

CRUISE REPORT FROM KBV001 – M/V Poseidon



Survey period: 2011-08-01 - 2011-08-07

Survey area: The Skagerrak, the Kattegat, the Sound and the Baltic Proper.

Principal: SMHI

SUMMARY

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

At stations visited in Kattegatt, Skagerrak and the Sound, nutrient concentrations were normal for the season. In the south eastern and eastern Baltic Proper, silicate concentrations were lower than normal.

Oxygen values below 2 ml/l were found at all stations in the western, eastern and northern Baltic Proper with bottom depths greater than 70 to 80 metres. Hydrogen sulphide was found from 125 metres and deeper in eastern Baltic Proper and from 80 to 90 metres and deeper in western Baltic Proper.

Algae report in pdf.

The next expedition is scheduled for September 12th to September 17th, 2010.

Data presented in this report have been subject to preliminary quality control procedures only

PRELIMINARY RESULTS

The cruise, part of SMHI's ordinary monitoring programme, began in Göteborg on Monday, August 1st and ended in same port on Sunday, August 7th. The cruise was interrupted by a short harbour stopover in Visby during Thursday.

At 23 stations full hydrographic sampling was performed. CTD-samples only were taken at an additional 3 stations.

The weather during the week was calm and sunny. The wind increased during the last days.

The Skagerrak

At stations in the Skagerrak, the sea surface temperature was normal or slightly higher than normal for the season: lowest measured temperature was 18.3 °C (**Å13**) and highest temperature was 20.5 °C (**Släggö**).

Sea surface salinities were normal: the lowest value measured was 19.5 [psu] at **Släggö**. The highest value, 29.3, was found at **Å15**.

In the surface layer, all nutrient concentrations from both coastal (**P2** and **Släggö**) and offshore (**Å13-Å17**) stations, were normal for the time of year. Near surface phosphate concentrations at the coastal stations were 0.04 µmol/l and 0.03 µmol/l respectively while at stations in the central parts of the Skagerrak, they were near or below the detection limit (0.02 µmol/l).

Near surface Σ nitrite+nitrate were below the detection limit throughout the area (0.10 µmol/l).

Silicate levels at **P2** were 1.9 µmol/l while at **Släggö** they were 1.8 µmol/l. Samples analyzed from the offshore Skagerrak stations showed silicate concentrations varying between 0.3 µmol/l (**Å17**) and 1.0 µmol/l (**Å13**).

The Kattegat the Sound

Sea surface temperature was normal or slightly higher than normal at stations in Kattegat. The lowest recorded temperature was 19.7°C (**L9 Laholmsbukten**) and the highest value was 20.7°C (**Fladen**). In the Sound (**W Landskrona**) sea surface temperature was normal for season, at 18.0°C.

Sea surface salinities at the Kattegat stations were below normal. The highest observed salinity was 15.7 [psu] at **Anholt E.** The lowest was 15.0, at **Fladen**. In the Sound (**W Landskrona**) the sea surface salinity was 8.2.

In the Kattegat and in the Sound the halocline was found between 10 and 15 metres.

All nutrient measurements from the surface layer in the Kattegat and Sound indicated normal (low) levels for the season. The silicate levels at **Anholt E.** were a little above normal

Phosphate concentration in the Kattegat surface waters was 0.04 µmol/l (**Anholt E.** and **N14 Falkenberg**). At **W Landskrona** phosphorus concentration in the surface water was 0.2 µmol/l.

Near surface Σ nitrite+nitrate concentrations values were below the detection limit (0.10 µmol/l) throughout the area.

Silicate levels in the surface water at **Fladen** and **Anholt E.** were 1.6 µmol/l and 2.5 µmol/l respectively. At **N14 Falkenberg** near the coast, silicate levels were 1.5 µmol/l. In the Sound at **W Landskrona** silicate levels was 8.7 µmol/l.

Oxygen concentrations were lower than normal in the deepwaters of the area. Lowest oxygen concentrations (3.4 ml/l) were observed at the coastal station **L9 Laholmsbukten**. This concentration was equivalent to an oxygen saturation of 47 %. At all other stations oxygen values were over 4 ml/l.

Secchi depth in the Kattegat was 6.0 metres (**Fladen** and **Anholt E.**).

Mean and standard deviation for N14 Falkenberg is not based on data from SMHI.

The Baltic Proper

Sea surface temperature was normal for the season in the Baltic Proper. The lowest recorded temperature was 18.1°C (**BY38**) and highest value was 20.4°C (**BY2**).

Salinity measured in the surface water was below normal at stations **BY1**, **BY2**, **BY4** and **Hanöbukten**. At all other stations in the Baltic Proper, surface salinity was found to be normal.

A well-developed thermocline was found between 20 and 30 metres.

In the Arkona basin (**BY1** and **BY2**) the halocline was found between 30 and 40 metres, in the remainder of the Baltic Proper it was found between 60 and 80 metres.

The silicate concentration was below normal in the south-eastern and eastern Baltic Proper (4.9 – 5.5 µmol/l). Silicate concentrations were normal at the other stations. Other inorganic nutrient concentrations were normal throughout the area: Phosphate concentrations in near-surface waters were just below 0.1 µmol/l. At the coastal station **REF M1V1** the phosphate concentration value was 0.3 µmol/l.

Near surface Σ nitrite+nitrate concentrations values were below the detection limit (0.10 µmol/l) throughout the area.

Silicate concentration at **REFM1V1** was found to be 12.8 µmol/l. Silicate concentrations from all other stations in the Baltic Proper showed concentrations between 4.9 µmol/l (**BY15**) to 8.7 µmol/l (**BY32**).

Higher than normal concentrations of hydrogen sulphide were found at stations in the eastern and western Gotland Basins (**BY10**, **BY15**, **BY20**, **BY32** and **BY38**). At the station **BCSIII-10** a thin layer of more oxygenated water (compared to levels above) was found. The oxygen level in this layer was 1.8 ml/l, compared with 0.7 ml/l in the layer above.

Oxygen values below 2 ml/l were found at all stations in Baltic Proper with a bottom depth greater than 70 or 80 metres. Hydrogen sulphide was found extending from 125 metres to the bottom in the eastern Baltic Proper (**BY10**, **BY15**). At **BY20**, north east of Gotland, and at **BY32** and **BY38** in the western Gotland Basin, hydrogen sulphide was found below 80 – 90 metres depth.

Secchi depth never exceeded 6 metres: the lowest value was found to be 4 metres at **REF M1V1**.

PARTICIPANTS

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We are grateful to the crew on the Coast Guard Vessel 001 – M/V Poseidon for all professional help during the expedition.

APPENDICES

- Track chart
- Table over stations, parameters and sampling depths
- Map showing bottom oxygen concentrations
- Profiles for selected stations



Click on the button to open appendices.
Note that this will only work when
connected to Internet!

*Mean and standard deviation for N14 Falkenberg is **not** based on data from SMHI.*

"Normal" values are values within ± 1 standard deviation compared with mean values taken from the period 1995 - 2004