A-K. Thell,
M. Hansson

Swedish Meteorological and Hydrological Institute
Oceanographic Laboratory

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Report from SMHIs monitoring cruise with KBV 002 Triton

Survey period: 2013-05-24 - 2013-05-29
Survey area: The Skagerrak, Kattegat, Sound and 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, the Sound and the Baltic Proper.
Data presented in this report have been subject to preliminary quality control procedures only.

The surface temperature was over normal in Kattegat and the salinity in the surface layer was slightly over normal values in Skagerrak. All nutrients, in the surface layer, showed normal values for the season except for silicate which was below normal in the eastern Gotland Basin. In the Arkona basin the oxygen concentration in the bottom water had decreased and was now just below 3 ml/l. In the Bornholm basin the oxygen values were still around 2 ml/l in the deep water. In the remaining parts oxygen levels below 2 ml/l were found at depth exciding 70-80 meters. High concentrations of hydrogen sulphide were found in the eastern and western Gotland basin from 125 meters depth.

The next expedition is planned to take place 17-21 June.

Address:
Sven Källfelts gata 15
SE-426 71 Vastra Frolunda
SWEDEN

Telephone:
+46 11 4958000
Telefax:
+46 31 7518980

E-mail:
Lars.S.Andersson@smhi.se
WWW:
http://www.smhi.se/

SMHI

PRELIMINARY RESULTS

The cruise, part of the Swedish regular marine monitoring programme, began in Göteborg on May 24th and ended in Slite on the island Gotland on the 29th May.
Winds during the expedition were week to moderate, mainly from north. Air temperature varied from 9 to 18 °C.

The Skagerrak

The temperature in the surface water was normal for the season and varied between 9.1 and 12.8 °C. The high temperatures were found near the coast. The surface salinities were below normal varying from 21-23 psu along the coast and higher than normal, 32-33psu, in offshore Skagerrak. Halocline and thermocline were found at depths between 5 and 15 metres.
In the surface layer, all nutrients showed normal values for the season. Phosphate concentrations were between 0.06 and 0.11 µmol/l. The sum of nitrite + nitrate was below detection limit (0.10 µmol/l) and the concentrations of silicate varied between 0.6-2.8 µmol/l.
Plankton activity, based on fluorescence measurements and oxygen saturation, were relatively low.

The Kattegat and the Sound

In April the temperature in the surface layer was lower than normal in the whole area but now the temperature had increased and was instead higher than normal. In Kattegat the temperature varied between 12.0-13.6°C and in the Sound it was 13.2 °C. The surface salinity showed normal or slightly lower than normal values, 18-19 psu. In the Sound the salinity was about 10 psu. The thermocline and halocline were found at 12-15 meters depth in Kattegat and at 5-10 meters depth in Öresund.
All nutrients showed, for the season, normal values in the surface water. The inorganic nutrients, was below the detection limit (0.10 µmol/l) and the phosphate concentrations were around 0.08 µmol/l, while the silicate concentration varied between 1.2-2.1 µmol/l. In the Sound the phosphate concentration was 0.16 µmol/l, silicate 4.8 µmol/land inorganic nitrogen was below the detection limit.
Oxygen conditions in the deep water were good. The lowest values were found in the bottom water in the Sound, 5.09 ml/l which correspond to an oxygen saturation of 75%.
Some plankton activity was registered at 15 meters depth in Kattegat, but the activity was relatively low.

Baltic Proper

The temperature in surface layer had now increased and a strong thermocline could be found at 10-20 meters depth. The temperature varied between 7-10°C, which is normal for the season. The surface salinity was also normal and increased from 6.5 psu in the northeast to 7.4 psu in the south. A secondary thermocline and the halocline coincided at about 40 meters depth in Arkona, at about 60 meters depth in the Bornholm Basin and Hanö and at about 60-70 meters in the other areas.
The phosphate and inorganic nitrogen concentration in the surface water showed normal values for the season. The phosphate varied between 0.07-0.17 µmol/l and the sum of nitrite and nitrate, was completely consumed after the spring bloom and was below the detection limit (0.10 µmol/l) at all stations. The concentration of silicate varied between 5.7-10.6 µmol/l and was slightly below normal in the eastern Gotland basin,

In the Arkona basin the oxygen concentration at the bottom had decreased since the last visit in April and the concentration were now lower than normal. At the station BY2 the concentrations had decreased from 7.6 ml/l to 2.9 ml/l. In the Bornholm basin the oxygen concentrations hade decreased somewhat but was still around 2 ml/l which is higher than normal for the season. In the Hanö Bight the oxygen concentration in the bottom water was 1.3 ml/l, which also is normal for the season.
Oxygen concentrations below 2 ml/l were found at depth exceeding 70-80 meters in the eastern and western Gotland basins where also hydrogen sulphide was found from depth exciding 125 meters depth. The concentrations of hydrogen sulphide in the bottom water were also very high in these basins. Traces of the inflow that occurred in January could be seen at BY10 in the southern eastern Gotland basin.
The plankton activity was low in the whole area; hence the spring bloom was over.

PARTICIPANTS

Name		From
Anna-Kerstin Thell	Cruise leader	SMHI Oceanographic laboratory
Martin Hansson		- ” -
Kristin Andreasson		- ” -
Sari Sipilä		- ” -
Bengt Yhlen		- ” -

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