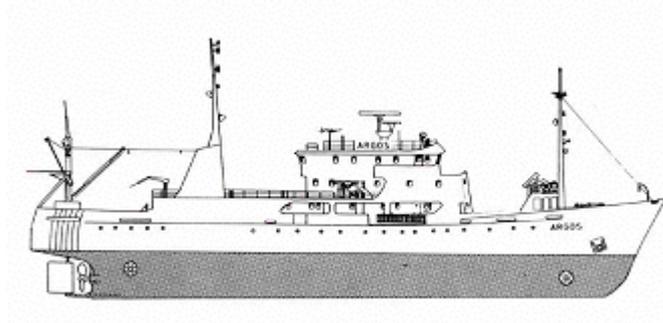


## CRUISE REPORT FROM R/V ARGOS



**Survey period:** 2009-04-13 - 2009-04-19

**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 temperatures were normal throughout the study area.

Nutrient concentrations were normal throughout the investigated area with the exception of silicate, concentrations, which were elevated in the Kattegat.

The water below the halocline in the Arkona Basin was well oxygenated with levels of ca. 6 ml/l.

In the rest of the Baltic Sea, oxygen concentrations below 2 ml/l were observed at depths exceeding 70 to 80 metres.

Hydrogen sulphide was found deeper than 100-125 metres in the Western Gotland Basin. In the eastern Gotland Basin hydrogen sulphide began at depths between 125 and 160 metres.

A plankton bloom was ongoing in the Baltic Proper and in the Kattegat. The spring bloom was over in the Skagerrak surface layer, though still in progress in deeper layers.

The next expedition will take place from the 11<sup>th</sup> to 16<sup>th</sup> May.

## **PRELIMINARY RESULTS**

The cruise, part of SMHI's ordinary monitoring programme, began in Göteborg on April 14 and ended in the same port April 19. The winds were weak to moderate during most of the expedition, with the exception of one day in the middle when the wind freshened to 10-13 m/s. Wind direction varied from north to east, except for the last day when it was southerly.

### **The Skagerrak**

Surface temperatures were normal for the season and varied between 7-8°C. Surface salinities were below normal, between 22 and 27 psu, except for at station Å17 in the central Skagerrak where it was higher than normal (32.4 psu). Thermocline and halocline were located close to the surface, at between 5 and 10 metres.

Nutrient concentrations in the surface layer were normal throughout the area, Inorganic nitrogen components had been consumed (< 0.10 µmol/l); phosphate concentrations were between 0.05 and 0.13 µmol/l and silicate between 0.4 and 1.2 µmol/l.

### **The Kattegat and the Sound**

Surface water temperatures were normal, 7.3-7.9°C in the Kattegat and 6.1°C in the southern part of the Sound. As in the Skagerrak, surface salinities were low: 15-21 psu in the Kattegat and 8 psu in the Sound. The halocline and thermocline were found at 10 to 20 metres depth.

Phosphate and nitrogen showed normal concentrations: inorganic nitrogen was the detection limit while phosphate varied between 0.12 and 0.14 µmol/l. On the other hand, silicate concentrations were elevated, at between 4.2 and 5.3 µmol/l in the Kattegat, and 6.3 µmol/l in the Sound.

The lowest oxygen concentration in the bottom water was recorded at a depth of 30 metres in the Sound, at 4.9 ml/l, which corresponds to a saturation of 70%.

### **Baltic Proper**

Surface water temperatures were normal for the season and varied from 3.8 to 5.1°C. The halocline began at 70 to 80 metres in the central Baltic Proper, at 50 to 60 metres in the Bornholm Basin and at 35 to 40 metres in the Arkona Basin. In most areas the thermocline and halocline coincided.

The concentrations of phosphate in surface waters ranged between 0.3 and 0.5 µmol/l and were more or less normal in the whole area. Nitrate + nitrite levels in the surface were normal and below detection limit in the whole area, with the exception of station BCSIII-10 in the southeast, where the concentration was 0.72 µmol/l. Silicate concentrations varied between 6 and 13 µmol/l, lowest in the Arkona Basin and highest in the western Gotland Basin.

Fluorescence measurements and high oxygen saturation indicated an ongoing plankton bloom from the surface down to 25-30 metres depth.

The water below the halocline in the Arkona Basin was well oxygenated with levels of 5 to 6 ml/l. In the remaining parts oxygen concentrations below 2 ml/l were observed at depths exceeding 70 to 80 metres.

Hydrogen sulphide was found deeper than 100-125 metres in the Western Gotland Basin. In the eastern Gotland Basin, hydrogen sulphide began at depths between 125 and 160 metres.

### **Coastal stations**

The coastal stations, Ref M1V1 in Kalmar Sound and N14 in the Kattegat showed normal values for the season for all parameters. At the Släggö, at the mouth of Gullmar fjord, temperature was higher than normal, while salinity was clearly below the seasonal mean. Silicate concentrations were strongly elevated: 22 µmol/l compared to normal, 4 µmol/l.

## PARTICIPANTS

Name		From
Lars Andersson	Chief scientist	SMHI Oceanographic laboratory.
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Hans Olsson		-"-
Bodil Thorstensson		-"-
Bengt Yhlen		-"-

## 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