

## CRUISE REPORT FROM KBV001 POSEIDON



**Survey period:** 2011-12-05 - 2011-12-16

**Survey area:** The Skagerrak, Kattegat, Sound, Baltic Proper and the Gulf of Bothnia.

**Principal:** SMHI

### SUMMARY

The expedition was part of SMHI's regular marine monitoring programme and covered the Skagerrak, Kattegat, Sound, Baltic Proper and Gulf of Bothnia.

This report is based on preliminary, part-quality controlled data.

Most parameters showed values typical for the season, except phosphate and silicate that showed elevated concentrations in some parts of the Baltic Proper.

Oxygen concentrations below 2 ml/l were observed at depths exceeding 50 to 80 metres in the main part of the Baltic Proper and from 125 metres in the northern Gotland Basin. Hydrogen sulphide was found in the Eastern and Northern Gotland Basins from 90 to 130 metres, in the Western Gotland Basin deeper than 70 to 90 metres and in the bottom water of the Bornholm Basin.

The next expedition will take part in January, 2012.

## **PRELIMINARY RESULTS**

The cruise, part of the SMHI's ordinary monitoring programme, began in Göteborg on December the 5<sup>th</sup> and ended in the same port on December 16<sup>th</sup>.

The weather during the expedition was dominated by strong winds up to the strength of storm.

Sampling was carried out at wind speeds up to 26 m/s. Air temperatures varied from -3 to +5°C.

Great thanks to the crew of KBV001-Poseidon, for professional work making it possible to carry out all planned sampling, despite extreme weather conditions.

### **The Skagerrak**

The conditions were normal for the season. Surface water temperatures varied around 9°C. The halocline and thermocline was at a depth of 12 metres in the coastal current and at a depth of 20 metres in the more westerly parts. At some stations the water column was homogeneous.

Surface phosphate concentrations varied between 0.35 and 0.50 µmol/l, nitrite+nitrate from 2.8 to 5.4 µmol/l, and silicate 3.4-8.1 µmol/l.

### **The Kattegat and the Sound**

Also in this area conditions were typical for December. Surface water temperatures were around 8°C. Surface salinities varied between 19 and 28 psu in the Kattegat. After a period of inflow to the Baltic, surface salinity was very high in the Sound, 24 psu. Thermo- and halocline were weakly developed and found between 5-15 metres.

Surface nutrient concentrations were normal. Phosphate concentration was 0.36-0.50 µmol/l, nitrite+nitrate varied from 2.8 to 4.4 µmol/l and silicate between 8.3 and 11.5 µmol/l.

Oxygen conditions in the deep water were good. The lowest oxygen concentration, 4.7 ml/l corresponding to a saturation of 75%, was measured in the central part of the Sound.

### **The Baltic Proper**

Surface water temperatures were normal in the whole area, varying from 4.5 to 8°C, highest in the southern and eastern parts, lowest in the Western Gotland Basin. The surface layer was well mixed down to 40 - 60 metres in the main part of the Baltic Proper.

Surface phosphate concentrations varied between 0.3 and 0.6 µmol/l. They were higher than normal, in the southern parts and in the Northern and Western Gotland Basins. Silicate concentrations in the surface water were higher than normal in the Arkona Basin and in the Western Gotland Basin.

Concentrations in these areas were 8 to 15 µmol/l while they in the Eastern Gotland Basin varied between 6 and 8 µmol/l. Concentrations of nitrite+ nitrate in the surface layer were normal, from 0.8 to 3.6 µmol/l throughout the area.

Oxygen concentrations below 2 ml/l were observed at depths exceeding 50 to 80 metres in the main part and deeper than 125 metres in the northernmost parts.

Hydrogen sulphide was found in the Western Gotland Basin at depths exceeding 70 to 90 metres, in the Eastern Gotland Basin deeper than 90 to 130 metres. In the northern parts hydrogen sulphide was present deeper than 125 to 150 metres. Hydrogen sulphide was also found in the bottom water of the Bornholm Basin. Oxygen conditions in the Arkona Basin were good with concentrations between 5 and 6 ml/l.

## The Gulf of Bothnia

All parameters showed normal values for the season in the whole investigated area. Surface water temperatures in the Gulf of Bothnia varied between 2.3 and 5.9°C. Surface water salinity in the Bothnian Sea varied between 5.2 and 5.84 psu and in the Bothnian Bay 2.9-3.3 psu.

The surface water in the Bothnian Sea had phosphate concentrations of 0.2-0.6 µmol/l, nitrate+nitrite concentrations of 1.4 -4.5 µmol/l and silicate concentrations of 15-30 µmol/l. As normal, the Bothnian Bay had lower phosphate concentrations, < 0.1 µmol/l, and higher nitrite+nitrate concentrations 4.9-6.4 µmol/l than the Bothnian Sea. Silicate concentrations were 15 – 30 µmol/l in the Bothnian Sea and 35-37 µmol/l in the Bothnian Bay

The lowest oxygen concentration at the bottom was recorded at station MS6, in the middle of the Bothnian Sea, with 5.0 ml/l corresponding to 55% saturation. In the Bothnian Bay the water columns were well mixed and no low oxygen concentrations were measured.

## PARTICIPANTS

Name		From
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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