Bodil Thorstensson

Swedish Meteorological and Hydrological Institute
Oceanographic Services

1998-10-26
Dnr: Sh-1998-199

CRUISE REPORT FROM R/V ARGOS

Survey period: 981019-981023

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 program and covered the Skagerrak, the Kattegat, the Sound and the Baltic Proper. During the expedition the weather was rather cloudy and windy. In the southern Baltic there was a strong wind from southwest. In the Skagerrak sampling was done only at station P2, because wind velocities more than 20 m/s were forecast.

The surface water temperatures were between 8 and 11°C in the whole area.

Oxygen concentrations below 2 ml/l were found at depths greater than 70m in the Bornholm Basin and in the Landsort Deep, at 80m or deeper in the northern and eastern Gotland Basin. Hydrogen sulphide was present from 150 m in the Eastern Gotland Basin and from 80 m in the Bornholm Basin.

In the surface water the nitrate concentrations were between 0,2-0.3 µmol/l and the phosphate concentrations were of the level 0.1-0.2 µmol/l.The values of ammonia were higher in the southern Baltic - 0.9 µmol/l at station BY1 - to be compared with a normal value of 0.1-0.2 µmol/l.

A detailed algal situation report is available on http://www.smhi.se/sgn0102/nodc/reports/.

Address:
Byggnad 31 Nya Varvet
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 expedition that was an ordinary expedition within SMHI:s integrated monitoring of the sea started in Karlskrona the 18 of October and ended in Gothenburg the 23 of October. The weather was cloudy with winds from south west. The first days the wind velocity was 12-13 m/s and later it decreased to 6-8 m/s in the north Baltic. On the way back in the south Baltic the wind increased to 18 m/s. The expedition was reduced in the Skagerrak because of a deep low -pressure with wind velocities higher than 20 m/s.

The Skagerrak

The surface water temperature was at the station P2 10°C. This was the only station in the Skagerrak where we sampled. The phosphate- and nitrate concentration was 0.25 resp.0.65 µmol/l in the surface layer, while the concentration of silicate was low (2 µmol/l) in comparison with the other stations of the west coast.

The Kattegat and the Sound

The surface water temperatures were between 9.5 and 10.2°C. At the station Kullen the halocline was strong, that is, from the depth 15m to 20m the salinity increased with 14 psu.
The lowest oxygen saturation of the area was measured at W Landskrona. From a depth of 25 m and greater the oxygen concentration was 2.9 ml/l, which corresponds to a saturation of 47%.
In the western Kattegat and in the Sound the nitrate values were high, 2-4 µmol/l, while the concentration in the southeast of the Kattegat was below the limit of detection. All other nutrients also had higher concentrations than the rest of the area.

The Baltic Sea

The surface water temperatures of the Baltic were between 8 and 11°C. The highest temperature was registered at BY1 in the southern Baltic and the lowest at the Landsort Deep.
BY 29 also in the northern Baltic had however such a high temperature as 10.3°C. At this station a great amount of jellyfish were seen. The thermocline was at 40-50m in the southern Baltic, at 35-40m in the southeastern and eastern Baltic and at 30-40m west of Gotland.
The hydrogen sulphide was found in the Bornholm Basin at Christiansö (BY4) and at the Bornholm Deep (BY5) from 80 resp.90m, in the eastern Gotland Basin at BY10, Fårö and Gotland Deep, from 140, 150 resp. 160m. At the station Hanö Bight there was no hydrogen sulphide. The results of the September expedition from this station indicated hydrogen sulphide at depth greater than 70m.
The oxygen concentration was <2 ml/l in the Bornholm Basin (BY4 and BY5 at 70 resp.80m) and in the southeastern, eastern, northern and western Baltic from 80m and deeper. At the Landsort Deep the limit of oxygen concentration <2 ml/l was at 70m.
The concentrations of phosphate were between 0.1-0.2 µmol/l. The concentration of nitrate varied between 0.2-0.3 µmol/l. Some higher concentrations were found in the northern Baltic, especially at the Landsort Deep, where the concentration of nitrate was 1.5-2 µmol/l and of phosphate 0.4 µmol/l. The concentration of ammonia had an increased level in the southern Baltic with values at BY1 of 0.9 µmol/l - to be compared with the

concentration of 0.1-0.2 µmol/l in the rest of the Baltic. The concentration of silicate was normally 8-10 µmol/l, somewhat lower at BY29 in the northern Baltic and somewhat higher at Arkona and BY39.

PARTICIPANTS

Name	From
Bodil Thorstensson, chief scientist	SMHI Oceanographic Services.
Tuulikki Jaako	- ″ -
Nils Kajrup	- ″ -
Mats Ohlson	- ″ -
Jan Szaron	- ″ -

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