MINISTRY OF AGRICULTURE, FISHERIES AND FOOD FISHERIES LABORATORY, LOWESTOFT, SUFFOLK, ENGLAND

1993 RESEARCH VESSEL PROGRAMME

REPORT: RV CORYSTES: CRUISE 5a

STAFF:

Dr J Brown

Mr D S Kirkwood

Mr N Faber

Mr R Rycroft

Ms T Brooks

Mr S Jones

Dr A Rendell (UEA)

DURATION (all times GMT)

Left Lowestoft 1845h 4 May Arrived Lowestoft 1200h 10 May

LOCALITY: North Sea, Wash and Humber

AIMS:

1. To identify and quantify the fate of river-borne nutrients entering the Wash and Humber estuary, examining nutrient distributions and critical processes from the river inputs through to the North Sea in subtidal sediments and overlying waters.

2: To measure factors affecting benthic nutrient recycling in subtidal sediments along transect across the North Sea.

NARRATIVE (all times GMT):

After departing Lowestoft, Corystes made for the northern most of the planned stations (HOS11) (see Fig. 1), with work commencing immediately after breakfast (5/5). Stations were occupied south to OS12 at the mouth of the Wash, with a combination of CTD and surface water samples. Some problems were encountered with the rosette, with bottles failing to fire at times and firing at others without a confirmation on the deck unit. The problem persisted throughout the cruise. The ship proceeded to anchor at WG9 (2300 5/5) in the central Wash in order to test the newly installed ADCP (acoustic Doppler current profiler) and trial the S4 current meter, the latter deployed from the coring winch.

On completion of the anchor station (0630h 6/5), a survey of the JoNuS Wash grid was undertaken, missing out two stations (WG22 and WG16) as the water depth was regarded as too shallow. Upon completion at approximately 2045h, work was halted whilst contaminated hydraulic fluid in the CTD gantry was replaced. This was undertaken at anchor, with 6 hours lost from the scientific programme.

Work recommenced at approximately 0300h (7/5) and the North Sea transect started. On the eastward leg the weather deteriorated, with winds exceeding 30 knots from the north east on arrival in Dutch coastal waters (stations NS8 - 10). Fortunately, work was not unduly hampered and by the following morning conditions had moderated (wind 20 knots).

After sampling south along the Dutch coast to the Rhine (station NS19), a line of surface water samples was undertaken (Fig. 1) northwards from the Rhine, west and then south to NS20 (0330h 9/5). The remainder of the North Sea transect was completed, finishing at station NS35 (2200 h 10/5).

RESULTS (preliminary):

This cruise is a component of JoNuS, therefore aims 1 and 2 will ultimately be met within the programme as a whole. Given this, the sampling aims for the cruise were successfully met, with 59 CTD and 73 surface water stations completed for nutrient, chlorophyll, suspended load, C:N:P (Carbon: Nitrogen: Phosphorus) and water column structure analysis.

Despite calm sunny conditions and relatively low levels of suspended load, levels of primary productivity on the UK side appeared typical for early spring, with the high nutrient values consistent with pre-bloom conditions. Riverine discharge into the Wash appeared higher than encountered in previous JoNuS years, with stratification near to the rivers, and to a lesser extent at the north eastern end of the Wash. Toward the Dutch and Belgian coasts nutrient values were lower, with a greenish tinge to the residue on the filter papers indicating comparatively high levels of primary productivity, associated with the Rhine and Scheldt out flows.

The additional transect of surface water samples north of the Rhine will provide data to augment the analysis of Dickson and Kirkwood (1992) in their investigation of phosphate in the southern North Sea. To date, it is suggested that there is a strong and consistent seasonal cycle with no evidence of a trend over the period 1930 to 1992.

As far as it is possible to tell at this stage the Broad Band ADCP appeared to function correctly.

REFERENCE:

Dickson, R.R. and Kirkwood, D.S., 1992. An analysis of historical phosphate data for the southern North Sea. Quality Status Report, North Sea.

Juan Brown 10 May 1993

SEEN IN DRAFT: B Chapman (Master)

M Reeder (S.F.M.)

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PG-S

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BASIC LIST+

Dr J Brown x 4

Mr D S Kirkwood

Mr N Faber

Mr R Rycroft

Ms T Brooks

Station positions for Corystes 5a/93

SHOWING : STATION POSITION COASTLINE

