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Report from SMHIs monitoring cruise with KBV 001 Poseidon

Survey period: 2013-01-28 - 2013-02-04
Survey area: The Skagerrak, Kattegat, Sound and the Baltic Proper.
Principal: SMHI and the Swedish Agency for Marine and Water Management

SUMMARY

The expedition was part of the Swedish regular marine monitoring programme and covered the Skagerrak, the Kattegat, the Sound and the Baltic Proper. The winter pool of nutrients was mapped in the Kattegat and the Sound.
Data presented in this report have been subject to preliminary quality control procedures only.

Surface water temperatures were somewhat below normal in Skagerrak, otherwise typical for the season. Concentrations of inorganic nitrogen were normal in all areas. Phosphate as well as silicate showed values above normal in Skagerrak and in the southern Baltic Proper, in all other areas concentrations were normal.

The bottom water in the Arkona Basin was well oxygenated. Oxygen concentrations below 2 ml/l were found at depths exceeding 70 to 80 metres in the whole area.
Hydrogen sulphide was measured in the eastern, western and northern Gotland Basins deeper than 100 to 150 metres.

The next expedition will take place in mid-February and will cover the Baltic Proper.

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PRELIMINARY RESULTS

The cruise, part of the Swedish regular marine monitoring programme, began in Göteborg on January 28th and ended in the same port February 4th. Winter nutrient conditions were mapped in the Kattegat and the Sound. Winds during the expedition were moderate to strong, mainly from west, during the last two days the wind abated. Air temperature varied from -1°C to ca. 5°C.

The Skagerrak

Surface water temperatures were below normal and varied between 1.7 and 3.2°C. Also, surface salinities were lower than normal, varying between 21.7 psu in the southeast to 28.3 psu in the more westerly parts. The halocline and thermocline coincided at depths of 10 to 20 metres along the Swedish coast, while they were weakly developed in the central parts.
Phosphate concentrations in the surface water were above mean for January, ca. 0.7 µmol/l. The sum of nitrite + nitrate showed typical values for the season, between 5.5 and 6 µmol/l. Concentrations of silicate, around 13 µmol/l, were clearly elevated, compared to mean for the season, in the whole area.
Plankton activity was low.

The Kattegat and the Sound

Surface water temperatures were normal, varying from 0 to just above 2°C. Surface salinity, which was lower than normal, increased from ca. 15 psu in the south to 21.8 psu in the north. In the Sound surface salinity was just below 14 psu. The halocline and thermocline were both found at 10 to 20 metres depth in the Kattegat, and between 5 and 10 metres in the Sound.
Phosphate as well as silicate concentrations in the surface layer were higher than normal. Phosphate varied between 0.7 and 0.8 µmol/l, while the concentrations of silicate were between 14 and 18 µmol/l. Inorganic nitrogen showed typical winter values, between 5 and 6 µmol/l.
Oxygen conditions in the deep water were good. The lowest values in the deep water were found in the south eastern parts. The lowest concentration measured was found at a depth of 24 metres, at the station Kullen, in the southernmost part of Kattegatt, 4.7 ml/l, corresponding to a saturation of about 70%.

Baltic Proper

Surface water temperatures were normal for the season and varied between 1.5 and 2.9°C. Surface salinity, also normal, varied from ca. 6.3 psu in the north to 7.8 psu in the southwest. The thermocline and halocline coincided and began at a depth of 30 to 35 metres in the Arkona Basin and at 50 to 70 metres in the remaining areas.
Concentrations of nitrite+nitrate in the surface layer were normal, between 2.4 and 4.3 µmol/l. Surface phosphate and silicate were somewhat elevated in the Arkona- and Bornholm Basins, ca. 0.75 µmol/l and 14-16 µmol/l, respectively. In the remaining areas concentrations were normal, about 0.6 µmol/l for phosphate and between 10 and 15 µmol/l for silicate.
The bottom water of the Arkona Basin was well oxygenated, with concentrations of ca. 6.5 ml/l. Oxygen concentrations below 2 ml/l were measured at depths exceeding 70 to 80 metres in the whole area.
Hydrogen sulphide was measured at depths greater than 125 meters in the Eastern- and Western Gotland Basins, and at depths exceeding 100 to 150 metres in the Northern Basin.
During the expedition an inflow, trough the Sound, of ca. 15 km^3 to the Baltic took place. This inflow will probably only influence the Arkona and possibly the Bornholm Basin.

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PARTICIPANTS

Name		From
Anna-Kerstin Thell	Cruise leader	SMHI Oceanographic laboratory
Lars Andersson		- ” -
Sari Sipilä		- ” -
Bodil Thorstensson		- ” -
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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