

Report from SMHI's monitoring cruise on board KBV001 Poseidon



Survey period: 2012-09-14 to 2012-09-17
Survey area: The Skagerrak, Kattegat, Sound and parts of the southern Baltic Proper.
Principal: SMHI

SUMMARY

The expedition, part of SMHI's regular marine monitoring programme, covered the Skagerrak, the Kattegat, the Sound and the southern part of the Baltic Proper. Data presented in this report have been subject to preliminary quality control procedures only.

A new agreement with the Swedish Coastguard meant that only the Swedish west coast and south western Baltic Proper (Arkona and Bornholm Basins) were sampled.

In Skagerrak and Kattegat, nutrient conditions were normal for the season. In the south western parts of the Baltic Proper concentrations of phosphate and silicate were still high, while inorganic nitrogen showed normal values. Plankton activity was low in all areas.

Oxygen concentrations below 2 ml/l (hypoxia) were found at depth exceeding 60 metres in the Bornholm Basin as well as in the Hanö Bight.

The next expedition is scheduled for October.

PRELIMINARY RESULTS

The cruise, part of SMHI's ordinary monitoring programme, began in Göteborg on September 14th and ended in the same port September 17th. Winds were fresh-to-strong for most of the expedition, blowing from between south and west.

A new agreement with the Swedish Coastguard means that SMHI's expeditions for the remainder of 2012 will be split, making use of the two ships KBV001 for the west Coast and the south western parts of the Baltic Proper, and KBV002 for remaining areas. There will be no expedition in the remainder of the Baltic Proper during September due to logistics problems.

Skagerrak

Surface water temperatures were normal for the season and varied from 13.3°C in the western parts to 15.1°C at the coast. Surface salinities were somewhat above normal, ca. 31 psu in the whole area. Thermocline and halocline coincided and were found at a depth of ca. 20 metres. The halocline was weakly developed while the thermocline was distinct.

Nutrient concentrations in the surface layer were typical for the season. Concentration of phosphate varied from 0.03 to 0.06 µmol/l. The sum of nitrite/nitrate was below detection limit (<0.10 µmol/l), in the whole area. Silicate concentrations varied between 0.8 and 1.5 µmol/l.

Plankton activity, based on fluorescence and oxygen saturation, was low.

The oxygen conditions in the offshore deep water were good, while the bottom water at the coastal station Släggö, showed lower oxygen concentrations than normal (2.8 ml/l).

Kattegat and the Sound

Surface water temperatures were normal, about 15.5°C. Surface salinity was high in the northern parts of Kattegat as well as in the Sound, and varied from 28.3 in the north to 20.5 in the southern Kattegat. In the Sound the surface salinity was 17 psu. Both thermocline and halocline were weakly developed in the north. In the southern Kattegat, the halocline was found at depths between 15 and 30 metres while the thermocline was located deeper at 25 to 35 metres. In the Sound, thermocline and halocline coincided, with the region of maximum stratification extending from 7 to 20 metres. All nutrients showed typical values for the season in the surface layer. In Kattegat, phosphate concentrations varied between 0.10 and 0.15 µmol/l, silicate between 1.1 and 2.4 µmol/l while the concentration of nitrite+nitrate was below the detection limit. In the Sound, phosphate concentration was 0.30 µmol/l, silicate 7.1 µmol/l. Plankton activity was low in the whole area.

The lowest oxygen concentration was measured in the deep water of Kattegat at the station Anholt E, 2.78 ml/l. In the bottom water of the Sound the concentration was 2.29 ml/l, corresponding to a saturation of 34%.

Arkona, Hanö Bight and the Bornholm Basin

The temperature in the surface water was normal, varying between 13.3 and 16.4°C. Surface salinity was above normal, 7.6 to 8.4 psu. The halocline was located at depths between 30 and 40 metres in the Arkona Basin and between 50 and 70 metres in the Bornholm Basin and Hanö Bight.

Concentrations of nitrite+nitrate were below the detection limit, which is normal for the season.

Phosphate showed elevated levels, 0.3 to 0.5 µmol/l. Silicate concentrations were enhanced in the Arkona Basin, ca. 12 µmol/l, and just above normal 10 µmol/l in remaining areas.

Oxygen conditions were relatively good in the bottom water of the Arkona basin, 3 to 5 ml/l. In the Bornholm Basin and in the Hanö Bight, oxygen was almost depleted and concentrations between 0.2 and 0.3 ml/l were measured.

Plankton activity was low in the investigated area.

PARTICIPANTS

| | | |
|--------------------|---------------|-------------------------------|
| Lars Andersson | Cruise leader | SMHI Oceanographic laboratory |
| Sari Sipilä | | - ” - |
| Arne Svensson | | - ” - |
| Bodil Thorstensson | | - ” - |
| Bengt Yhlen | | - ” - |

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