5714

This is a report on a joint project involving CEFAS (MAFF) + DANI with additional DOE funding. The project will consider mechanisms of nutrient cycling in Liverpool Bay + western Irish Sea and builds upon DANI initiatives with in situ mooring technology. The collaboration with MAFF has been very fruitful in results will contribute to the otherwise limited information available for the Quality Status Report required of the UK + ROI governments under the Oslo Paris Commission.
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BIOLOGICAL OCEANOGRAPHY CRUISE REPORT

LF 10/97

3 March 1997

PERSONNEL

B Stewart	(SIC), SSO, DANI.
R Gowen	SSO, DANI.
S Bloomfield	ASO, DANI
C McAtamney	Res. Assist QUB
M Allen	Res. Assist. QUB

OBJECTIVES

i. As part of a joint nutrient study (JONUS) with CEFAS Lowestoft, to assess temperature, salinity and nutrient distributions over a grid of stations in a central area of the Irish Sea and in Liverpool Bay.
ii. To recover two instrument moorings located at station 45 on the sampling grid, attach sediment traps and current meters and redeploy at station 38A.

CRUISE NARRATIVE

Sunday 2 March 1997

Final preparations for the cruise continued as mooring components and instrumentation were interconnected and readied for deployment. All DANI and QUB scientific crew were onboard by 2000 hrs when equipment and instrumentation was tested and confirmed to be functioning properly. Following a talk on ship safety and a demonstration of life saving equipment, the RV Lough Foyle departed Belfast at 2200 hrs and sailed overnight in a light southerly wind to the mooring site at station 45 (see attached sampling grid).

Monday 3 March 1997

The ship arrived on the mooring site (position 53° 42'.16N 05° 34'.61W) at 0700hrs. The weather was dry and bright with a light easterly wind. Work commenced at 0800 hrs, with recovery of the instrument mooring (buoy i.d. No. 2) to the shipdeck completed at 0930 hrs. The remaining instrument mooring guard buoy No.3 was recovered to shipdeck at 1015 hrs. While sailing to the position of redeployment, mooring components were inspected for corrosion and data from temperature and depth sensors down loaded. The vessel arrived on station at 1100 hrs where preparations for deployment continued. The mooring with water samplers attached (buoy id. No. 2) was successfully deployed at 1330 hrs on position 53° 47'.15N 05° 37'.80W and the mooring with sediment traps attached (buoy id. No. 3) was successfully deployed at 1430 hrs on position 53° 47'.45N 05° 37'.72W. The Irish Marine Emergency Service was informed of the change in position of the moorings and requested to modify their navigation warning broadcasts accordingly. Work then commenced on the sampling schedule from station 38A at 1415 hrs, continued with

station 45 and finished for the day on station 45A at 2030 hrs. Overnight in calm seas the vessel drifted in the vicinity of station 45A.

Tuesday 4 March 1997

Work commenced on station 47 at 0730 hrs and continued in a north easterly direction in the central Irish Sea with stations 37A, A1 and 38. The weather was dry and bright with light winds. After a lengthy delay the vessel eventually arrived in Liverpool Bay at 2230 hrs to complete the final stage of the survey with stations A, B and C. Work for the day was completed at 0030 hrs Wednesday. Overnight in light winds the vessel sailed towards Belfast.

Wednesday 5 March 1997

The vessel docked in Belfast at 1230 hrs where scientific and mooring equipment was dismantled and unloaded. The scientific crew disembarked at 1330hrs.

PARAMETERS MONITORED

The CTD/rosette water sampler was deployed at all stations on the sampling grid to acquire nutrient, chlorophyll a, temperature and salinity data from the depth profile. Samples were taken every 10 metres over the depth profile at station 38A. Daylight permitting, Secchi disc readings were taken at each station. Profile samples for total aluminium were taken at stations 38, 37A, 45A, A1, 45 and 38A. Sediment cores were taken at stations 47, 45A, A1, 45 and 38A and subsampled for chlorophyll *a*, total organic carbon/nitrogen and total aluminium.

SUMMARY OF RESULTS

Data from the CTD profiles and nutrient analysis show the survey area to be entirely mixed from surface to bottom. In the central Irish Sea, typical salinity and temperature was 34.35 ppt and 7.7 °C respectively. Wheras in Liverpool Bay, freshwater influence reduced both salinity and temperature throughout the profile to 33.91 ppt and 6.4 °C respectively. Nutrient concentrations of inorganic nitrogen in the open sea, typically 9 -10 micromoles $N\ l^{-1}$, have approximately doubled since last November and are close to the expected winter maximum. Higher nutrient levels were monitored in Liverpool Bay and ranged 11 -12.5 micromoles $N\ l^{-1}$.
A number of samples were taken for total aluminium analysis. It is planned to use aluminium as a tracer, both for resuspended sediment in the water column and for resettled sediment captured by the sediment traps. This will allow a more accurate assessment of the contribution of the spring algal bloom products to the seabed.

PROBLEMS ENCOUNTERED

1. On recovery it was found that the McLane, 400 ml volume, biological, water sampler had not sampled since deployment almost two weeks previous. An inspection revealed that the sample pump was not working; a problem that had ocurred recently in two other McLane samplers. The sampler was removed from the mooring for repair in the laboratory and replaced by a length of wire. The remaining 30 ml volume, nutrient, water sampler had sampled as programmed and was redeployed at the new mooring site to continue operating as scheduled. It is intended that the biological sampler will be repaired and can be deployed during the first week in April, in time to monitor the start of the Spring bloom.

2. Following redeployment of the mooring at station 38A, the skipper of a Kilkeel based trawler contacted the MV Lough Foyle and strongly objected to the new location of the mooring, as it interfered with his normal fishing area. Following discussions between Dr Heaney and Fisheries Division it was decided to leave the mooring at the present position and continue with the survey cruise.

ACKNOWLEGEMENTS

I am grateful to the deck crew of the MV Lough Foyle for their assistance and expertise shown during the mooring recovery and deployment operations. The ship's master, officers, engineers and catering staff are also thanked for their co-operation during this cruise.

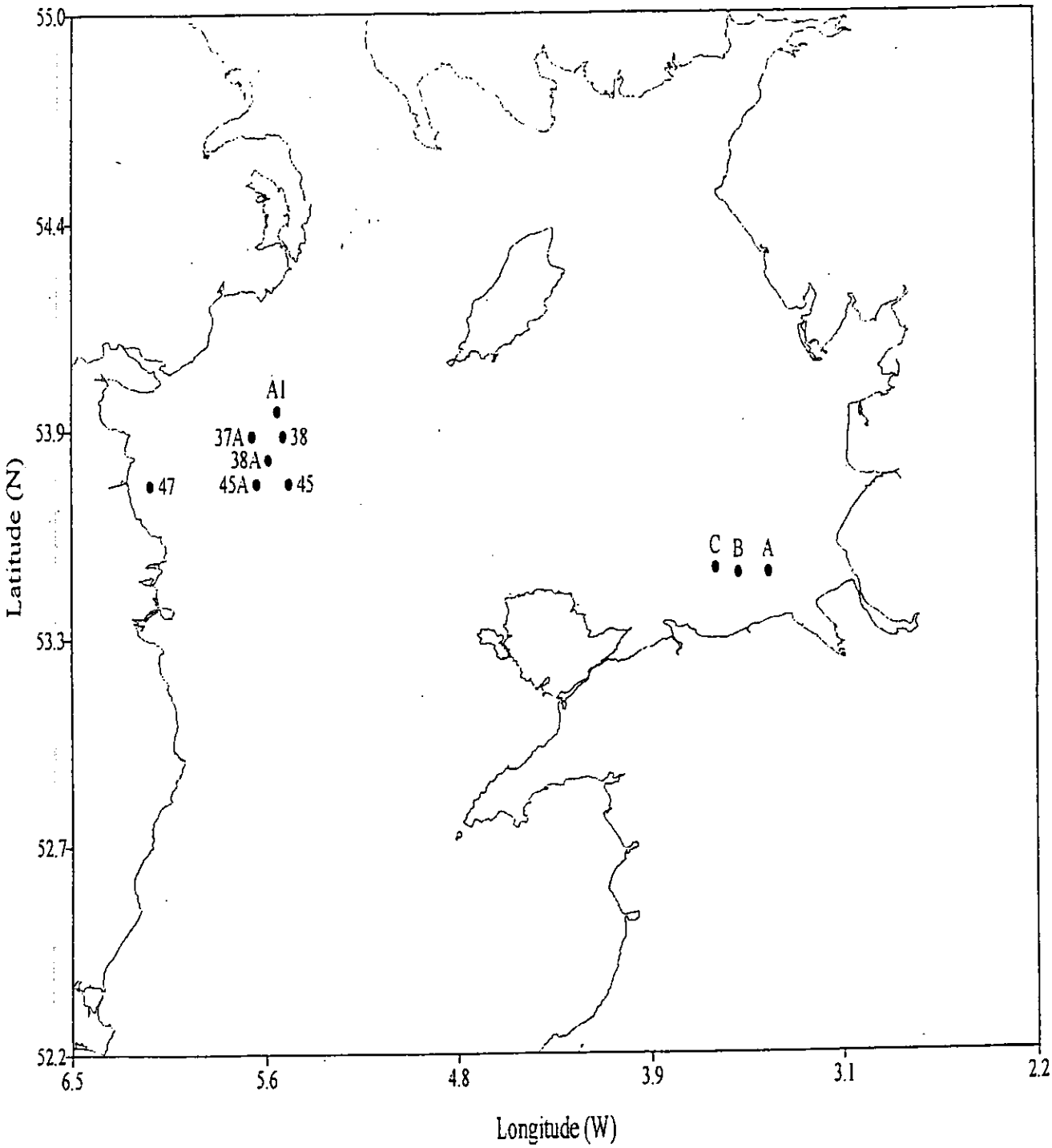
B M Stewart

B M STEWART

25 March 1997

Biological Oceanography Cruise LF 10/97

3-7 March 1997



BIOLOGICAL OCEANOGRAPHY CRUISE LF 10/97

3 - 7 March 1997

PROPOSED WORK SCHEDULE

STATION	Lat.	Long.	Activity
38	53 51	05 34	CTD, Secchi, Al, corer + sediment Al
37A	53 51	05 42	CTD, Secchi, Al, corer + sediment Al
45A	53 43.2	05 40.8	CTD, Secchi, Al, corer + sediment Al
A1	53 55.2	05 35.5	CTD, Secchi, Al, corer + sediment Al .
45	53 43.2	05 32.4	CTD, Secchi, Al, corer + sediment Al **& mooring recovery**
38A	53 47.2	05 37.75	CTD, Secchi, Al, corer + sediment Al, C/N, Chl a, & **mooring redeployment**
47	53 43	06 09	CTD, Secchi, corer + sediment C/N & Chl a.
Liverpool Bay Stations			
A	53 28.3	03 25.0 (16m)	CTD, Secchi.
B	53 28.3	03 33.0 (17m)	CTD, Secchi
C	53 29.0	03 39.0 (25m)	CTD, Secchi