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2002-03-23
Dnr: Sh-2002-072

CRUISE REPORT FROM R/V ARGOS

Survey period: 2002-03-17 - 2002-03-23

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. Mapping of winter nutrient conditions in the Baltic Proper was performed.
The temperature as well as nutrient conditions in the surface layer were mostly normal for the season in all areas.
The positive effect of the earlier inflows through the Sound was not any longer to be seen in the eastern Gotland Basin. The concentration of hydrogen sulphide was high. Oxygen concentrations below 2 ml/l, were found at depths from 70 - 80 metres in the western Gotland Basin and in the southeastern Baltic, from 80 metres in the eastern Baltic and in the Bornholm Basin and from 90 metres in the northern Baltic.
Hydrogen sulphide was found from 90 metres at the Karlsö Deep, from 125 metres in the eastern and northeastern Baltic and in the northern part of the Baltic from 150 metres.

SMHI

PRELIMINARY RESULTS

The cruise, part of the SMHI ordinary monitoring programme, began in Karlskrona on the 17th of March and ended in Göteborg the 23d of the same month. There was calm weather in the beginning with weak winds from the south. There was fog alternating with a little sunshine. After some days we had a gale from the west in the central to the southeastern Baltic.
A great deal of the programme with the mapping of winter nutrient conditions in the Baltic was remaining from the expedition in February, because this was mostly blown away. This programme was in return performed during this expedition.
Sampling for the EU-project HABILE was carried out at Fladen and at Anholt E.

The Skagerrak

The surface water temperatures varied between 3.7°C and 4.4°C, the lowest near the coast and the highest in the central Skagerrak. The halocline was near the surface at depths less than 10 metres. The nutrients of the surface layer were normal. The phosphate concentrations were 0.1-0.2 µmol/l, nitrate 1.7-3.8 µmol/l and silicate, 1.5-4.2 µmol/l.The station Släggö had a differing higher nitrate and silicate concentration, 7.8 and 11.3 respectively. The spring bloom of phytoplankton had started at all stations in the Skagerrak. Å17 in the central Skagerrak had the highest maximum of fluorescence together with the highest super saturation of oxygen.

The Kattegat and the Sound

Surface water temperatures varied between 3.8 and 4.3°C.The lowest temperature was measured in the Sound. The water here was not stratified. In the Kattegat the halocline was at a depth of 5 metres and a weak thermocline at 15 m.
The nutrient concentrations of the surface water were almost normal for the season. The phosphate was 0.1-0.4 µmol/l, the nitrate varied between 0.1 and about 4 µmol/l, silicate between 2.5 and 10 µmol/l. The lowest concentrations were measured in the surface water at Anholt E, where also a high peak of fluorescence showed that there was a bloom of phytoplankton.
The bottom water was well oxygenated and the surface water had a super saturation of oxygen.

The Baltic Sea

Surface water temperatures varied between 1.8°C and 3.6°C, which is normal of the season. The lowest temperature was measured in the northeastern Baltic and the highest at Arkona in the southern Baltic. The thermocline and the halocline were in the Arkona Basin at 35 metres, in the western and southern Baltic at 50 metres, in the northern at 60 m and in the eastern at 60-70 m.
The phosphate concentration was somewhat higher than normal in the eastern and northern Baltic. At the stations far away in the northeastern Baltic, BY27 and BY28, the nitrate concentration was much higher than in the rest of the Baltic, 6 µmol/l. Otherwise the nutrient concentrations were normal of the season: phosphate 0.6-0.7 µmol/l, nitrate 2.8-4.4 µmol/l and silicate 12-16 µmol/l.

The nutrients in the Arkona Basin were somewhat lower, where a spring bloom of phytoplankton had started. This could be seen by fluorescence measurements and by sampling with a plankton net. Oxygen concentrations beneath 2 ml/l were at depths from 70-80 metres in the western and southeastern Baltic, from 80 m in the Bornholm Basin and in the eastern Baltic and from 90 m in the northern Baltic.
Hydrogen sulphide was found from 90 metres at the Karlsö Deep, from 125 m in the eastern and northeastern Baltic and from 150 metres in the northern Baltic. The positive effect of the oxygen situation these earlier inflows of high saline water through the Sound had to the bottom water of the Baltic as far as the Gotland Deep, now was gone. At the Gotland Deep hydrogen sulphide was measured between 150-240 metres in concentrations of 50-85 µmol/l. In the Bornholm Basin there was no hydrogen sulphide.

PARTICIPANTS

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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