

CRUISE REPORT FROM R/V ARGOS

Survey period: 990118-990123

Survey area: 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 Kattegat, the Sound and the Baltic Proper. Mapping for the winter pool of nutrients in the Kattegat was performed. The weather was dominated by moderate winds from south to southwest.

The sea surface temperatures as well as the surface nutrient concentrations were normal for the season. The spring-bloom had not yet started in any area.

The bottom water at station BY4 in the Bornholm Basin was oxygenated; concentrations over 4 ml/l were measured. Oxygen concentrations lesser than 2 ml/l were found below 70m in almost the rest of the Baltic Proper. Hydrogen sulphide was observed from 80m in the Bornholm Deep (BY5), from 125m at BY10 and from 150 m depth in the Gotland (BY15) and Fårö Deep (BY20).

PRELIMINARY RESULTS

The expedition, which was a part of SMHI's ordinary monitoring program, began and ended in Göteborg. Mapping for the winter pool of nutrients in the Kattegat was performed. The spring-bloom had not yet started in the researched area. In the Kattegat, the fluorescence measurements, especially in the eastern part, showed that the spring-bloom could be imminent. The weather during the expedition was dominated by moderate winds from south to southwest

The Kattegat and the Sound

The sea surface temperature varied between 2°C and 4°C. The nutrient concentrations were normal for the season both in the Kattegat and the Sound. The phosphate concentrations in the Kattegat were about 0.7 µmol/l and in the Sound about 0.6 µmol/l. The sum nitrate+nitrite varied between 8 and 11 µmol/l, except at Fladen and L:a Middelgrund, where the content between 20 and 60m depth, were higher. The concentration in the vicinity of the Sound and the Belts was about 7 µmol/l. In the Sound, the content of NO₂₃ decreased from 7 µmol/l in the north to 4.5 µmol/l in the south. The silicate concentrations varied between 10 and 12 µmol/l with the highest values in the southwestern part. The lowest oxygen quantity in the bottom water of the area, 5.4 ml/l corresponding to 80% saturation, was measured in the Sound.

The Baltic Sea

The sea surface temperature varied between 3.1°C and 4.3°C. Only in northeast it exceeded 4°C. Nutrient concentrations were normal for the season, phosphate about 0.5-0.7 µmol/l, nitrate+nitrite 3.3-4.2 µmol/l, and silicate 8.5-13 µmol/l. The oxygen conditions in the Arkona Basin were good. At station BY4 in the Bornholm Basin the bottom water was now well oxygenated. Concentrations over 4 ml/l, more than 50% saturation, were measured. Oxygen content below 2 ml/l was found below 70m depth in roughly the rest of the Baltic Proper. At station BY29 the limit was situated at 90m and at the Landsort Deep at 80m. Hydrogen sulphide was found at station By5 in the Bornholm Basin from 80m depth. In the Eastern Gotland Basin hydrogen sulphide was found from 125m depth at station BY10 and from 150m depth at the Gotland (BY15) and the Fårö Deep (BY20). At station BY29 in the Northern Gotland Basin the oxygen concentrations were very low from 125m depth and the nitrate vertical indicated that formation of hydrogen sulphide could be imminent.

PARTICIPANTS

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APPENDICES

- Track chart
- Table over stations, parameters and sampling depths
- Map showing bottom oxygen concentrations
- Monthly average plots for selected stations
- Profiles for selected stations