B Thorstensson
B Yhlen

Swedish Meteorological and Hydrological Institute
Oceanographical Laboratory

2002-12-13
Dnr: Sh-2002-279

CRUISE REPORT FROM R/V ARGOS

Survey period: 2002-12-01 - 2002-12-12

Survey area: The Skagerrak, the Kattegat, the Sound, the Baltic proper and the Gulf of Bothnia.

Principal: SMHI

SUMMARY

The expedition was performed within SMHI's regular marine monitoring programme and covered the Skagerrak, the Kattegat, the Sound, the Baltic Proper and the Gulf of Bothnia.

The minor inflow of 20 km^3, which flowed in through the Sound at the end of October and was detected at BY4 November 13, had now spread to BY5 giving oxygen concentrations just above 1 ml/l at bottom in the Bornholm Basin. However the volume is small and the oxygen content will soon be consumed. At BY4 the trend is already decreasing.
In the remainder of the Baltic proper oxygen concentrations below 2 ml/l were found in the Eastern, Western and Northern Gotland Basins at depths exceeding 60 to 80 metres. Hydrogen sulphide was found from 70 metres in the Hanö Bight, from 100-125 metres in the Eastern and from 90-125 metres in the Northern and the Western Gotland Basins.

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 cruise, part of the SMHI's ordinary monitoring programme, began in Karlskrona December 1 and ended in Göteborg December 12. The weather during the expedition was dominated by weak winds and an air temperature of some degrees over or below zero. The atmospheric pressure was registered to more than 1050 hPa, an infrequent high value.

The Skagerrak

Surface water temperatures varied between 2.2 and 3.6 °C, which is below normal for the season. The homogeneous surface layer was thin.
All nutrients showed for the season normal values in the surface layer, phosphate ca. 0.3-0.5 µmol/l, the sum of nitrate+nitrite 1.7-3.3 µmol/l and silicate 2.4-8.0 µmol/l.

The Kattegat and the Sound

Surface water temperatures decreased from 4.4 °C in the south to 3.4 °C in the north, i.e. normal December values. The halocline as well as the thermocline was found at depths from 5 to 10 metres. The salinity above halocline was lower than normal giving enhanced silicate concentration, 14.5 µmol/l in the Sound and 9.0 µmol/l in northern Kattegat. Phosphate and the sum of nitrate+nitrite were normal for the season, ca. 0.6 and 3.5-5.8 µmol/l respectively. The lowest oxygen concentration measured was at W Landskrona in the Sound, 3.37 ml/l, corresponding to a saturation value of 53%.

The Baltic Proper

Surface water temperatures were in the range 6.9-4.2 °C, which is normal for the season. Thermocline and halocline were found at the same depth. They began at 40 metres in the Arkona Basin and in the remainder of the Baltic proper at approximately 50 to 60 metres. Phosphate and silicate content were somewhat higher than normal at most stations, 0.5 and 10-13 µmol/l respectively, while the sum of nitrate+nitrite where normal for the season, 1.3-3.4 µmol/l.
The minor inflow of 20 km^3, which flowed in through the Sound at the end of October and was detected at BY4 November 13, had now spread to BY5 giving oxygen concentrations just above 1 ml/l at bottom in the Bornholm Basin. However the volume is small and the oxygen content will soon be consumed. At BY4 the trend is already decreasing.
In the Arkona Basin the oxygen conditions were good. In the remainder of the Baltic proper oxygen concentrations below 2 ml/l were found in the Eastern, Western and Northern Gotland Basins at depths exceeding 60 to 80 metres. Hydrogen sulphide was found from 70 metres in the Hanö Bight, from 100-125 metres in the Eastern and from 90-125 metres in the Northern and the Western Gotland Basins.

The Gulf of Bothnia

The surface water temperatures in the Bothnian Bay varied between 0.0 and 1.8 °C and in the Bothnian Sea between 0.1 and 3.1°C, highest in the south. At Solovjeva in the Åland Sea the temperature was 3.7 and to the south of it, at the Sill, 4.6°C. Ice mainly was observed far north and along the coast of Finland. The surface water salinity in the Bothnian Bay was about 3 psu and in the Bothnian and Åland Sea ca. 5 psu.
The surface water in the Bothnian Sea had a phosphate concentration of 0.2-0.3 µmol/l, a nitrate concentration of 2.3-4.3 µmol/l and a silicate concentration of 13-23 µmol/l. On comparison the Bothnia Bay had lower phosphate concentration and higher nitrate concentration, 0.05 and 6-7 µmol/l respectively, and silicate had almost the double concentration, 34-38 µmol/l.

PARTICIPANTS

Name		From
Bodil Thorstensson,	chief scientist	v49 SMHI Oceanografiska lab.
Bengt Yhlen,	chief scientist	v50 - ″ -
Jonas Henriksen	v49	- ″ -
Tuulikki Jaako	v50	- ″ -
Sara Kollberg	v49	- ″ -
Eva Nyberg	v50	- ″ -
Hans Olsson	v49-50	- ″ -
Sari Sipilä	v49	- ″ -
Arne Sjöquist	v50	- ″ -
Josefin Mossberg,	trainee	
Marie Tilja,	trainee	

APPENDICES

Figurer

Klicka på knappen för att öppna bilagor.
Observera att denna länk enbart fungerar om Ni är uppkopplade mot 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