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Oceanographical Laboratory

2003-04-12
Dnr: Mg-2003-064

CRUISE REPORT FROM R/V ARGOS

Survey period: 2003-04-07 - 2003-04-12

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

Principal: SMHI

SUMMARY

The expedition took place within SMHI's regular marine monitoring programme and covered the Skagerrak, the Kattegat, the Sound and the Baltic Proper.

This report is based on preliminary data.

Nutrient concentrations were normal for the season in most areas with the exception of high values of phosphate and silicate in the eastern Baltic.
After the latest inflow to the Baltic in January, the deep water of the Arkona Basin, Bornholm Basin and the Hanö Bight was now well oxygenated. A thin layer of oxygen rich water was also detected in the south-eastern Baltic Proper. Hydrogen sulphide was present in the Eastern and Western Gotland Basins.

The next expedition is scheduled for May, 5 to 10.

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PRELIMINARY RESULTS

The cruise, part of SMHI´s ordinary monitoring programme, began in Göteborg April 7 and ended in Göteborg April 12.
The weather started with sunshine and weak northern winds. Air temperature was only about 3°C. In the middle of the week a strong wind from the north came suddenly. This caused sea sickness and samples from the Bornholm Deep were treated by united efforts. During the later part of the expedition there was a rather moderate wind from the south.
Samples for the EU-project HABILE were taken at Fladen, Anholt E (2 times) and BY5.
Kristin Andreasson from the Institute of Botany at the University of Gothenburg worked onboard with her incubation experiment: A study of the effect on marine micro algae of UVB radiation.

The Skagerrak

The surface water temperature varied from 4.1°C at Släggö in the coastal area to about 5°C in the central Skagerrak. The halocline was located at a depth of 5-20 metres. The salinity of the surface water was higher than normal, 32.4 psu at Å 13.
The nutrient concentrations in the surface layer were normal for the season, phosphate 0.07-0.2 µmol/l, nitrite+nitrate 4-7 µmol/l (at Å 17 the conc. was 0.25), and silicate 0.2-0.5 µmol/l (at Släggö a higher silicate conc. was measured, 1.6 µmol/l). The Secchi depth was 9 metres with exception of Å17, where it was just 4 metres.

The Kattegat and the Sound

The surface water temperature was between 3.3 (Drogden) and 3.9°C in the whole area. The halocline was at about 10 metres. The surface salinity at Fladen was >30 psu, which is higher than normal. Here the surface layer had a higher concentration of nitrite+nitrate than normal, 6-7 µmol/l, while the concentration at the other stations was lower than the detection limit, 0.1 µmol/l. The phosphate values in the Kattegat were 0.03-.04 and in the Sound 0.12 µmol/l. The silicate concentration was increasing to the south, 0.2 µmol/l at Fladen and 2.6 in the Sound.
At Anholt E the saturation of oxygen of the bottom water was 80%. This represents the lowest value in the area, 5.97 ml/l.

Baltic Sea

The surface water temperature varied from 0.8°C at Fårö to 3.2°C in Arkona. The halocline was located at a depth of 20 metres in Arkona and at 40-50 metres in the Bornholm Basin, while it in the central parts was at a depth of 70-75 metres.
In the Hanö Bight and in the Arkona- and Bornholm Basins the nutrients were low. The value of nitrite+nitrate was near the limit of detection, 0.1 µmol/l, that of phosphate 0.1-0.3 µmol/l and that of silicate 3-8 µmol/l. In the eastern part of the Baltic the concentration of nutrients in the surface water was very much higher. There was no supersaturation of oxygen. The concentration of nitrite+nitrate was 2.4-3 µmol/l, phosphate about 0.6 µmol/l and silicate 13-15 µmol/l. The values of phosphate and silicate were higher than normal. The western part of the Baltic had lower concentration of nutrients than the eastern part.

East and west of Gotland the bottom water from 80-90 metres had an oxygen concentration lower than 2 ml/l. Hydrogen sulphide was established at depths from 100-145 metres and down to the bottom. At the bottom (90 metres) of BCS III-10 in the south-eastern Baltic there was a thin layer of higher oxygen concentration, 5.05 ml/l and 80% saturation. Above this at 80 metres the oxygen saturation was only 32% and the concentration 2.7 ml/l. In the Hanö Bight and in the Arkona- and Bornholm Basins the oxygen saturation was good.

PARTICIPANTS

Name	From
Bodil Thorstensson, chief scientist	SMHI Oceanographical lab.
Jonas Henriksen	- ″ -
Sara Kollberg	- ″ -
Eva Nyberg	- ″ -
Hans Olsson	- ″ -
Kristin Andreasson	Institute of Botany, University of Gothenburg

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