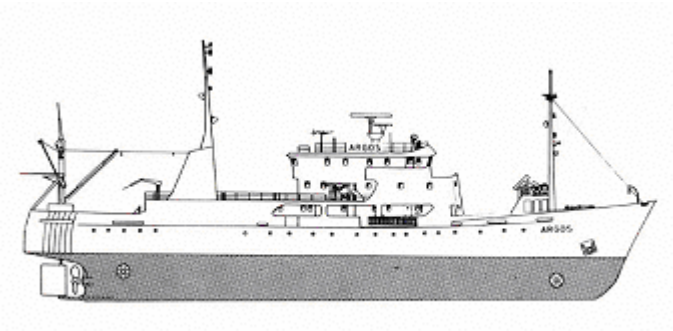
Arne Svensson

Swedish Meteorological and Hydrological Institute
Oceanographical Laboratory

2006-09-29
Dnr: Mo-2005-215

CRUISE REPORT FROM R/V ARGOS



Survey period: 2006-09-25 - 2006-09-29

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

Principal: SMHI

SUMMARY

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

Surface water temperatures were higher than normal in the whole investigated area.
Nutrients showed typical early autumn values, on the west coast as well as in the Baltic Proper.
Oxygen concentrations below 2 ml/l were observed at depths exceeding 70 – 80 metres in the Baltic.
Hydrogen sulphide was found deeper than 125 metres in the south eastern Gotland Basin and at depths greater than 150 - 160 metres in the north eastern Gotland Basin. In Western Gotland Basin hydrogen sulphide was found at depth exceeding 80 metre.

The next expedition is scheduled for October 2nd to October 20th 1, 2006.

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

Address:
Nya Varvet 31
SE-426 71 Vastra Frolunda
SWEDEN

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

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

PRELIMINARY RESULTS

The cruise, part of SMHI´s ordinary monitoring programme, began in Gothenburg on September 25th and ended in Västervik September 29th. The cruise is a part of Swedish commitment for the HELCOM COMBINE-program. For the University of Göteborg (dep. of Oceanography), water samples were taken for analysis of oxygen- and carbon isotopes for the FRISBEE –project. A CTD-cast was taken at the Läsö Ost for comparison with the measurement buoy.

Weather was summer-like, with sunshine, high air temperatures and weak winds of varying directions. Highest daytime temperature was 26°C, observed at the beginning of the week.

The Skagerrak

Surface water temperatures were slightly above normal throughout the investigated area and varied from 16.0°C in the central parts to 17.0°C in the coastal areas. Surface salinities were normal in the whole area.

Nutrient concentrations in the surface water showed typical early autumn values, except at Å13 where phosphate levels were enhanced. Phosphate varied from below detection limit (0.02 µmol/l) in the central part of Skagerrak to 0.23 µmol/l at station Å13. Silicate concentrations were 0.2µmol/l near the coast and 2.4 µmol/l at Å13. Nitrite+nitrate were below detection limit (0.10µmol/l) in the whole area.

Strong fluorescence peaks were seen at station Å17 at a depth of 20 metres. Oxygen saturation was just above 100% from the surface down to 30 metres depth, indicating a ongoing autumn bloom. Secchi depths were 7 metres.

The Kattegat and the Sound

In the Kattegat and the Sound, surface water temperatures were slightly higher than normal, at approximately 16.5°C. Surface salinities were lower than normal in most parts: 20.9 psu in the northern Kattegat and 17.3 psu in the south. In the Sound, sea surface salinity was 11 psu. Nutrient concentrations in the surface water were normal for this time of the year. Phosphate concentration was about 0.04 – 0.07 µmol/l in the Kattegat and 0.21 µmol/l in the Sound. Silicate was 0.2 – 1.0 µmol/l in the Kattegat and 7.9 µmol/l in the Sound. The sum of nitrite+nitrate was near or below the detection limit (0.10 µmol/l) in the whole area.

The lowest oxygen concentration in the bottom water was measured at Anholt E in the southern Kattegat. The concentration of 2.4 ml/l corresponds to a saturation of approximately 35%.

Fluorescence peaks were seen between 8 and 14 metres depth in the area. Oxygen saturation was slightly above 100% from surface to 10 metres depth.

Secchi depths were 9 metres in the Kattegat and 7 metres in the Sound.

Baltic Proper

Surface water temperature varied from 16.0 °C in the north to 17.6°C in the southwest. This is higher than normal for the season. The thermocline, which was pronounced, started at a depth of 20- 40 metres. The halocline in the southern Baltic was located at a depth of 70 - 80 metres, while in the remaining parts was found at 80 – 90 metres depth.

Nutrient concentrations in the surface water showed typical late summer values. Phosphate varied between 0.05µmol/l and 0.25 µmol/l. The lowest value was in the north, highest in the south. Silicate concentration in the Arkona Basin was 10.3 µmol/l. In the remaining parts silicate concentrations varied between 7.0 – 8.0 µmol/l. Concentrations of nitrite+ nitrate were below the detection limit (0.10 µmol/l) in the whole of the Baltic Proper, except for in the south east. At BCSIII-10 the concentration of nitrite+nitrate was 0.15 to10.3 µmol/l.

Oxygen concentrations below 2 ml/l were observed at depths exceeding 70 to 80 metres in the whole area. Hydrogen sulphide was found at depths exceeding 125 metres in the south eastern Gotland Basin, exceeding 150 – 160 metres in the north eastern Gotland Basin and at depths greater than 80 metres in the Western Gotland Basin.

Secchi-depth varied between 6 and 7 metres.

PARTICIPANTS

Name		From
Arne Svenssonsson	Chief scientist	SMHI Oceanographic lab.
Martin Hansson		-”-
Johan Håkansson		-”-
Tullikki Jaako		-”-
Eva Nyberg		-’’-

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