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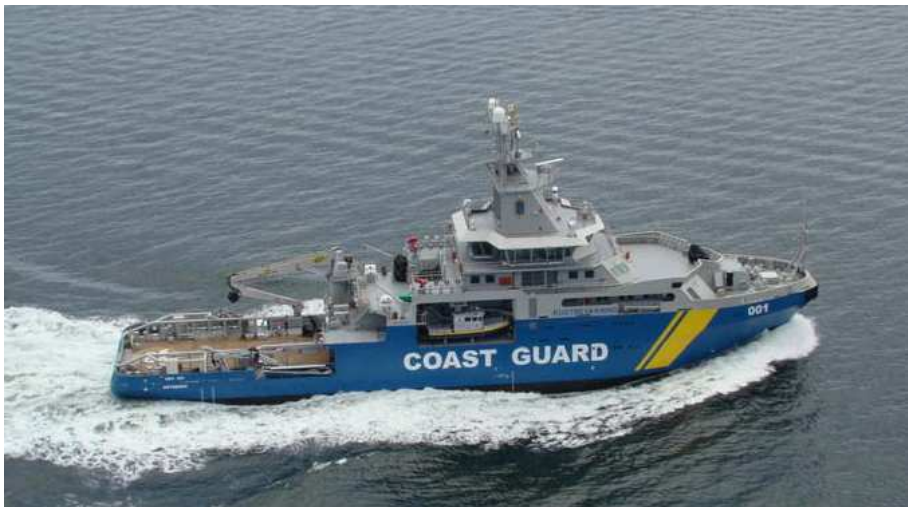
Report from the SMHI monitoring cruise with KBV001 Poseidon



Survey period: 2013-09-22 - 2013-09-25
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 the Skagerrak, the 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 were at low concentrations, which is normal for the season. The oxygen conditions in the Kattegat bottom water were good, while they were relatively poor in the southern Baltic Sea. In the Bornholm Basin and the Hanö Bight the oxygen conditions had deteriorated since the former expedition, though no hydrogen sulphide was present.

The next expedition is planned to take place October 6-10, then the same area will be investigated.

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SMHI

PRELIMINARY RESULTS

The cruise began in Göteborg on September 22th and ended in the same port on September 25th. Winds in the beginning of the expedition were moderate and decreased to weak in the end, mainly from the northwest. The air temperature varied between 11 and 15°C.

The Skagerrak

The surface temperatures were at normal levels, between 15.4 and 16.0°C, highest close to the coast. Surface salinities showed highest levels in the south, 32 psu and lowest levels close to the coast, 24 psu. The halocline was located between 5 and 20 metres depth in the area, except in the south were it was weak. The thermocline was located at 20 to 40 metres depth in the western parts, while it was situated deeper, 50 to 80 meters, in the other parts of the area.
In the surface layer all nutrients exhibited normal concentrations for the season. Phosphate concentrations varied between 0.08 and 0.14 µmol/l and the sum of nitrite plus nitrate were below the detection limit, 0.10 µmol/l. The silicate concentrations varied from 1.2 to 2.2 µmol/l, highest close to the coast.
The plankton activity, based on fluorescence measurements, was rather low, and could mainly be noticed at depths between 0 and 30 metres.

The Kattegat and the Sound

Just as observed in the Skagerrak area, the surface temperatures of the Kattegat were normal for the season, between 15.8 and 16.1°C. The surface salinity in the Kattegat was normal for the season except in the Sound were it was higher than normal, decreasing from 22.7 psu in the north to 20.6 psu in the Sound. The halocline in the Kattegat was located at 10 to 20 metres depth, while the thermocline reached from 25 to 50 meters. In the Sound the halocline and the thermocline coincided at 10 metres depth.
In the Kattegat the sum of nitrite+nitrate was below the detection limit while the concentration in the Sound was 0.14 µmol/l. Phosphate concentration varied from 0.11 µmol/l in the north, which is normal to lower than normal, 0.15 µmol/l in the Sound. The silicate concentrations were higher than normal at station Anholt E and lower than normal in the Sound, varied between 2.9 µmol/l and 4.6 µmol/l highest in the Sound.
The oxygen conditions in the deep water were relatively good, some higher than normal in the Sound. The lowest concentration measured was 2.18 ml/l, corresponding to a saturation of 33%, in the bottom water of station Anholt E in the southern Kattegat.
The plankton activity that was seen, based on fluorescence measurements, was situated between 0 and 20 meters.

The southern part of the Baltic Proper

The surface temperatures were normal for the season, 15.6-16.3°C. The thermocline was located at depths of 20-30 metres and the halocline was located at 30-60 metres depth in the measured area.
In the surface waters, all nutrients were found to be at concentrations that were normal for season. The phosphate concentration varied between 0.09 and 0.22 µmol/l, while nitrite and nitrate had been consumed totally and were below detection limit at all stations. The silicate concentrations varied between 7.7 and 10.0 µmol/l.
In the Arkona Basin, the bottom water concentrations were at the same levels as during the previous expedition, between 1.8 and 2.1 ml/l. The on-going influx, during the last expedition, of approximately 8 km^3 of Skagerrak/Kattegat water through the Sound, has not yet affected the

bottom water oxygen in the Arkona Basin deep water. Both in the Bornholm Basin and the Hanö Bight the oxygen concentrations had decreased to approximately 0.2 ml/l.
In the surface layer, certain plankton activity was detected in the whole area.

PARTICIPANTS

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Daniel Bergman-Sjöstrand		- ” -
Johan Håkansson		- ” -
Sara Johansson		- ” -

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