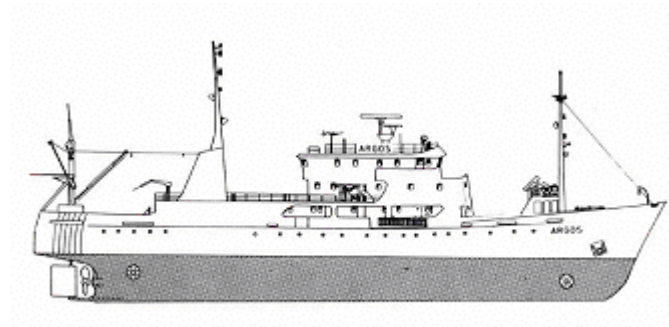


## CRUISE REPORT FROM R/V ARGOS



**Survey period:** 2008-02-16 - 2008-02-22

**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. Mapping of winter conditions was performed in the Baltic Proper.

Data presented in this report have been subject to preliminary quality control procedures only.

An early spring bloom occurred in the Skagerrak and Kattegat, resulting in low nutrient concentrations at the surface. In the Baltic Proper, the spring bloom had not started and nutrient concentrations were normal, with the exception of phosphate which was higher than normal. Surface water temperature was normal throughout most of the area.

Water below the halocline in the Arkona Basin was well oxygenated with levels of ca. 6 ml/l. Water was flowing in at the bottom in the western part of the Bornholm Basin and in the south of the eastern Gotland Basin, giving oxygen concentrations above 3 ml/l in the Bornholm Basin and 2.5 ml/l in the southern East Gotland Basin. 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 90-100 metres in the Western Gotland Basin. At most stations in the northern and eastern Gotland Basins, it began at depths between 125 and 150 metres.

## **PRELIMINARY RESULTS**

The cruise, part of SMHI's ordinary monitoring programme, began in Göteborg on February 16<sup>th</sup> and ended in Kalmar February 22<sup>th</sup>. Mapping of winter conditions was performed in the Baltic Proper. Wind speeds were moderate during most of the expedition, although a gale from the south passed through on the last night. S. Panigrahi from Umeå University performed tests on bacterial respiration. Water samples were collected for QUASIMEME.

### **The Skagerrak**

Surface temperatures were between 0.6 and 1.3°C. They were normal at P2, Släggö and Å13 but much below normal in central parts of Skagerrak. The high-pressure situation with low wind speeds that preceded the expedition has led to the formation of a thin surface layer with very low salinities, 20.5-23.3 psu, and a strong halocline situated shallower than 10 metres.

The strong stratification in the photic zone has led to an early spring bloom. Surface nutrient concentrations were therefore much below normal in the monitored region except at Släggö, where the bloom was in an earlier stage. Inorganic nitrogen compounds were all consumed: phosphate concentrations were 0.07-0.16 µmol/l and silicate 0.9-2.7 µmol/l. At Släggö nitrate was 4.6 µmol/l, phosphate was 0.4 µmol/l and silicate 9.9 µmol/l.

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

The surface water temperatures were normal: 0.9-1.0°C in the Kattegat and 1.3°C in the Sound. As in Skagerrak the surface salinities were low: 18-19 psu in the Kattegat and 9 psu in the Sound. The halocline was found above 10 metres in the north and between 10 and 15 metres in the south.

In the Kattegat the spring bloom was also in full swing, and surface nutrient concentrations were much below normal –as in the Skagerrak. In the Sound there were no indications of a bloom and the surface nitrate and silicate concentrations were normal at 4 and 11 µmol/l respectively. Phosphate was somewhat elevated, at 0.7 µmol/l.

Lowest oxygen concentrations, 4.9 ml/l, were found in the bottom water of the Sound at a depth of 25 metres. This corresponds to a saturation of 70 %.

### **Baltic Proper**

Surface water temperature varied from 2.2 and 3.6 (0.15° C in Kalmar Sound), which is normal for the season. The halocline began at 60 to 70 metres in the Baltic Proper, at ca. 50 metres in the Bornholm Basin and at 40 to 45 metres in the Arkona Basin. The thermocline often coincided with the halocline but in some places a weak thermocline was found above the halocline. Phosphate concentrations in surface waters were elevated throughout the Baltic Proper with concentrations ranging between 0.7 and 0.8 µmol/l. Silicate and nitrate + nitrite levels in the surface were normal. Silicate concentrations varied between 8.6 and 14.3 µmol/l (18.5 µmol/l in Kalmar Sound) and were highest in the northern Baltic Proper. Nitrate + nitrite varied between 2.4 and 5.9 µmol/l, and was highest in the Gdansk Bay.

The water below the halocline in the Arkona Basin was well oxygenated with levels of ca. 6 ml/l. Water was flowing in at the bottom of the western part of the Bornholm Basin with oxygen concentrations above 3 ml/l and in the south of the eastern Gotland Basin with levels over 2.5 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 90-100 metres in the Western Gotland Basin. In northern and eastern Gotland Basins hydrogen sulphide began at depths between 125 and 150 metres at most stations.

Phytoplankton activity was low throughout the region.

## PARTICIPANTS

Name		From
Bengt Yhlen	Chief scientist	SMHI Oceanographic laboratory.
Lars Andersson		-“-
Martin Hansson		-”-
Sari Sipilä		-”-
Bodil Thorstensson		-”-
Satyanarayan Panigrahi		Umeå University

## 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