

Nutrients and hydrography in the North Sea

late autumn 1999

Report from a cruise with R/V "G. O. Sars"

November 15 - December 20, 1999

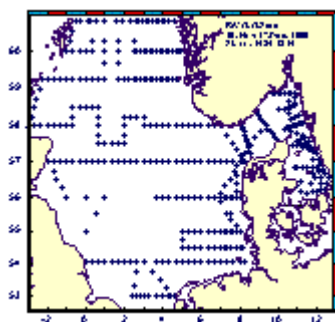
by

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The primary purpose of this presentation is to notify both interested scientists and managers as well about the existence of our monitoring data from the North Sea in November – December. The aim of the monitoring program is to have a background both for a better understanding of the transport of nutrients into Norwegian waters and for the evaluations of possible trends over the years in magnitude and distribution of nutrients in the North Sea, the Skagerrak and the Kattegat.

The yearly cruise is a combined fisheries and environmental survey. The fisheries investigations are mainly an acoustic survey focused on the distribution and abundance of sprat and young herring in the southern part of the North Sea, south of 57° N, and in the Skagerrak and the Kattegat. The value of the fisheries survey this year was unfortunately considerably reduced due to the bad weather conditions that persisted during most of the cruise.

The environmental investigations, with the main focus on describing the distribution of nutrients, are this year's continuation of our monitoring program on nutrients in the North Sea that started in 1980. The coverage of the area has varied a little from year to year depending on the weather conditions and ship time available.



[Fig. 1. The position of stations \(80k \)](#)

Figure 1 presents the positions of the stations, 380 stations altogether, where water was collected using a SeaBird rosette of twelve water bottles mounted on a SeaBird CTD. The sampling depths for water samples were according to the ICES standard depths, i.e.; 5, 10, 20, 30, 50, 75, 100, 125, 150, 200, 250, 300, 400 meters and so on. The deepest samples were collected from 2 to 10 meters above the bottom, depending on the weather situation and bottom topography. The water depths at the stations varied from about 15 meters in the German Bight and in the Kattegat to more than 600 meters in the Norwegian trench between Denmark and Norway.

Continuous vertical profiles of temperature and salinity were sampled at all stations. At some stations water was tapped from all depths for traditional oxygen measurements by Winkler determination. Samples for nutrients from all standard depths and stations were analysed on our on-board auto-analyser. In addition samples for Chlorophyll determinations were collected at all stations from 10 meters depth and if the water depth allowed also from 30 meters depth.

For the purpose of Chlorophyll measurements 250 ml samples were filtered and the filters were stored deep-frozen for analysis at the home institute.

As examples of the horizontal distribution we have chosen to present the distribution in 10 meters depth of salinity, nitrate, nitrite, phosphate and silicate. The five figures present a general picture of the distribution of the surface water masses of the North Sea in a late autumn/winter situation. The general distribution has been more or less similar for every year, but the degree of observed elevated nutrient levels vary considerably from year to year. This is most pronounced in the shallow waters of the inner part of the German Bight as well as along the western coast of Jutland.

