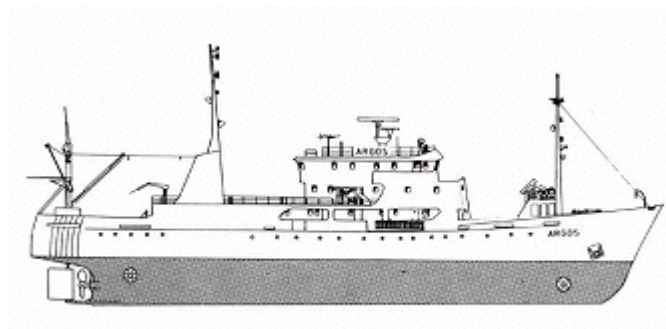


CRUISE REPORT FROM R/V ARGOS



Survey period: 2007-12-02 - 2007-12-13

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

Principal: SMHI

SUMMARY

The expedition took place within SMHI's regular marine monitoring programme and covered the Skagerrak, Kattegat, Sound, Baltic Proper and Gulf of Bothnia. This report is based on preliminary, part-quality controlled data.

Surface water temperatures in the Skagerrak, the Kattegat and the Baltic were normal.

Nutrient concentrations were normal in the surface waters.

Oxygen concentrations below 2 ml/l were found in the Baltic Proper at depths exceeding 60 to 80 metres

In the Western Gotland Basin hydrogen sulphide was found from 80 metres and below. In the northern Gotland Basin hydrogen sulphide began at a depth of 125 metres in the Landsort Deep (BY31) and at 90 metres in the northeast (BY29). In the eastern Gotland Basin hydrogen sulphide was found from 125 metres and below. In the Bornholm Basin hydrogen sulphide remained only at Christiansö (BY4).

The next expedition is scheduled for January 14-19, 2008.



PRELIMINARY RESULTS

The cruise, part of the SMHI's ordinary monitoring programme, began in Karlskrona on December 2nd and ended in Gothenburg on December 13th. The weekend was spent in Norrtälje.

The dominant weather during the first half of expedition consisted of strong winds first from southwest to north and later from south. Air temperature was between three and six degrees above zero. During the second half of the expedition, winds were from north to south-west of varying strength. Air temperatures were between 0 and 7°C

The Skagerrak

Surface water temperatures varied from 8.7°C in the central parts to 5.8°C in the coastal areas. This was normal. Surface salinity decreased from 33.5 psu in the central parts to 23.5 at P2.

Surface phosphate concentrations were normal, ca. 0.5 µmol/l, except at Å15 where they were low, at 0.27 µmol/l. Nitrite+nitrate concentrations were below normal in the central parts and ca. 3 µmol/l at P2. At the coast the concentration was between 4.3 and 6.4 µmol/l. Silicate varied from 3.5 µmol/l at Å15 to 11.2 µmol/l at Släggö.

The Kattegat and the Sound

Surface water temperatures were also normal in this area, about 6°C. Surface salinities were ca. 23 psu in the Kattegat, 20 psu in the Baltic Current outside Falkenberg and 10 psu in the Sound.

Throughout the area, nutrient concentrations were normal in the surface water, except for silicate which was slightly higher outside Falkenberg, and nitrate which was low in the Sound. In the Kattegat, surface phosphate concentration was about 0.5 µmol/l; nitrite+nitrate 2.5-4.5 µmol/l and silicate 6.6-12.1 µmol/l. In the Sound, phosphate was 0.6 µmol/l; nitrite+nitrate 1.5 µmol/l and silicate 10.8 µmol/l. The bottom water in Kattegat is now well oxygenated. In the Sound bottom oxygen concentration has increased to 3 ml/l, or ca. 50% saturation.

The Baltic Proper

Surface water temperature varied from 6.1 to 7.0°C, which is normal for the season. The thermocline and halocline both started at the same depth: 40 to 50 metres throughout the Baltic Proper, except for the Arkona Basin where they began at 30 to 35 metres.

Surface phosphate concentrations varied between 0.4 and 0.6 µmol/l. They were a little higher than normal in the Arkona- and Bornholm Basins as well in the south-east, but in the remaining parts were normal. Silicate concentrations in the surface water were lowest: 5.4 µmol/l, south-east of Gotland and highest: 19.5 µmol/l in southern Kalmarsund. Concentrations of nitrite+ nitrate in the surface layer were below normal west of Gotland, ca. 0.7 µmol/l, but normal in the remainder of the Baltic at between 1.4 and 2.8 µmol/l.

Oxygen concentrations below 2 ml/l were observed at depths exceeding 60 to 80 metres in the whole area. The bottom water of the Arkona Basin was well oxygenated with concentrations exceeding 5.3 ml/l.

In the Western Gotland Basin, hydrogen sulphide was found from 80 metres and below. In the northern Baltic Proper hydrogen sulphide began at a depth of 125 metres in the Landsort Deep (BY31) and at 90 metres in the northeast (BY29). In the eastern Gotland Basin hydrogen sulphide was found from 125 metres and below. In the Bornholm Basin hydrogen sulphide remained only at Christiansö (BY4).

The Gulf of Bothnia

Surface water temperatures in the Bothnian Bay varied between 3.8°C in the central part and 4.2°C in the north. In the Bothnian Sea, sea surface temperatures were recorded between 3.7°C outside the Swedish coast and 5.6°C at Grundkallen. In the Åland Sea the lowest temperature, 5.6°C, was measured at F64 Solovjeva, while 6.4°C was observed to the south, at the Sill.

Surface water salinity in the Bothnian Bay was about 3 psu. There was no stratification in the water column here. In the Bothnian Sea, the surface water salinity was 5.2-5.7 psu and at the Sill in the Åland Sea: 6.7 psu. In the central Bothnian Sea thermo- and halocline were observed at a depth of 55-60 metres.

The lowest oxygen saturation, 50-54%, was measured at US3 and US2 Ulvödjupet, in the Bothnian Sea, at a depth of 175 metres, where water contained 4.5 -4.7 ml/l oxygen.

Surface water in the Bothnian Sea had a phosphate concentration of 0.20-0.36 µmol/l, a nitrate concentration of 1.6-3.1 µmol/l and a silicate concentration of 12-23 µmol/l. The Bothnian Bay had lower phosphate concentrations and higher nitrate concentrations compared to the Bothnian Sea.

Phosphate concentrations were 0.06-0.08 µmol/l and nitrate was 5.2-6.6 µmol/l. Silicate concentrations were 32 µmol/l: much higher than those found in the Bothnian Sea. Ammonia had the highest concentration in the north at F2: 0.7 µmol/l, and along the Finnish coast: 0.5 µmol/l. This area even had a higher level of nitrite than normal: 0.13-0.19 µmol/l, in comparison with a normal concentration of 0.03-0.06 µmol/l.

PARTICIPANTS

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APPENDICES



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