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BIOLOGICAL OCEANOGRAPHY CRUISE REPORT

LF 42 2000

1 – 3 November 2000

PERSONNEL

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OBJECTIVES

i. To maintain a nutrient monitoring programme at station 38A.

ii. To assess temperature, salinity and nutrient distributions over depth at stations 38A and 47.

CRUISE NARRATIVE

This cruise was originally scheduled to commence on Sunday 15 October but due to a prolonged period of windy and unsettled weather, sailing was postponed until weather conditions improved.

Wednesday 1 November 2000

In preparation for the cruise, all DARDNI scientific crew were onboard by 2000 hrs when mooring components and the automated water sampler were prepared for deployment. Following a talk on ship's safety and a demonstration of personal life saving equipment, the RV Lough Foyle departed Belfast at 2130 hrs and sailed overnight in a moderate to fresh north westerly wind to station 47 in Dundalk bay.

Thursday 2 November 2000

The vessel arrived on station 47 at 0700 hrs. The weather was dry but overcast with a fresh easterly breeze. Work for the day commenced after breakfast at 0800 hrs with deployment of the rosette water sampler, followed by three zooplankton net hauls. The vessel then sailed in an easterly direction towards the mooring site at station 38A arriving at 1015 hrs. At this point weather conditions were unsuitable for mooring recovery, so work continued with the routine sampling schedule. The rosette water sampler, zooplankton net and sediment corer were successfully deployed in

deteriorating weather conditions. Following sampling, the vessel remained on station until mid afternoon awaiting an improvement in weather conditions. With daylight fading and a further deterioration in the weather, I decided to return to Belfast. The vessel returned to Belfast in gale force winds to dock at 2115 hrs

Friday 3 November 2000

Work commenced at 0800 hrs with scientific crew removing samples, scientific instruments and mooring equipment from the vessel to AESD.

McLane moored water sampler

Unfortunately weather conditions during the cruise, prevented recovery of the moored water sampler.

PARAMETERS MONITORED

The CTD/rosette water sampler was deployed at stations 38A and 47 to acquire nutrient, chlorophyll *a*, temperature and salinity data from the depth profile. The Bowers & Connelly mini-corer was deployed at station 38A, where sediment was subsampled for chlorophyll, total carbon and total nitrogen analysis.
Three zooplankton net hauls were taken at stations 38A & 47.

SUMMARY OF RESULTS

CTD profile data from station 38A show that the prolonged spell of stormy weather has indeed broken down the stratified structure of the water column (Fig. 1). Temperature is fairly constant and typically 13.2 °C throughout the entire profile, while salinity at the surface 34.2 psu, shows only a marginal increase approaching the seabed. Nutrient concentrations throughout the profile were reasonably constant with inorganic nitrogen typically 4 –5 micromoles N l^{-1} (Table 1). Surface inorganic nitrogen concentration has increased by almost 3 micromoles N l^{-1} since the September cruise and this represents the beginning of a steady increase towards the normal winter maximum concentration, 9 –10 micromoles N l^{-1}.
In Dundalk Bay, Station 47 the CTD profile graphically demonstrates the effect of land runoff during the recent spell of heavy rainfall (Fig. 2). The profile consists of two distinct layers with the upper 8 metre layer cooler and less saline; typically 11 °C and 33.3 psu respectively. This upper layer is associated with an elevated nutrient concentration ranging 8.5 –11 micromoles of inorganic N l^{-1} (Table 2). These observations are consistent with major freshwater influence of the River Boyne on this coastal area of the Irish Sea.

HOTEL REPORT & OPERATIONAL ASPECTS OF THE SHIP

During the cruise the A-frame, main trawl winches, both hydrographic winches and the ship's clean seawater supply were used. No problems were encountered with any of the ship's equipment nor indeed with any of the scientific equipment. The hotel and catering service was of the usual high standard and there was a good working relationship between the scientists and the ship's crew. Prior to the ship departing Belfast a comprehensive and detailed safety briefing was delivered to the scientific crew.

ACKNOWLEDGEMENTS

I hereby acknowledge the co-operation and assistance of the RV Lough Foyle deck crew throughout the survey cruise. The ship's master, officers, engineers and catering staff are also thanked for their co-operation during this cruise.

B M STEWART

9 November 2000

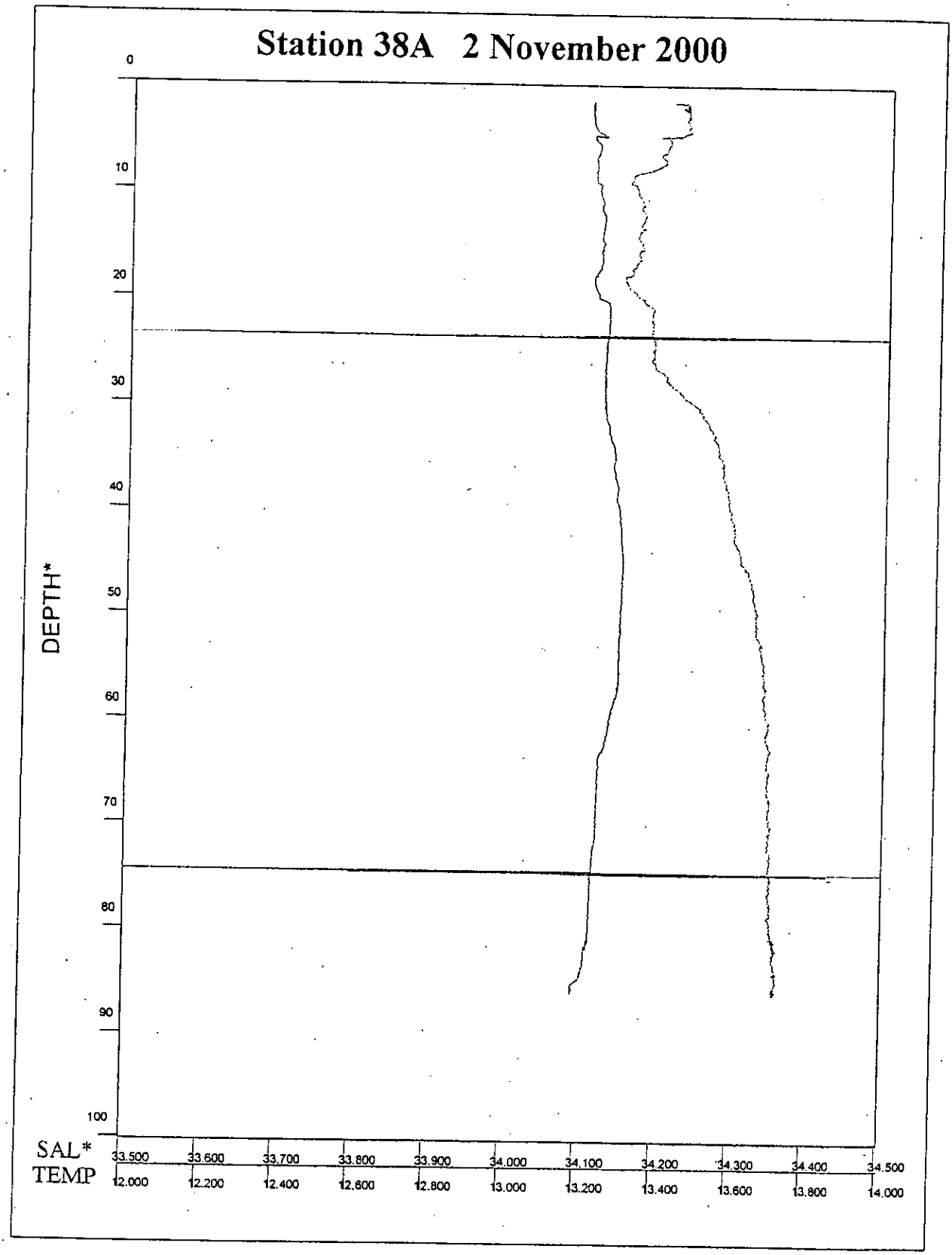
Station 38A 2 November 2000
DEPTH*
0
10
20
30
40
50
60
70
80
90
100
SAL*
33.500
33.600
33.700
33.800
33.900
34.000
34.100
34.200
34.300
34.400
34.500
TEMP
12.000
12.200
12.400
12.600
12.800
13.000
13.200
13.400
13.600
13.800
14.000

Figure 1.

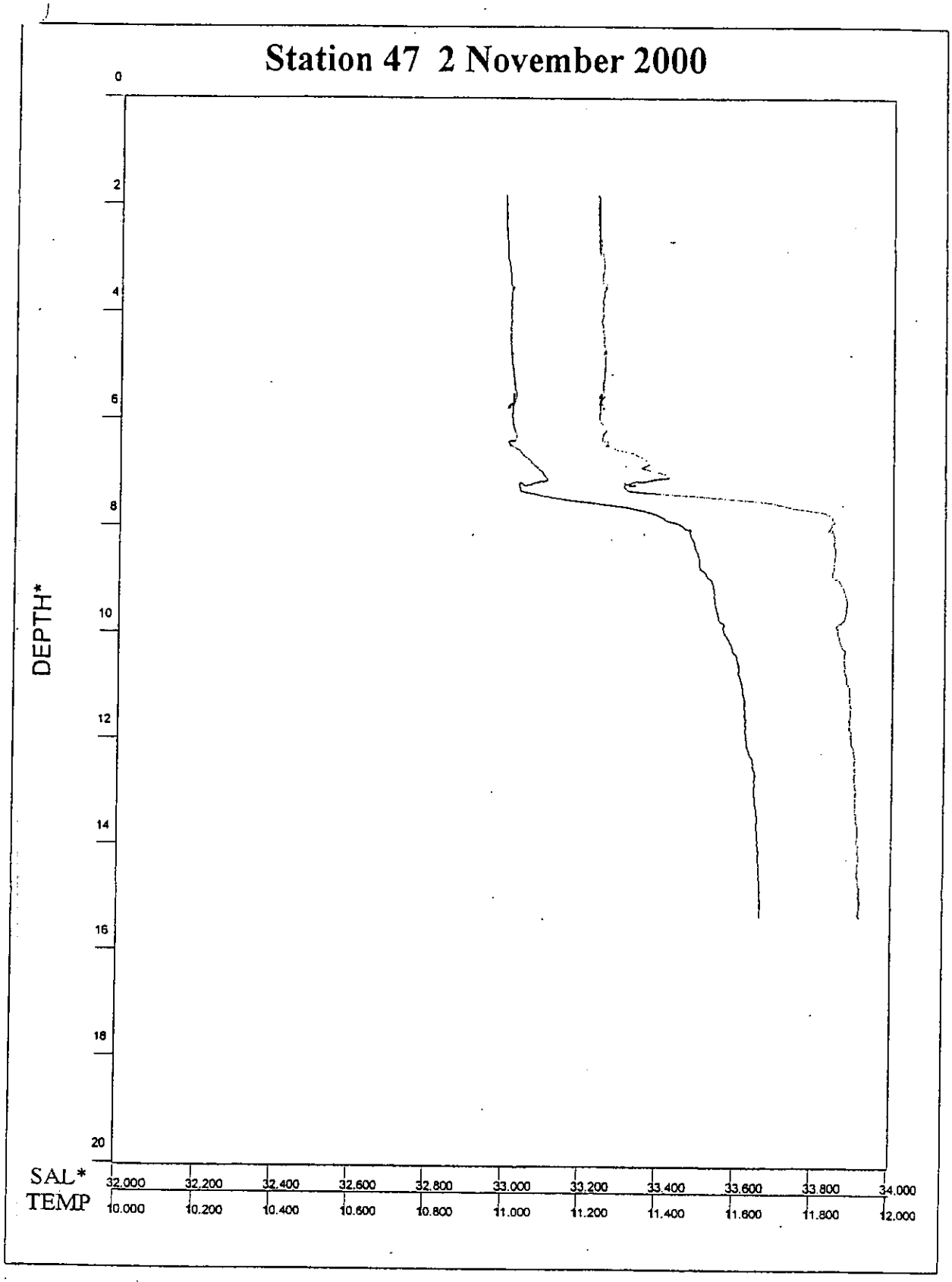
Station 47 2 November 2000
DEPTH*
0
2
4
6
8
10
12
14
16
18
20
SAL*
32.000
32.200
32.400
32.600
32.800
33.000
33.200
33.400
33.600
33.800
34.000
TEMP
10.000
10.200
10.400
10.600
10.800
11.000
11.200
11.400
11.600
11.800
12.000

Figure 2.

IRISH SEA OCEANOGRAPHY 2000

Depth profile samples (2 November 2000)

STATION	DATE	DEPTH M	AMMONIA $\mu m\ N\ l^{-1}$	PHOSPHATE $\mu m\ P\ l^{-1}$	INORG N $\mu m\ N\ l^{-1}$	SILICA $\mu m\ SiO_2\ l^{-1}$	UREA $\mu m\ N\ l^{-1}$	NITRITE $\mu m\ N\ l^{-1}$	CHL	PHAEO	ACID RATIO
38A	02/11/00	2.4	0.75	0.62	4.85	4.19		0.10	0.41	0.10	1.77
38A	02/11/00	10.4	0.38	0.56	3.82	4.12		0.07	0.21	0.06	1.74
38A	02/11/00	21.3	0.52	0.55	3.97	4.04		0.07	0.43	0.13	1.74
38A	02/11/00	30.4	0.57	0.60	4.14	4.09		0.10	0.40	0.13	1.73
38A	02/11/00	40.5	0.49	0.59	3.98	4.29		0.11	0.46	0.16	1.72
38A	02/11/00	50.4	0.51	0.56	4.06	4.16		0.10	0.46	0.15	1.73
38A	02/11/00	59.4	0.44	0.51	3.69	3.84		0.12	0.47	0.12	1.77
38A	02/11/00	70.9	0.58	0.62	4.25	4.29		0.14	0.53	0.12	1.79
38A	02/11/00	85.5	0.47	0.58	4.11	4.44		0.14	0.56	0.08	1.85

534

Table 1

IRISH SEA OCEANOGRAPHY 2000

Depth profile samples (2 November 2000)

STATION	DATE	DEPTH M	AMMONIA $\mu m\ N\ l^{-1}$	PHOSPHATE $\mu m\ P\ l^{-1}$	INORG N $\mu m\ N\ l^{-1}$	SILICA $\mu m\ SiO_2\ l^{-1}$	UREA $\mu m\ N\ l^{-1}$	NITRITE $\mu m\ N\ l^{-1}$	CHL	PHAEO	ACID RATIO
47	02/11/00	2.2	2.06	0.84	11.00	7.80		0.65	2.07	0.42	1.88
47	02/11/00	6.0	1.92	0.86	8.50	7.32		0.68	1.93	0.55	1.82
47	02/11/00	10.7	1.57	0.78	5.43	5.52		0.56	2.14	0.49	1.86
47	02/11/00	14.8	2.81	0.81	4.76	4.97		0.52	2.28	0.50	1.87

535

Table 2