Bengt Yhlen

Swedish Meteorological and Hydrological Institute
Oceanographical Laboratory

2010-10-10
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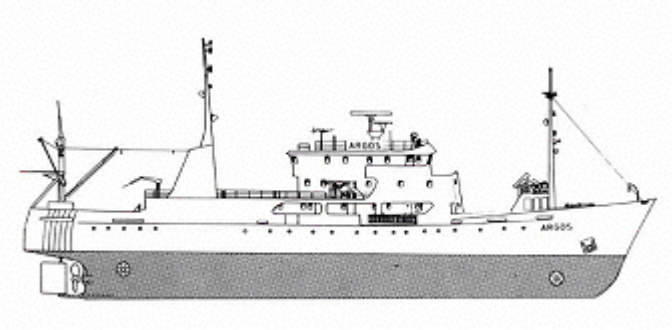
CRUISE REPORT FROM R/V ARGOS



Survey period: 2010-10-03- 2010-10-10

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

Principal: SMHI

SUMMARY

The expedition was part of SMHI's regular marine monitoring programme and covered the Skagerrak, Kattegat, Sound and Baltic Proper.
Data presented in this report have been subject to preliminary quality control procedures only.
Surface water temperatures and nutrient levels were normal in the whole area.
Oxygen levels in the bottom water of the Arkona Basin were good. At BY4 (Christiansö) in the Bornholm Basin new water, with an oxygen content of nearly 4 ml/l, had penetrated in close to the bottom. In the intermediate layers in the Gotland Deep, between 80 and 110 metres, there was a layer of water with oxygen concentrations close to 2 ml/l. In the rest of the Baltic Proper, oxygen concentrations below 2 ml/l were found at depths exceeding 60 to 75 metres.
Hydrogen sulphide was found at the bottom at BY5 (Bornholm Basin), in the Landsort Deep (BY31) from 100 metres, from 70-90 metres in the Western Gotland Basin and from 90 metres in the northern Eastern Gotland Basin (BY20) and 150 metres in the central Eastern Gotland Basin (BY15).
Phytoplankton activity was low in the region.

The next expedition will take place from November 8th to 13th.

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PRELIMINARY RESULTS

The cruise, part of SMHI´s ordinary monitoring programme, began in Oxelösund on October 3rd and ended in Västervik on October 10th. The winds during the first half of the expedition were strong and during the other half weak.

The Skagerrak

Surface temperatures were normal for the season and varied between 11.4 and 13.0°C. Surface salinity was variable, between 23.0 to 33.6 psu. The surface layer was thin in the central Skagerrak at Å17, where the halocline began at approx. 6 metres. In the remainder of the area, the halocline began between 20 and 40 metres. There was no sharp thermocline.
Nutrient levels in the surface layer showed typical values for the season. The sum of nitrate and nitrite ranged from the detection limit (0.1 µmol/l) to0.9 µmol/l, phosphate concentrations were between0.14 and 0.23 µmol/l and silicate from 1.0 to 2.9 µmol/l.
Oxygen saturation and fluorescence measurements indicated that phytoplankton activity was low.

The Kattegat and the Sound

Surface water temperatures were normal, ca. 12.5°C. Surface salinities were normal: in the Kattegat, between 17 and 20 psu while in the Sound it was somewhat low, at about 8 psu. The halocline was around 20 metres depth in the Kattegat and 10 metres in the Sound. The thermocline was weak.
All nutrients in the surface showed normal concentrations. Nitrate plus nitrite was below or near the detection limit throughout the area. Phosphate levels were between 0.08 and 0.16 µmol/l in the Kattegat and 0.29 µmol/l in the Sound. Silicate concentrations in the Kattegat decreased from 3.4 µmol/l in the south to 0.5 µmol/l in the north while concentrations in the Sound were 10.3 µmol/l.
The lowest oxygen concentrations were measured in bottom waters in the Sound with 3.0 ml/l, corresponding to a saturation of 50%.
Phytoplankton activity was low throughout the area.

Baltic Proper

The surface temperature showed normal values for the season. It ranged between 13.0 and 10.6°C. The halocline began at a depth of 35 metres in the Arkona Basin and at 40 to 60 metres in the remainder of the area. The thermocline was shallower, at approximately 30 to 40 metres.
In the surface layer all nutrients showed normal concentrations throughout the investigated area. Phosphate varied from 0.08 in the north to 0.26 µmol/l in the south, the sum of nitrite and nitrate varied from below the detection limit (< 0.10 µmol/l) to just above, with 0.4 µmol/l as a maximum. Silicate levels ranged between 7.2 and 9.7µmol/l.
Oxygen levels in bottom waters of the Arkona Basin were good, about 4.5 ml/l. At BY4 (Christiansö) in the Bornholm Basin new water with an oxygen content of nearly 4 ml/l penetrated in at the bottom. An intermediate layer in the Gotland Deep, between 80 and 110 metres, had a concentration close to 2 ml/l. In the rest of the Baltic Proper, oxygen concentrations below 2 ml/l were found at depths exceeding 60 to 75 metres.
Hydrogen sulphide was found at the bottom at BY5, in the Landsort Deep (BY31) from 100 metres, from 70-90 metres in the Western Gotland Basin, from 90 metres in the northern East Gotland Basin (BY20 Fårö Deep) and from 150 metres in the central Eastern Gotland Basin (BY15 East Gotland Deep).
Phytoplankton activity was low throughout the region.

PARTICIPANTS

Name		From	
Bengt Yhlen	Chief scientist	SMHI Oceanographic laboratory.	
Lars Andersson		-"-	
Sara Johansson		-"-	Disembarked in Göteborg
Anna-Kerstin Thell		-"-	Disembarked in Göteborg
Bodil Thorstenson		-”-	

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