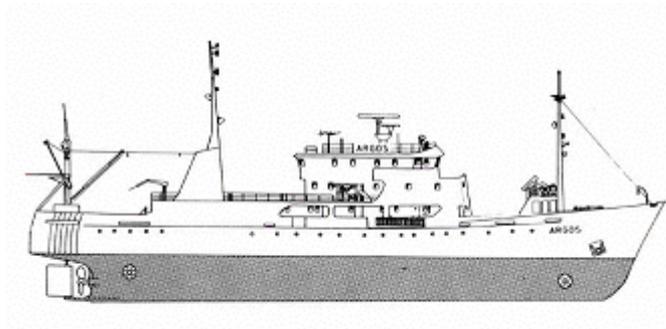


## CRUISE REPORT FROM R/V ARGOS



**Survey period:** 2009-08-17 - 2009-08-22

**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.

The nutrient concentrations in the surface water were normal throughout the monitored area, with the exception of elevated phosphate concentrations in the Arkona Basin and silicate concentrations slightly above normal in the western and eastern Gotland Basin.

In the southeast Baltic Proper and in the western Arkona Basin the oxygen concentrations were lower than normal. Elsewhere in the Baltic Proper oxygen concentration below 2 ml/l were found at depths exceeding 60-70 meters. Hydrogen Sulphide was found in the western Gotland Basin at depth greater than 80 meters while in the eastern Gotland Basin at depths exceeding 125 meters. In the Bornholm Basin and in the Hanö Bight hydrogen sulphide was found in the bottom water.

Next cruise will take place between 14<sup>th</sup> and 19<sup>th</sup> September

## **PRELIMINARY RESULTS**

The cruise, part of SMHI's ordinary monitoring programme, began in Göteborg on August 17<sup>th</sup> and ended in the same port on August 22<sup>nd</sup>. The winds during most of the expedition were moderate. Zooplankton samples were taken as part of the Bazooqa project, studying the occurrence of the comb jelly Mnemiopsis. Maintenance on SMHI's wave buoy in the southeast Baltic Proper were also performed during the cruise.

### **The Skagerrak**

Both temperature and salinity in the surface water was normal for this season and varied around 17°C and 31-32 psu respectively.

The halocline was weakly developed along the coast and the thermocline was found between 50 and 80 meters depths. In the western parts both the thermocline and the halocline were well developed and could be found at depths between 10 and 20 meters.

The concentrations of nutrients in the surface layer were normal for the season throughout the monitored area. The inorganic nitrogen components were consumed ( $< 0.10 \mu\text{mol/l}$ ), the phosphate concentrations varied between below the detection limit ( $< 0.02 \mu\text{mol/l}$ ) and  $0.09 \mu\text{mol/l}$  and silicate between  $0.8 - 2.0 \mu\text{mol/l}$ .

The deep water was well oxygenated in the whole area.

Phytoplankton activity, based on chlorophyll fluorescence, was low throughout the area.

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

The surface temperature was normal for the season and varied slightly around 18°C. The surface salinity varied from 21-22 psu. In the Sound, the salinity was 19 psu, which is above normal. Both the halocline and thermocline could be found between 10 and 15 meters depth.

All nutrients showed normal concentrations in the area, except for the Sound where the phosphate- and silicate concentrations were below normal. The sum of nitrite + nitrate was below the detection limit ( $< 0.10 \mu\text{mol/l}$ ), while the phosphate concentrations varied around  $0.03 \mu\text{mol/l}$ , and silicate were low ( $0.7 \mu\text{mol/l}$ )

The lowest oxygen concentrations were found close to the bottom water in the Sound, 2.84 ml/l, which corresponds to a saturation of 42%.

Phytoplankton activity, based on chlorophyll fluorescence, was low throughout the area.

### **The Baltic Proper**

The temperature in the surface water was normal and varied between 15°C and 19°C. The halocline was found at 30 to 40 meters in the Arkona Basin and 50 to 60 meters in the Bornholm Basin and somewhat deeper in the central parts of the Baltic Proper. The thermocline was found between 20 to 30 meters depth.

Phosphate concentrations at the surface varied between  $0.06$  and  $0.23 \mu\text{mol/l}$ , and similar to measurements performed during July, the concentration were elevated in the eastern Arkona Basin. The sum of nitrite + nitrate were below the detection limit ( $< 0.10 \mu\text{mol/l}$ ) throughout the Baltic Proper, which is normal for the season. The silicate concentrations varied between  $7.5$  and  $9.9 \mu\text{mol/l}$ , lowest in the Bornholm Basin, and similar to previous measurements in July, highest and above normal in the western and eastern Gotland Basin.

In the western parts of the Arkona Basin and in the southeast Baltic Proper (BCSIII-10) oxygen levels in the bottom water were below normal. In the Bornholm Basin and in the Hanö Bight oxygen concentrations below 2 ml/l were found at depths exceeding 60 meters and hydrogen sulphide was found in the bottom water. In the remaining parts of the Baltic Proper oxygen concentrations below 2 ml/l were found at depths greater than 70 meters. Hydrogen sulphide was found in the western Gotland Basin at depths greater than 80 meters, while in the eastern Gotland Basin from depths exceeding 125 meters.

Phytoplankton activity, based on chlorophyll fluorescence, was low throughout the area.

## PARTICIPANTS

Arne	Svensson	Chief scientist	SMHI Oceanographic laboratory
Kristin	Andersson		-"-
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Sara	Johansson		-"-
Martin	Hansson		-"-
Ulf	Christensen		SMHI Norrköping
Markus	Andersen		-"-
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Sanne	Kjellerup Hansen		-"-

## APPENDICES

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



Click on the button to open appendices.  
Note that this will only work when  
connected to Internet!