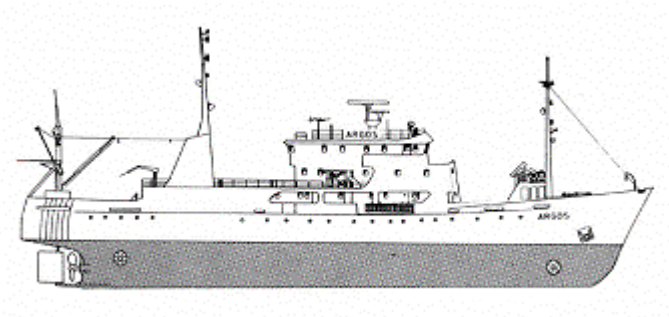
Bengt Yhlen

Swedish Meteorological and Hydrological Institute
Oceanographical Laboratory

2004-08-27
Dnr: Mg-2004-168

CRUISE REPORT FROM R/V ARGOS



Survey period: 2004-08-20 - 2004-08-27

Survey area: The Skagerrak, the Kattegat, the Belt Sea, 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, the Belt Sea and the Baltic Proper.
Mapping of oxygen conditions in the Kattegat was performed together with staff from the National Environmental Research Institute of Denmark
Data presented in this report have been subject to preliminary quality control procedures only.
The bottom water oxygen concentrations in Kattegat Proper were not alarming low.
In the Belt Sea concentrations below 2 ml/l were recorded at two stations, Fehmarn Belt and Mecklenburger Bucht.
No surface accumulations of cyanobacteria were observed.
Due to the ongoing inflow oxygen concentrations below 2 ml/l were measured already at depth of 15 metres at station Falster E, closest to the Belt, in the Arkona Basin. In the remainder of this Basin oxygen concentrations were about 2 ml/l at depths exceeding 45 metres. In the rest of the Baltic Proper, station BCS III-10 excepted, oxygen concentrations were below 2 ml/l at depths exceeding 60 to 70 metres.
Hydrogen sulphide was found at BY15 (Gotland deep) below 235 metres, in the western Gotland Basin at depths exceeding 70 to 90 metres, and in the Bornholm Basin at the bottom at the stations BY4 and BY5.
Next expedition is scheduled for September 20 to 25, 2004.

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 Göteborg August 20 and ended in the same port August 27.
Mapping of oxygen conditions in the Kattegat was performed together with staff from the National Environmental Research Institute of Denmark
The winds during the expedition were moderate, of various origin.

The Skagerrak

Surface water temperatures were higher than normal, 19°C, in the middle parts and normal 18°C, in the southern part. Surface salinity on the Å-section decreased from 33.6 psu at the coast to 27 psu in the west.
Nutrient concentrations in the surface were low which is normal for the season. Phosphate concentrations were less than 0.10 µmol/l, silicate between 0.4 and 2.8 µmol/l and nitrate were below detection limit, (0.10 µmol/l).
The fluorescence was low without pronounced peaks.

The Kattegat, the Belt Sea and the Sound

Surface water temperatures varied between 18 and 19°C in the Kattegat Proper and between 17 and 18°C in the Belt Sea and the Sound. Surface salinities decreased from fully 25 psu to 12 psu in the Mecklenburger Bucht and 11 psu in the Sound. The thermocline and halocline both began at depths between 10 and 15 metres.
Phosphate concentrations in the surface water were in the range 0.1 to 0.4 µmol/l. Silicate varied between 1 and 4 µmol/l in the Kattegat Proper and between 5 and 10 µmol/l in the Belt Sea. Nitrate were below the detection limit (0.1 µmol/l) in the whole area.
The fluorescence was low without pronounced peaks.
The bottom water oxygen concentrations in Kattegat Proper were not alarming low. The lowest was found at Hesselö, 3.1 ml/l and corresponding to a saturation of 47%. In the Belt Sea concentrations below 2 ml/l were recorded at two stations, Fehmarn Belt and Mecklenburger Bucht.
An inflow to the Baltic began August 12 and ended August 23

Baltic Proper

Surface water temperature varied between 17.7 and 18.6°C, which is typical for the time of year. The surface temperature extended down to a depth of 15 to 20 metres. In the Arkona Basin the halocline began at between 30 and 40 metres and in the remaining parts, between 50 to 60 metres. Surface phosphate concentrations, which varied between 0.07 and 0.23 µmol/l, were now at normal levels in almost the entire area. Silicate surface concentrations in the Arkona and Bornholm Basins were between 7.3 and 9.2 µmol/l, normal for the season. In the remainder of the Baltic concentrations were in the range 9.1 to 10.1 µmol/l, at several stations above normal levels. The surface nitrate was consumed in the whole area.
The chlorophyll-fluorescence was low at all stations without pronounced peaks and negligible below 20 meters. No surface accumulations of cyanobacteria were observed.
Due to the ongoing inflow oxygen concentrations below 2 ml/l were measured already at depth of 15 metres at station Falster E, closest to the Belt, in the Arkona Basin. In the remainder of this Basin oxygen concentrations were about 2 ml/l at depths exceeding 45 metres. In the rest of the Baltic Proper, station BCS III-10 excepted, oxygen concentrations were below 2 ml/l at depths exceeding 60 to 70 metres.
Hydrogen sulphide was found at BY15 (Gotland deep) below 235 metres, in the western Gotland Basin at depths exceeding 70 to 90 metres, and in the Bornholm Basin at the bottom at the stations BY4 and BY5.

PARTICIPANTS

Name		From
Bengt Yhlen	Chief scientist	SMHI Oceanographic lab.
Tuulikki Jaako		-”-
Ann-Turi Skjevik		-”-
Anna-Kerstin Thell		-”-
Bodil Thorstensson		-”-
Hanne Ferdinand	disembarked in Ystad	The National Environmental Research
Kjeld Sauerberg	disembarked in Ystad	Institute of Denmark

Plots

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

APPENDICES

- Track chart
- Table over stations, parameters and sampling depths
- Map showing bottom oxygen concentrations
- On way data of temperature and salinity from a depth of ca. 4 m.
- Monthly average plots for selected stations
- Profiles for selected stations