The phosphate concentrations were about 0.2 µmol/l. The silicate concentrations varied between 5 and 10 µmol/l with the lowest concentrations in the northern part where the spring bloom still was going on. The oxygen concentration was below 2 ml/l at depths greater than 70m in the whole Baltic. Hydrogen suphide was once again observed in the Bornholm Basin at depths greater than 87m and in the Gotland Basin at depths greater than 140m and 150m.

PARTICIPANTS

Name	From
Bengt Yhlen, Chief scientist	SMHI Oceanographical lab.
Tuulikki Jaako	- ″ -
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Bodil Thorstensson	- ″ -
Jorge Valderrama	- ″ -
Elisabeth Sahlsten	Göteborg University

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
- Vertical profiles for selected stations