Arne Sjöquist

Swedish Meteorological and Hydrological Institute
Oceanographical Laboratory

2003-05-10
Dnr: Mg-2003-087

CRUISE REPORT FROM R/V ARGOS

Survey period: 2003-05-05 - 2003-05-10

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

Principal: SMHI

SUMMARY

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

This report is based on preliminary data.

Nutrient concentrations were normal for the season in all areas.

After the latest inflow to the Baltic in January, the deep water of the Arkona Basin, Bornholm Basin and the Hanö Bight was now well oxygenated. The inflow observed in the southeast of the Baltic Proper in April has now reached and oxygenated the deep water east of Gotland (BY 10 and BY 15) although hydrogen sulphide still occupied intermediate layers. Hydrogen sulphide was also present in the northeast and west Gotland Basins.

The next expedition is scheduled for June 5 to 10.

Address:
Nya Varvet 31
SE-426 71 Västra Frölunda
SWEDEN

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

E-mail:
shark@smhi.se
WWW:
http://www.smhi.se/sgn0102/nodc/

PRELIMINARY RESULTS

The cruise, part of SMHI´s routine monitoring programme, began in Göteborg May on 5th and ended in Göteborg on May 10th.

The week started with cloudy weather and weak southerly winds, which shifted towards the east and weakened further. Air temperature was about 10-12°C during daytime. In the middle of the week the temperature fell to 4-5°C and the weather brightened. The week ended with more cloudy weather.

Samples for the EU-project HABILE were taken at Fladen, Anholt E (twice) and BY5.

The Skagerrak

Surface water temperature varied from 8.3°C in the coastal area (Släggö) to about 6.9°C in the central of the Skagerrak. The salinity of the surface water varied between 23 psu at the coast and 32.6 psu at the central part (Å13), which was higher than normal.

Nutrient concentrations in the surface layer were normal for the season. Phosphate concentrations were 0.03-0.07 µmol/l. Nitrite+nitrate were lowest at the central parts of Skagerrak (Å15, 0.11 µmol/l) and highest near the coast (Släggö, 2.1 µmol/l). At Släggö the silicate concentration was 1.7 µmol/l. The remaining stations showed a silicate concentration below the detection limit, 0.1 µmol/l.

The Kattegat and the Sound

Surface water temperature varied from 8.6°C in the north (Fladen) to 9.3°C in the south (W Landskrona). Surface salinity values were normal. In the north of the Kattegatt measurements showed 20.7 psu (Fladen) and in the south 15.6 psu (W Landskrona). The halocline was found at 15 metres.

A two-layer situation with a halocline at 6 metres was found at the sill of the Baltic (Drogden). Less saline surface water, 11.1 psu, was flowing to the north and a more saline deep water, 19.4 psu, to the south. At the end of the week the halocline had broken down and an inflow to the Baltic from surface to bottom occured.

The concentration of nitrite+nitrate was near or below detection limit, 0.1 µmol/l, with exception of the concentration at station W Landskrona, 1.1 µmol/l. The phosphate values varied between 0.04 and 0.08 µmol/l. The silicate concentration was increasing towards the south. Measurement gave values of 0.4 µmol/l in the north (Fladen) and 2.4 µmol/l in the south (W Landskrona).
There was no oxygen defiency in the bottom waters of the area.

Baltic Sea

Surface water temperature varied from 2.5°C at Fårö in the north to 6.1°C in Arkona in the south. The halocline was located at a depth of 20-30 metres in Arkona at 40-50 metres in the Bornholm Basin. In the central parts of Baltic Proper the halocline was at a depth of 70 metres.

In the Hanö Bight and in the Arkona and Bornholm Basins the nutrient values were low. The value of nitrite+nitrate was near the limit of detection, 0.1 µmol/l. The concentration of phosphate was around 0.1-0.2 µmol/l and silicate 3-8 µmol/l.

There was no oxygen defiency in the bottom waters of Arkona and Bornholm Basins or Hanö Bight.

In the eastern and western parts of the Central Baltic the concentration of nitrite+nitrate in the surface water was near or below the detection limit. Phosphate was about 0.4 µmol/l and silicate 10-13 µmol/l. The values of phosphate and silicate were slightly higher than normal.

West (BY32 and BY 38) and northeast of Gotland (BY 20) the bottom water from 80-90 metres had an oxygen concentration of less than 2 ml/l. Hydrogen sulphide was established at depths from 100-125 metres and down to the bottom. The inflow in January has increased the oxygen concentration at the stations southeast of Gotland. At the station BY10 the bottom water was well oxygenated from 125 metres down to the bottom at 145 metres. No hydrogen sulphide was found here. A 40 metre wide layer near the bottom was well oxygenated at Gotlandsdjupet (BY15). However, between 100 and 150 metres depth the oxygen concentraton was below 2 ml/l. Hydrogen sulphide was found between 150 and 200 metres. In the southeast of Baltic Proper (BCSIII-10) the oxygen values from April, 5 ml/l, have decreased to below 2 ml/l.

PARTICIPANTS

Name	From
Lars Andersson, chief scientist SMHI	Oceanographical lab.
Tuulikki Jaako	- ″ -
Eva Nyberg	- ″ -
Hans Olsson	- ″ -
Arne Sjöquist	- ″ -

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