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2012-07-20
Dnr: M/Gbg-2012-151

Report of SMHIs monitoring cruise from KBV001 Poseidon

Survey period: 2012-07-09 to 2012-07-14
Survey area: The Skagerrak, Kattegat, 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 Baltic Proper. Data presented in this report have been subject to preliminary quality control procedures only. The Knolls Grund wave buoy in the West Gotland Basin was recovered for servicing and replaced.
In the Skagerrak and Kattegat, surface water temperatures were normal and sea surface salinity lower than normal. Surface temperatures and salinities were normal for the time of year in the Baltic. Nutrient concentrations in surface waters were normal in most of the region, with the exception of silicate and phosphate which were higher than normal in the Sound and southern Baltic. Silicate levels were even above normal in the western Baltic.
Oxygen concentrations were close to zero in the Bornholm Basin / Hanö Bight. With the exception of station BCSIII-10 in the southeastern Baltic, oxygen concentrations below 2 ml/l occurred throughout the remainder of the Baltic Proper where depths exceeded 65 – 85 metres.
Hydrogen sulphide was found once again in the eastern and western Gotland basins from 100 – 115 metres.
Surface accumulations of cyanobacteria (blue-green algae) were observed in Hanöbukten. A more detailed report describing observed algae can be found here:
http://www.smhi.se/oceanografi/oce_info_data/reports/havmiljoarkiv/oce_reportarchive12.html

The next expedition is planned for week 34 (20th – 26th August).

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PRELIMINARY RESULTS

The cruise, part of SMHI´s ordinary monitoring programme, began in Göteborg on July 9th and ended in the same port July 14th. Winds were mainly weak to moderate during the expedition. Air temperature varied between 13° and 18° Celsius. The expedition was the first of the year where all planned stations could be sampled at the correct locations, as all permits to sample had been granted.
During the expedition, the wave buoy at Knolls Grund was recovered for servicing, and a new buoy deployed in its place.

Skagerrak

Surface water temperatures were normal for the season and varied from 17.2 to 18.1°C, warmest at the coast. Surface salinities varied from slightly lower than normal at the coast (ca. 20.7) to normal in the west (29.2). The halocline and thermocline were found between 10 and 20 metres throughout the area. Nutrient concentrations were normal for the time of year: Phosphate varied from 0.03 – 0.07 µmol/l; Silicate between 0.2 and 0.5 µmol/l while the sum of nitrite and nitrate was below the limit of detection (< 0.10 µmol/l).
An algal bloom was underway in the pycnocline of the central Skagerrak.

Kattegat and the Sound

In the Kattegat and Sound, surface water temperatures were normal and varied from 18.1°C in the north to 17.1°C in the south. Surface salinity was lower than normal and varied from 16.4 in the east to 17.9 in the north, while it was 8.6 in the Sound. The thermocline and halocline were coincident and could be found between 10 and 18 metres throughout the area.
Nutrient levels in the Kattegat were normal, while in the Sound phosphate and silicate levels were above normal. Phosphate varied from 0.53 µmol/l in the Sound to 0.07 µmol/l in the northern Kattegat. Silicate concentrations increased from 0.2 µmol/l in the northern parts to 10.0 µmol/l in the Sound, while the sum of nitrate and nitrite was close to the limit of detection throughout the region.
Oxygen conditions were normal for the time of year. Lowest concentrations were observed in the deep water at Anholt E., with 4.2 ml/l oxygen being equivalent to a saturation of 61%.
A Secchi depth around 10 metres indicated that plankton activity was minimal throughout the area.

Baltic Proper

The temperature in the surface water was normal throughout the region and varied from 15.0°C to 16.3°C. Surface salinity was normal for the time of year and increased from 6.7 in the north to 7.8 in the south. The thermocline was found between 15 and 20 metres. The halocline started at 40 metres deep in the Arkona Basin, and from 50 to 80 metres deep elsewhere.
Phosphate concentrations in surface waters were normal throughout the area with the exception of the southern Baltic where they were higher than normal and varied between 0.06 and 0.42 µmol/l across the whole region. The sum of nitrate and nitrite concentrations was normal for the time of year and was below the limit of detection throughout the region. Silicate concentrations were above normal in the south and west, but otherwise normal between 6.8 and 11.5 µmol/l.
Oxygen concentrations at the bottom were above 3 ml/l in the Arkona Basin, while the Hanö Bight / Bornholm Basin bottom water was barely oxic (0.63 – 0.70 ml/l). Oxygen concentrations of 2.5 ml/l were found at station BCSIII-10 in the south eastern Baltic Proper. In the rest of the Baltic Proper, oxygen concentrations below 2 ml/l were found at depths exceeding 65 – 85 metres, while hydrogen sulphide was found below 100 – 115 metres in the western and eastern Gotland Basins.
Some phytoplankton activity was observable as a fluorescence peak above the thermocline. The only surface accumulations of cyanobacteria were seen in the Hanö Bight.

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PARTICIPANTS

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APPENDICES

Plots

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