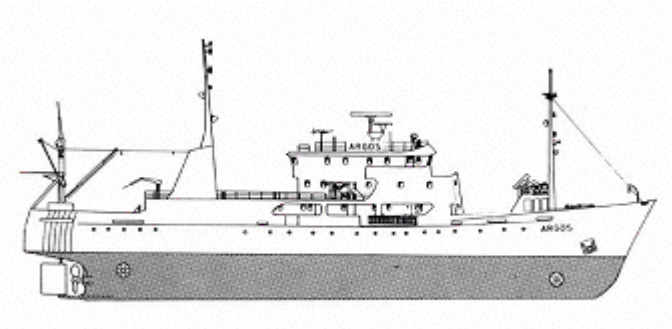
Lars Andersson

Swedish Meteorological and Hydrological Institute
Oceanographical Laboratory

2009-01-18
Dnr: Mo-2009-003

CRUISE REPORT FROM R/V ARGOS



Survey period: 2009-01-12 - 2009-01-18

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. Mapping of winter conditions was performed in the Kattegat and the Sound.
Data presented in this report have been subject to preliminary quality control procedures only.

Surface water temperatures were above normal in the Baltic Proper.
All nutrient concentrations were normal for winter with the exceptions of phosphate, which was above normal in the Southern Baltic Proper and Kattegat, and silicate that was higher than normal in the Kattegat. No sign of a spring bloom was detected in any area.
In the Baltic Proper, oxygen concentrations below 2 ml/l were found at depths exceeding 55 to 85 metres.
Hydrogen sulphide was found in the eastern - and northern – Gotland Basin, and parts of the western Gotland Basin.

The next expedition is scheduled for February 16 to 22, 2009.

Address:
Sven Källfelts Gata 15
Nya Varvet 31
SE-426 71 Vastra Frolunda
SWEDEN

Phone:
+46 11 495 80 00
E-mail:
Lars.S.Andersson@smhi.se

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

PRELIMINARY RESULTS

The cruise, part of SMHI´s ordinary monitoring programme, began in Göteborg on January 12th and ended at the same place January 18th. Mapping of winter conditions was performed in the Kattegat and the Sound.
During the first day of the expedition gale winds from south-west prevailed. The winds then turned to north-west, blowing between 7 and 12 m/s. During the last day the wind turned to the south-east and increased to 9 – 19 m/s.

The Skagerrak

Surface water temperatures were normal (3.8 – 5.3°C) in the outer sea and 2.2°C in the entrance of Gullmar fjord. Surface salinities in the central parts varied between 29 and 33 psu and the stratification was weak.
Surface nutrient concentrations were normal for the season, with the exception of silicate which was higher than normal in the south-east. Phosphate concentrations varied between 0.5 and 0.7µmol/l; silicate between 5 and 11 µmol/l, with lowest concentrations in the west. The sum of nitrite + nitrate varied from 5 in the west to about 7 µmol/l at the coast.
Phytoplankton activity, based on fluorescence measurements and oxygen saturation, was very low.

The Kattegat and the Sound

Surface water temperatures were normal and varied between 3.1 and 5.4°C, lowest in the south-east and highest in the north-west. Surface salinities were normal and decreased from 30 psu in the north-west to 18 psu in the southern Kattegat. In the Sound, salinities were clearly above normal and varied between 18.5 and 21.2 psu. The halocline was found at a depth between 15 and 20 metres. Nitrite + nitrate were normal for the season and varied between 5.0 and 7.4 µmol/l. Phosphate concentrations in the area were slightly above normal: 0.70 – 0.83 µmol/l while silicate concentrations were clearly higher than normal, varying between 10 - 13 µmol/l.
The lowest oxygen concentration in the bottom water was measured in the southern part of the Sound: 4.6 ml/l corresponding to a saturation of ca: 70%.
Phytoplankton activity was low.

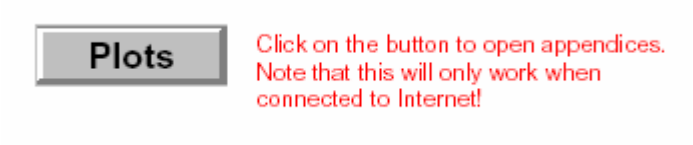
Baltic Proper

Surface water temperature was above normal for the season and varied between 3.8 and 5.7°C, with the exception of Kalmar Sound were it was about 1°C. Surface salinities were normal in the whole area 6.9 to 8.2 psu; lowest in the north and highest in southwest. Halocline and thermocline were found at 40 metres depth in the Arkona Basin, at 50 metres in the Bornholm Basin and Hanö Bight and at 60-70 metres in the remaining parts
Nutrients were normal in the whole area, with the exception of phosphate, which was above the seasonal mean in the southern parts. Phosphate varied between 0.64 and 0.77 µmol/l (0.83 µmol/l in the Kalmar Sound) nitrite + nitrate from 2.4 to 4.3 µmol/l and silicate between 7.7 and 13.2 µmol/l (18.4 µmol/l in the Kalmar Sound).
The bottom water of the Arkona Basin was well oxygenated with concentrations exceeding 4.5 ml/l. In the remainder of the Baltic Proper, oxygen concentrations below 2 ml/l were found at depths exceeding 55 to 85 metres.
Hydrogen sulphide was found deeper than 100 metres in the western Gotland Basin. However in the Karlsö Deep the water was oxygenated all the way to the bottom (0.19 ml/l at 111 metres depth). In the northern- and eastern Gotland Basins, hydrogen sulphide began at a depth of ca. 125 metres.
Phytoplankton activity was low in the whole area.

PARTICIPANTS

Name		From
Lars Andersson	Chief scientist	SMHI Oceanographic laboratory.
Sari Sipilä		-”-
Anna-Kerstin Thell		-”-
Bodil Thorstensson		-”-
Bengt Yhlen		-“-

APPENDICES



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