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Report from SMHIs monitoring cruise with KBV001 Poseidon

Survey period: 2013-06-26 - 2013-06-29
Survey area: Skagerrak, Kattegat and the south-western part of 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 Skagerrak, Kattegat and the south-western part of the Baltic Proper.
Data presented in this report have been subject to preliminary quality control procedures only.

Surface water temperatures were normal for the season in all investigated areas. All nutrients, in the surface layer, showed normal values for the season, except for phosphate which had concentrations below typical values for the summer season in the southwestern part of the Baltic Proper.
Oxygen concentrations in the bottom water of the Arkona Basin were around 4 ml/l. In the Bornholm Basin oxygen values had decreased since the last visit and were now just below 2 ml/l. In the Hanö Bight oxygen concentrations were 0.7 ml/l.

The next expedition is planned to take place July 15-18.

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PRELIMINARY RESULTS

The cruise began in Göteborg on June 26th and ended in the same port on the 29th.
Winds during the beginning of the expedition were moderate to fresh, mainly from north. Thereafter the wind abated and turned to south. Air temperature varied from 12 to 16 °C.

The Skagerrak

The temperatures in the surface water were normal for the season and varied from 13.5 to 16.8 °C, highest close to the coast. Surface salinities were between 22 and 31psu, at P2 in the south eastern part below normal. Halocline and thermocline were found at depths between 5 and 10 metres.
In the surface layer, all nutrients showed normal values for the summer season. Phosphate concentrations were about 0.05 µmol/l. The sum of nitrite + nitrate was below detection limit (0.10 µmol/l) in the whole area and the concentrations of silicate were varied between 0.1-0.8 µmol/l, highest in the outer and southeastern Skagerrak. Unusual high concentrations of ammonium were found at depths exceeding 100 meters in the central Skagerrak.
Plankton activity, based on fluorescence measurements and oxygen saturation, were found at intermediate depths. The low silicate concentrations indicate that it could be blooms of diatoms.

The Kattegat and the Sound

Surface water temperatures were about 16.5°C, normal for the season. In Kattegat, surface salinity increased from 18.5 psu in the south to ca. 20 psu in the north. In the Sound surface salinity was 11 psu. Thermocline and halocline were found at 15 meters depth in the whole area.
All nutrients showed, for the season, normal values in the surface water. Inorganic nitrogen was below the detection limit (0.10 µmol/l), phosphate concentrations were around 0.07 µmol/l, while the silicate concentration varied between 1.1 to 1.6 µmol/l. In the Sound the phosphate concentration was 0.25 µmol/l and silicate 7.1 µmol/l.
Oxygen conditions in the deep water were good. The lowest values were found in the bottom water at the station Anholt E in the southern Kattegat, 4.7 ml/l which correspond to an oxygen saturation just below 70%.
Some plankton activity was registered at 15 meters depth in Kattegat, but otherwise the activity was relatively low.

The southern part of the Baltic Proper

A distinct thermocline could be found at 10-20 meters depth. The temperature in the surface layer was about 15°C, which is normal for the season. The surface salinity was also normal, about 7.2 psu. The halocline was found at about 40 meters depth in Arkona, at about 60 meters in the Bornholm Basin and Hanö Bight.
Phosphate concentrations varied between 0.08 and 0.11, which is less than it has been over the last couple of years during this season. Inorganic nitrogen concentration was below the detection limit (0.10 µmol/l) in the surface water at all stations. The concentrations of silicate varied between 7.8 and 9.2 µmol/l , which is normal for the season.
The oxygen concentrations in the bottom water in the Arkona basin were about 4 ml/l. In the Bornholm Basin the oxygen had decreased since the last measurement and was now just below 2 ml/l, in the Hanö Bight it was 0.7 ml/l.
Some plankton activity, based on fluorescence and oxygen saturation, was ongoing in the surface layer in the Arkona Basin and at intermediate depths, 10 to 20 meters, in the Bornholm Basin and Hanö Bight. Cyanobacteria were found in the surface layer, but no surface accumulations were seen.

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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