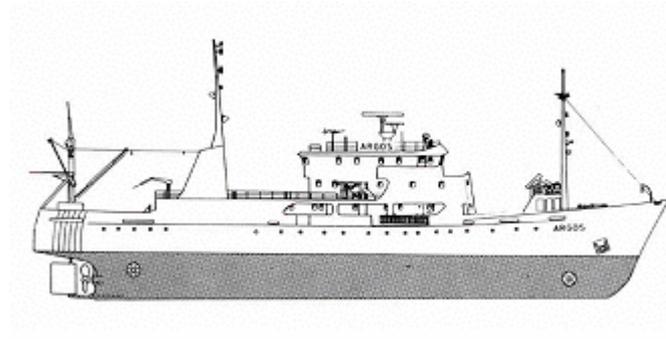


CRUISE REPORT FROM R/V ARGOS



Survey period: 2006-06-12 - 2006-06-17

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

Principal: SMHI

SUMMARY

The expedition was part of SMHI's regular marine monitoring programme and covered the Skagerrak, the Kattegat, the Sound and the Baltic Proper. Data presented in this report have been subject to preliminary quality control procedures only.

Surface water temperature was higher than normal in the Skagerrak, northern Kattegat and southern Baltic. Salinities at Anholt E, P2, Å13 and Å15, were lower than normal, due to a strong outflow from the Baltic. Phosphorus concentrations in the Arkona Basin, the Sound and southern Kattegat remain elevated. All dissolved inorganic nitrogen (DIN) had been consumed in the surface water at all stations. High silicate concentrations were found in the Kattegat. Oxygen levels below 2 ml/l were found at depths greater than 70-80 metres throughout the Baltic Proper. The bottom water in the Arkona basin was well oxygenated. Hydrogen sulphide was found in the eastern Gotland basin from 125-150 metres, and in the western Gotland basin and at Christiansö (Bornholm Basin) from 90 metres. High chlorophyll fluorescence was observed at 15 metres in the central Skagerrak, and at 20 metres at Laso E.

In co-operation with Gothenburg University's FRISBEE-project, water samples were taken for measurements of oxygen- and carbon isotopes at several stations. The project runs for one year.

The next expedition is scheduled for July 10 to 15, 2006.

PRELIMINARY RESULTS

The cruise, part of SMHI's ordinary monitoring programme, began in Gothenburg on June 12th and ended in the same port on June 17th. The work was aided by the settled sunny weather. Air temperature varied from 17-21 °C. In the middle of the week, a cold front led to localised strong winds and thunder storms. Following the passage of the front, the air temperature decreased some degrees. In co-operation with Gothenburg University's FRISBEE-project, water samples were taken for the measurement of oxygen- and carbon isotopes. The project runs for one year. The expedition aimed to reach harbour early on the morning of Saturday 17th June, to avoid the finish of the 2005-6 Volvo Ocean Race.

The Skagerrak

Surface water temperature varied from 15.7 – 16.9 °C. This is higher than normal for the season. Salinity varied between 19.6 and 28.9 psu. Salinity was lower than normal at P2 and Å15. The halocline was found at 5 metres at Å17. Phosphate and silicate concentrations were normal, <0.02 – 0.1 µmol/l and 0.4 – 1.4 µmol/l respectively. DIN-concentrations were below the detection limit, as is normal for the season. A layer between 50 and 75 metres at Å13 and Å15 had unusually low concentrations of nutrients, particularly nitrate. This water may have originated from surface of the North Sea (it had a salinity of 34 psu). When entering the Skagerrak it would have sunk to an appropriate density level.

High fluorescence was observed at 15 metres at P2, Å13 and Å16. Oxygen saturation was over 100% from the surface to the same depth, indicating phytoplankton production. Secchi depths varied between 7 and 9 metres. The lowest oxygen concentration (4.7 ml/l) was found in the bottom water at Släggö. This concentration equates to an oxygen saturation of 68 %.

The Kattegat and the Sound

Surface temperature varied from 12.9 (Drogden) – 17.2 °C (Fladen, higher than normal). Salinity varied between 21 psu in the northern Kattegat and 7.6 psu in the Sound. At Anholt E it was 10 psu, which is lower than normal. In the Kattegat the halocline (and thermocline) were found at 4 metres. At W Landskrona the halocline lay between 13 and 15 metres, and was well defined, with a salinity change of 7.8 psu to 28 psu.

Outflowing water from the Baltic - where the Arkona Basin has a higher phosphate level than normal - led to the surface water phosphorus concentration being slightly elevated at Anholt E and W Landskrona (0.22 and 0.27 µmol/l, respectively). At Fladen phosphate concentration was 0.07 µmol/l. Silicate levels were normal at W Landskrona (7.2 µmol/l) but elevated at Anholt E and Fladen (6.0 and 2.8 µmol/l, respectively). DIN concentrations were close to the limit of detection. Oxygen conditions in the deep water were normal for this time of the year throughout the area. At W Landskrona there was a saturation of 66 % in the bottom water (4.6 ml/l). Phytoplankton activity in the surface water of the southern Kattegat and the Sound led to greater super-saturation of oxygen than is normal. At 20 metres a considerable fluorescence peak was observed at the Läsö E Seawatch Buoy. Secchi depth varied from 7-10 metres.

Baltic Proper

Temperature in the surface water varied between 10.8 (Fårö) – 16.8 °C (BY1). This is normal for the season. The halocline was found at 25 metres in Arkona, at 40 metres in Bornholms basin and at 60 metres in the rest of the Baltic Proper. A clear thermocline was found only in the eastern Gotland Basin, at 4-10 metres. The phosphorus concentration was still elevated in the Arkona basin (0.3 µmol/l), while the remainder of the Baltic Proper was normal. DIN concentrations were close to or below the limit of detection at all stations, which is normal for the season. Silicate levels were normal for the time of the year.

Oxygen levels below 2 ml/l were found at 70-80 metres at all stations. Hydrogen sulphide was found below 125 - 150 metres in the eastern Gotland basin, and from 90 metres in the western Gotland basin and at Christiansö (in the Bornholm Basin). Deep water in the Arkona basin was well oxygenated. In the central parts of the Baltic Proper, fluorescence record indicated biological activity at 20 metres. At all samplings there was mainly phytoplankton of the species *Dinophysis*. At Arkona and Christiansö the surface water was super-saturated with oxygen, partly due to the recent increase in water temperature. The Secchi depth was 7-8 metres.

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