

Report from the SMHI monitoring cruise with KBV001 Poseidon



Survey period: 2013-08-12 - 2013-08-15
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 the oxygen conditions had deteriorated since the former expedition, though no hydrogen sulphide was present.

The next expedition is planned to take place August 20-24, when the Baltic Proper will be investigated.

PRELIMINARY RESULTS

The cruise began in Göteborg on August 12th and ended in the same port on August 15th. Winds during the expedition were moderate to hard, mainly from the west. The air temperature varied between 14 and 16°C.

The Skagerrak

The surface temperatures had decreased slightly since the previous expedition, and were now at normal levels, between 16.9 and 18.2°C, highest close to the coast. Surface salinities were between 30 and 32 psu. The halocline was located at 20 metres depth in the central parts of the sea area, while it was very weak close to the coast. The thermocline was located at 20 to 40 metres depth in the central parts, while it was situated considerably deeper in the southeast, at some 60 metres. In the surface layer all nutrients exhibited normal concentrations for the season. Both phosphate and the sum of nitrite plus nitrate were below the detection limit, 0.02 and 0.10 µmol/l, respectively. The silicate concentrations varied from being below detection limit (0.1 µmol/l) up to 0.5 µmol/l, highest close to the coast.

The plankton activity, based on fluorescence measurements and oxygen saturation, was rather low, and could mainly be noticed at depths between 20 and 30 metres.

The Kattegat and the Sound

Just as observed in the Skagerrak area, the surface temperatures of the Kattegat had decreased slightly and were now down to normal for the season, between 18.5 and 19.5°C. The surface salinity decreased from 23.6 psu in the northern part to 21.1 in the south. During the expedition an influx of water from the Skagerrak/Kattegat to the Baltic sea was observed, and as a consequence the surface salinity in the Sound was relatively high, 18.4 psu. The halocline in the Kattegat was located at 12 metres depth, while the thermocline reached from the surface layer of 12 metres thickness down to 40-50 metres depth. In the Sound the halocline and the thermocline coincided at 10-15 metres depth.

In the surface layer, all nutrients were at concentrations normal for the season. The sum of nitrite+nitrate was below the detection limit in the whole area. Also phosphate was below detection limit in the Kattegat, while the concentration was 0.15 µmol/l in the Sound. The silicate concentrations were around 1 µmol/l in the Kattegat and 3.4 µmol/l in the Sound.

The oxygen conditions in the deep water were relatively good. The lowest concentration measured was 3.86 ml/l, corresponding to a saturation of 57%, in the bottom water of station Anholt E in the southern Kattegat.

The plankton activity, based on fluorescence measurements and oxygen saturations, was low.

The southern part of the Baltic Proper

The surface temperatures were normal for the season, 17.5-18.9°C, with the exception of station BY1 in the Arkona Basin; here the surface temperature was 15.7°C. A very sharp thermocline was located at depths of 15-20 metres. The halocline was located at 30-40 metres depth in the Arkona Basin, and at 50-60 metres in the Bornholm Basin and the Hanö Bight.

In the surface waters, all nutrients were found to be at concentrations that were normal for season. The phosphate concentration varied between 0.04 and 0.23 µmol/l, while nitrite and nitrate had been consumed totally and were below detection limit at all stations. The silicate concentrations varied between 7.2 and 8.5 µmol/l.

In the Arkona Basin, the bottom water concentrations were at the same levels as during the previous expedition, between 1.6 and 2 ml/l. The on-going influx of approximately 8 km³ of

Skagerrak/Kattegat water through the Sound, has not yet affected the bottom water oxygen in the Arkona Basin deep water. In the Bornholm Basin the oxygen concentrations had decreased slightly, from approximately 1 to 0.5 ml/l, while in the Hanö Bight it had increased from 0.3 to 0.8 ml/l.

In the surface layer, certain plankton activity was detected in the whole area, though no surface accumulations of cyanobacteria were observed.

PARTICIPANTS

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APPENDICES



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