5725

2. Dr M'Murray

This cruise was essentially a dry-run exercise for new technology cruises under the DETR funded consortium of DANI, CEFAS & SAHFOS. The cruise was innovative in that we were able to determine very significant changes of water type & phytoplankton quantity & quality over relatively small spatial scales in real time on board ship. Such ability allows more innovative real-time decision making for process-oriented studies of fisheries & environmental significance.

Dr M 12/6

Biological Oceanography Cruise : 1998

Cruise Report
(May 05 - 07)

Personnel

R. Gowen (SIC)	SSO	(DANI)
S.I. Heaney	SPSO	(DANI)
P.Eliott	SO	(DANI)
K. Embleton	RA	(Queens)
G. M^{C}Cullough	RA	(QUEENS)

Cruise Objectives

1. to collect data on water column structure at the DANI mooring site and standard station in Irish coastal waters.

2. to investigate the distribution of phytoplankton and dissolved nutrients along an east - west section of the Irish Sea from Irish coastal waters to Liverpool Bay.

Cruise Narrative

R.V. Lough Foyle departed Belfast at 2100 on Tuesday May 05 and sailed for the standard DANI station in Irish coastal waters. Work commenced at station 47 in Irish coastal waters (Figure 1) at 0600 on Wednesday May 06. A CTD profile was recorded and water samples for estimation of phytoplankton biomass and concentrations of dissolved inorganic nutrients were collected. Zooplankton samples were collected using a 0.6 m, 280 μm mesh ring net (vertical hauls). Lough Foyle worked a line of CTD stations across the Irish Sea (including the DANI mooring station, where additional zooplankton samples were collected) to Liverpool Bay. The final station was completed at 2030 h and the ship returned to Belfast.

Preliminary Results

Lowest concentrations of nitrate were measured in Irish coastal waters and in the surface mixed layer of the offshore stratified region (Figure 2). Nitrate was close to winter levels at depth in the stratified region and throughout the water column in deep, vertically mixed waters of the eastern Irish Sea. In comparison to Irish coastal waters, there was evidence of nitrogen enrichment in Liverpool Bay. Silicate depletion was evident in the two coastal regions.

The distribution of phytoplankton biomass is shown in Figure 2. The maximum chlorophyll concentration (up to 28 mg m^{-3}) was observed in Liverpool Bay and was approximately 4 times the concentration measured in Irish coastal waters. The lowest biomass ($\approx$ 0.6 mg m^{-3}) was found below the thermocline in the stratifed region and throughout the water column of the deep, mixed waters of the eastern Irish Sea.

The phytoplankton community in Irish coastal waters was dominated by diatoms. The most abundant species was *Chaetoceros socialis*. The phytoplankton community in Liverpool Bay was also dominated by diatoms, although the population was characterised by large species such as *Guinardia flaccida*, *Eucampia zodiacus* and *Bidulphia* spp.

Acknowledgments

I would like to thank the captain, officers and crew of the R.V. Lough Foyle for their assistance during the cruise. I also wish to express my thanks to the scientific staff who participated in the cruise.

Richard Gowen

June 08, 1998

Figure 1.

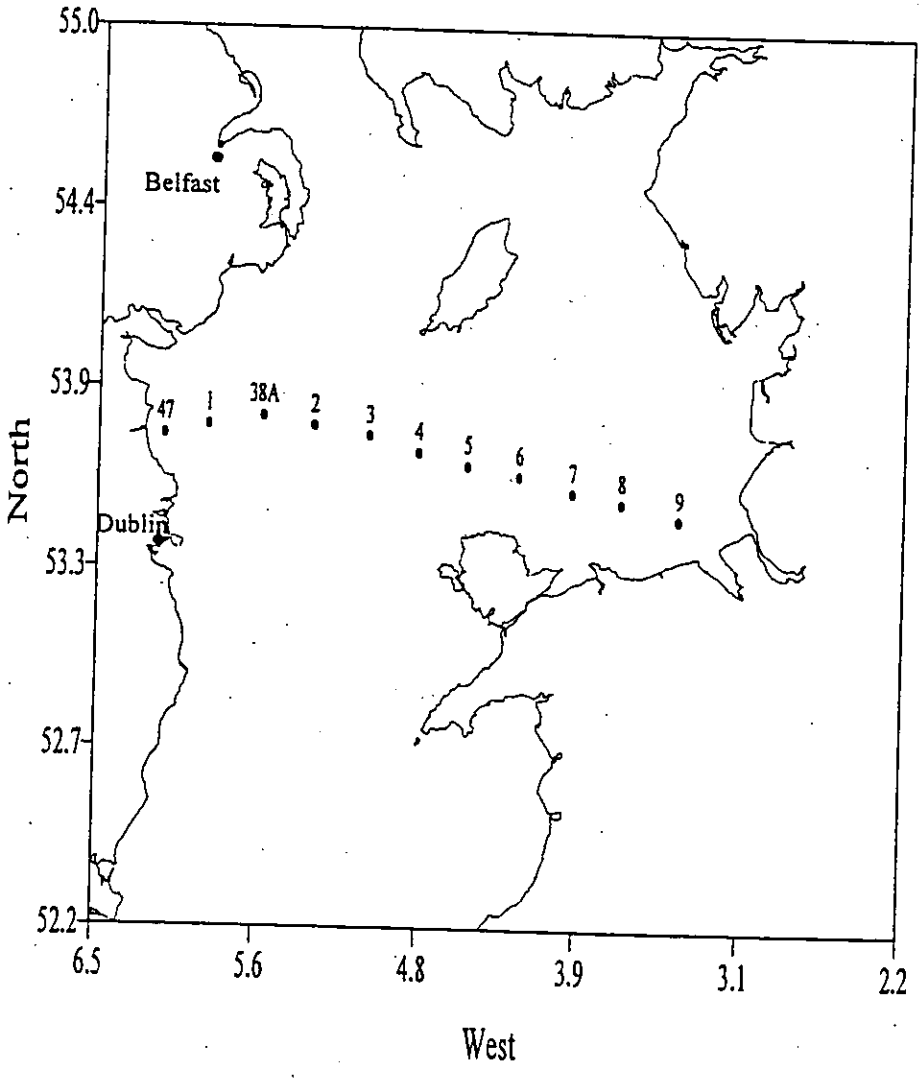
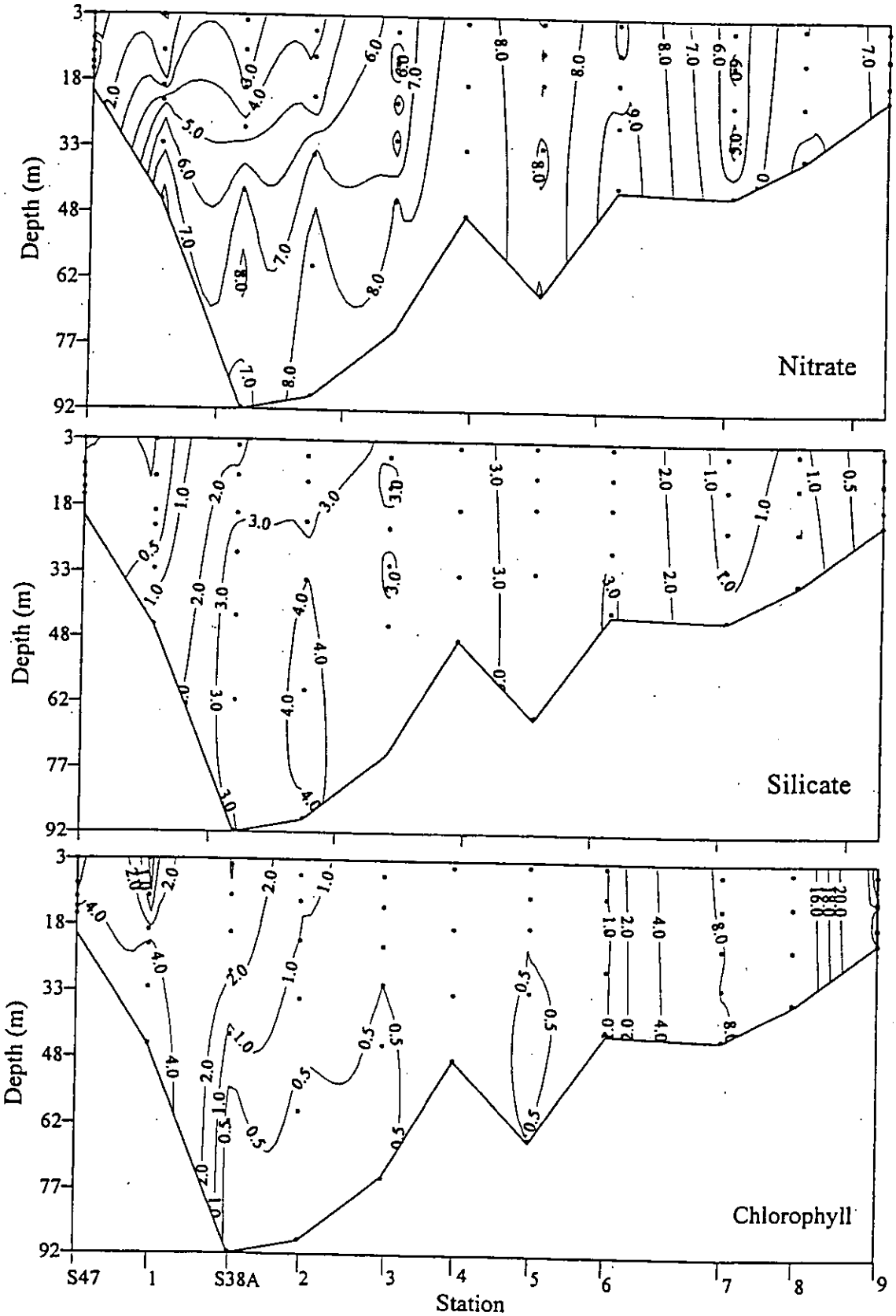

55.0
54.4
53.9
53.3
52.7
52.2
North
Belfast
Dublin
47
1
38A
2
3
4
5
6
7
8
9
6.5
5.6
4.8
3.9
3.1
2.2
West

Figure 2.


Depth (m)
3
18
33
48
62
77
92
Nitrate
Silicate
Chlorophyll
S47
1
S38A
2
3
4
5
6
7
8
9
Station