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BIOLOGICAL OCEANOGRAPHY CRUISE REPORT

LF 21 2001

21 –25 May 2001

PERSONNEL

B Stewart	(SIC), SSO, DARDNI.
R Gowen	SSO, DARDNI
C Cochrane	Temp. SO, DARDNI
A Downie	ASO, DARDNI
M McCullough	HPTO, DARDNI
G Tilstone	Plymouth Marine Lab.

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.

iii. To assess levels of primary production at both inshore and offshore stations in the Irish Sea.

iv. To assess the extent of the frontal region in the north western Irish Sea.

CRUISE NARRATIVE

Sunday 20 May 2001

In preparation for the cruise, all DANI scientific crew were onboard by 1800 hrs when mooring components and the automated 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 1900 hrs and sailed overnight in a light breeze to the mooring site at station 38A.

Monday 21 May 2001

The vessel arrived on the mooring site at 0330 hrs. The weather was dry with only a light breeze. Work for the day commenced at 0400hrs when the rosette water sampler was deployed to acquire pre dawn water samples for primary production experiments. The water sampler was again deployed at 0700 hrs to obtain samples from the depth profile for nutrient, chlorophyll and organic content. After breakfast work continued

with the recovery of the instrument mooring. The mooring components were inspected for corrosion and replaced where necessary. The thermistor chain was removed from the mooring wire and temperature data downloaded. The automated water sampler was removed and replaced with a similar pre programmed unit. Samples were removed from the biological water sampler, clean sample bags refitted and reprogrammed for daily sampling. The mooring components and thermistors were then reassembled and the unit was successfully redeployed at 1630 hrs on position $53^0\ 46^l.84N\quad 5^0\ 38^l.05W$. Following a further deployment of the rosette water sampler, the vessel sailed overnight to F3, the most eastern frontal station. Work for the day finished at 1900 hrs.

Tuesday 22 May 2001

Work for the day commenced on station F3 at 0345 hrs with the deployment of the water sampler to obtain samples for primary production studies. After breakfast, further deployments were made for standard samples and to obtain calibration data for the fluorometer. Following this the vessel sailed in a westerly direction from F3, with water sampler deployments at F5, F1, F4 and F2. The vessel then continued in a westerly direction to station 47 on the Drogheda fore shore where it anchored overnight. Work for the day finished at 1800 hrs.

Wednesday 23 May 2001

Work for the day commenced on station 47 at 0345 hrs with a repeat of the sampling procedures for the primary production experiments. Following this the vessel cruised a grid, back and forth across the southern area of the "front", during which time regular samples were taken from the ship's clean seawater supply. Work for the day finished at 2330 hrs and the vessel sailed slowly overnight to station F1.

Thursday 24 May 2001

Work for the day commenced on station F1 at 0345 hrs with a repeat of the sampling procedures for the primary production experiments. Following this the vessel cruised a grid, back and forth across the northern area of the "front", during which time regular samples were taken from the ship's clean seawater supply. Work for the day finished at 2400 hrs when the vessel was positioned close to the southern coast of the Isle of Man. Overnight the vessel sailed to Belfast.

Friday 25 May 2001

The vessel sailed to dock in Belfast at 0800 hrs. Work commenced at 0830 hrs with scientific crew removing samples, scientific instruments and mooring equipment from the vessel to AESD

McLane moored water sampler

The two McLane automated water samplers recovered from the Irish Sea had operated as programmed. The "nutrient" sampler was removed and replaced by an identical unit, programmed to take duplicate samples every third day during the period of deployment. The "biological" sampler was serviced during the survey cruise and reprogrammed for daily sampling during the next deployment period.

PARAMETERS MONITORED

The CTD/rosette water sampler was deployed at stations 38A, 47, F1, F2, F3, F4 and F5 to acquire nutrient, chlorophyll, temperature, light and salinity data from the depth profile. Primary production assessments were carried out at stratified station 38A, frontal station F1, coastal station 47 and mixed station F3. Three zooplankton net hauls were taken at stations 38A, 47, F1, F2, F3, F4 and F5. Samples were taken from the clean seawater supply for chlorophyll and nutrient determination during surface mapping of the northern and southern grids of the frontal regions.

SUMMARY OF RESULTS

Figure 1 illustrates the near surface distribution of temperature, salinity and chlorophyll in the vicinity of the western Irish Sea front, May 22 – 24, 2001. The frontal boundary can be identified along a line from the southern tip of the Isle of Man to Dublin Bay. A series of CTD profiles from a mixed area, station F3, through frontal stations, F5, F1 and F4 to a stratified area station F2 are show in Figures 4,5,6,7 &8. This adds a further dimension to the data in Figure1 by demonstrating an increase in surface warming from mixed to the stratified stations. The CTD profile at stations 38A and 47 now show significant levels of thermal stratification (Figs.2 & 3).
With current staff shortages it was impossible at this stage to have nutrient data included in this report.

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 am indebted the deck crew of the RV Lough Foyle for their co-operation and assistance during the mooring recovery and deployment operation. The ship's master, officers, engineers and catering staff are also thanked for their co-operation during this cruise.

B M STEWART

11 June 2001

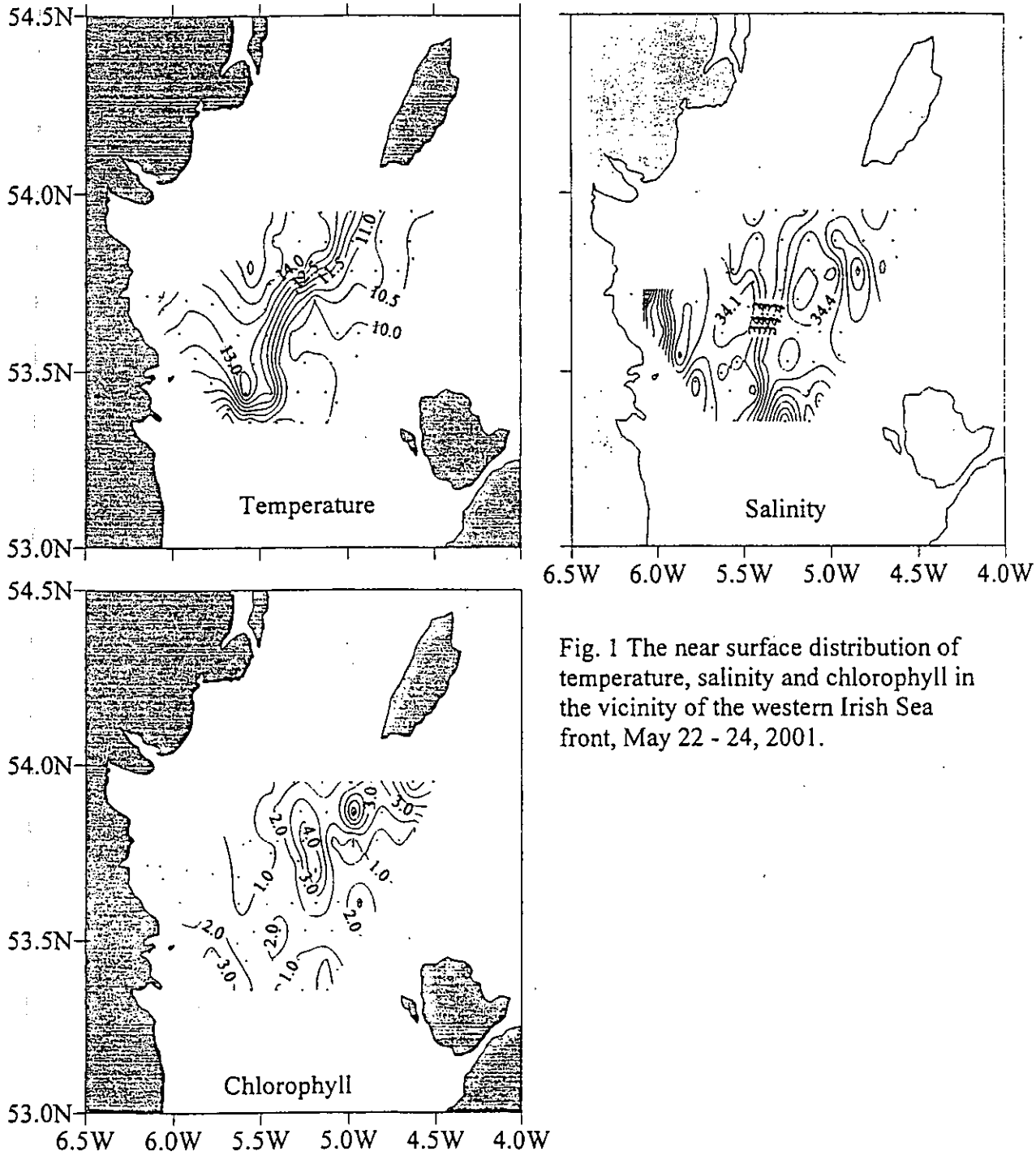

Fig. 1 The near surface distribution of temperature, salinity and chlorophyll in the vicinity of the western Irish Sea front, May 22 - 24, 2001.

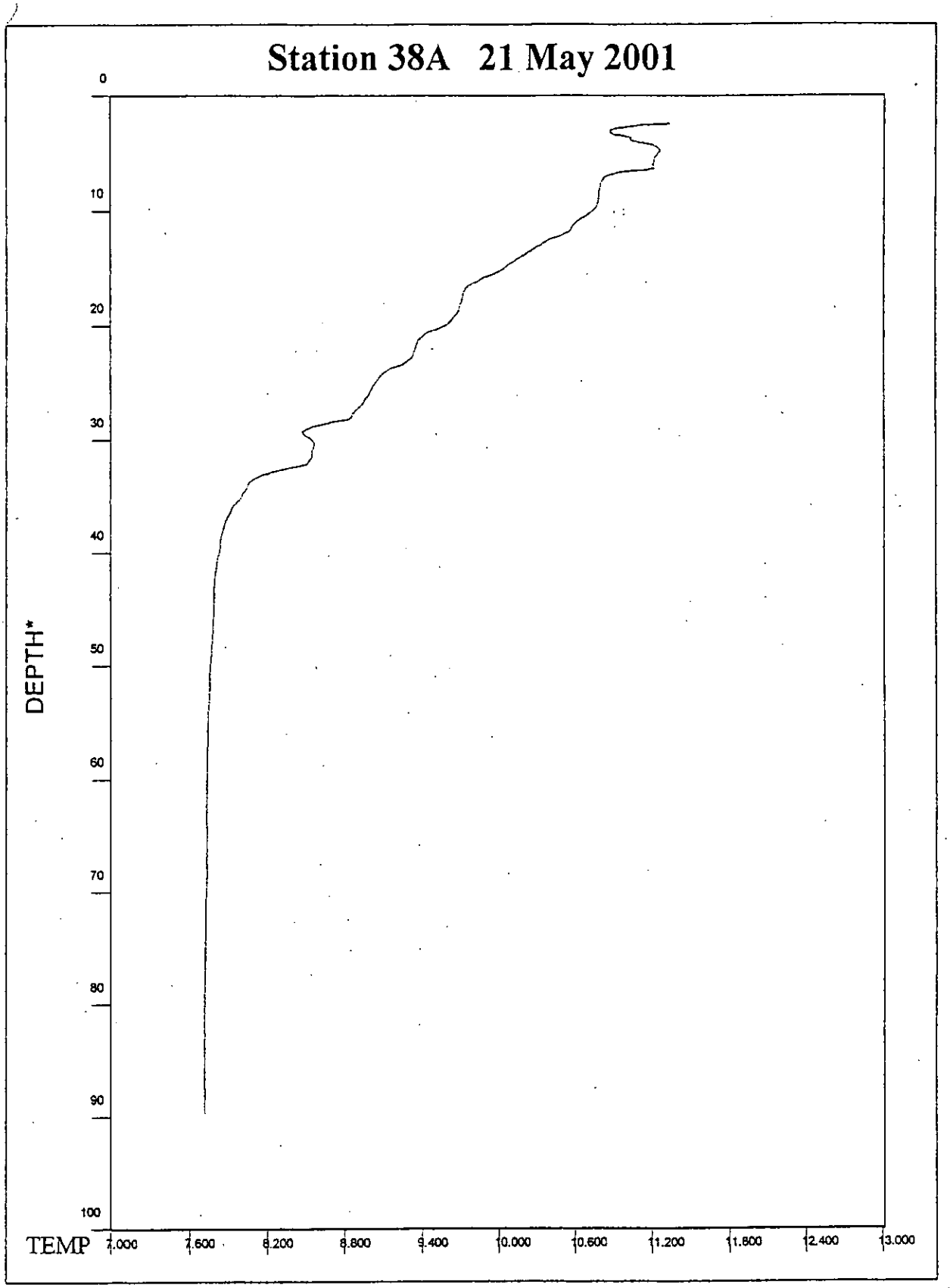
Station 38A 21 May 2001
DEPTH*
0
10
20
30
40
50
60
70
80
90
100
TEMP
7.000
7.600
8.200
8.800
9.400
10.000
10.600
11.200
11.800
12.400
13.000

Figure 2.

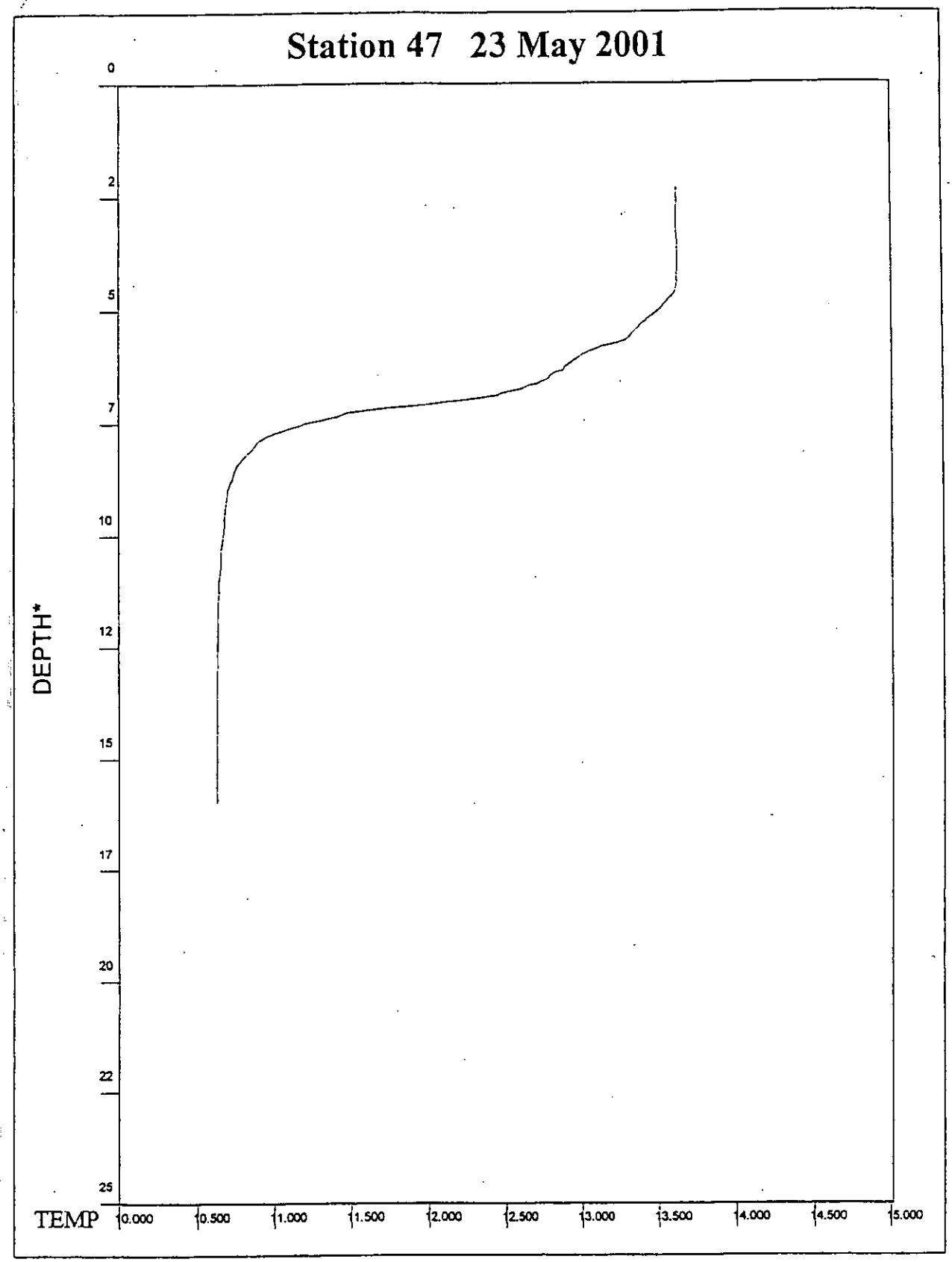
Station 47 23 May 2001
DEPTH*
0
2
5
7
10
12
15
17
20
22
25
TEMP
0.000
0.500
1.000
1.500
2.000
2.500
3.000
3.500
4.000
4.500
5.000

Figure 3.

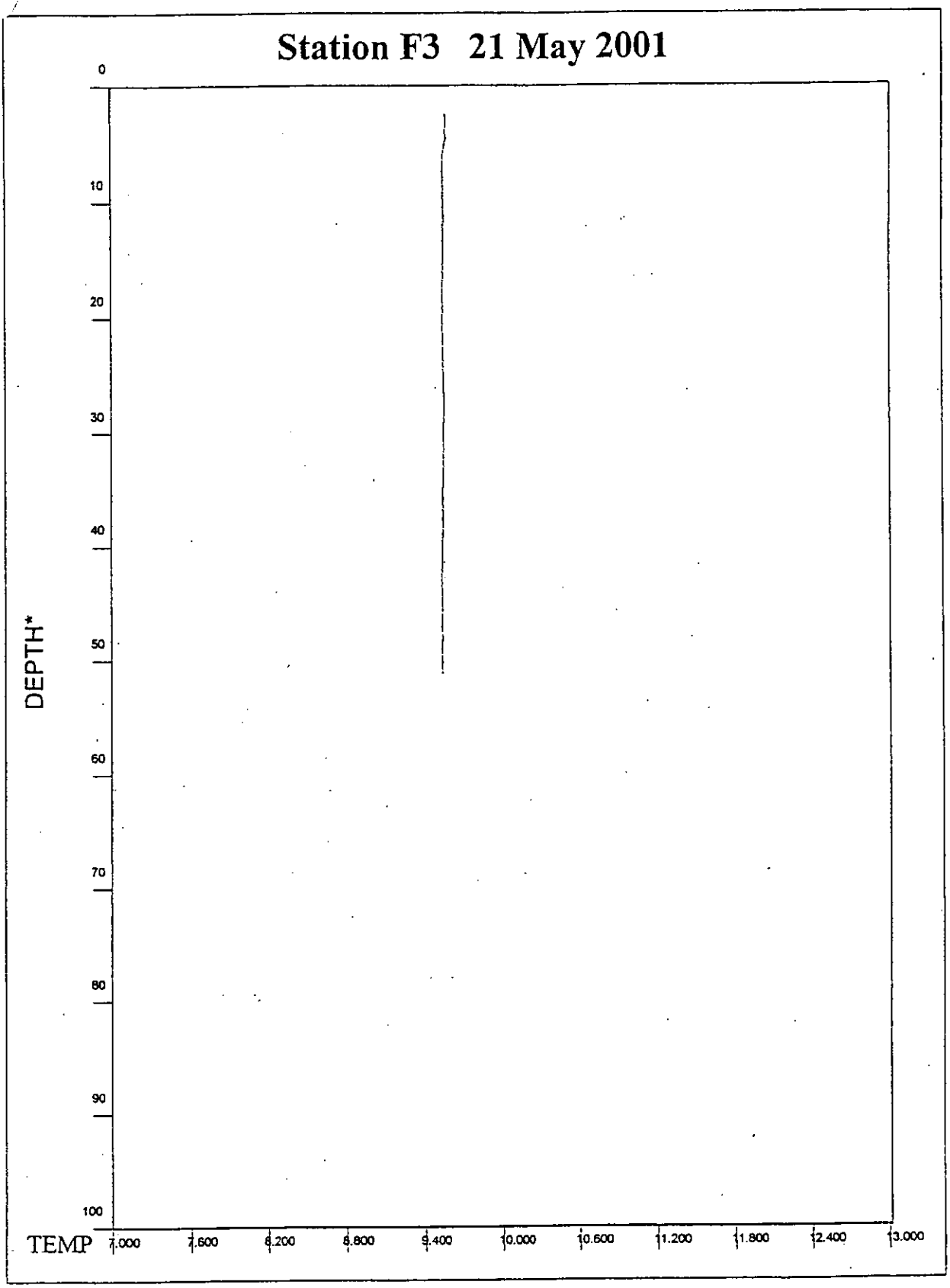
Station F3 21 May 2001
DEPTH*
0
10
20
30
40
50
60
70
80
90
100
TEMP
7.000
7.600
8.200
8.800
9.400
10.000
10.600
11.200
11.800
12.400
13.000

Figure 4.

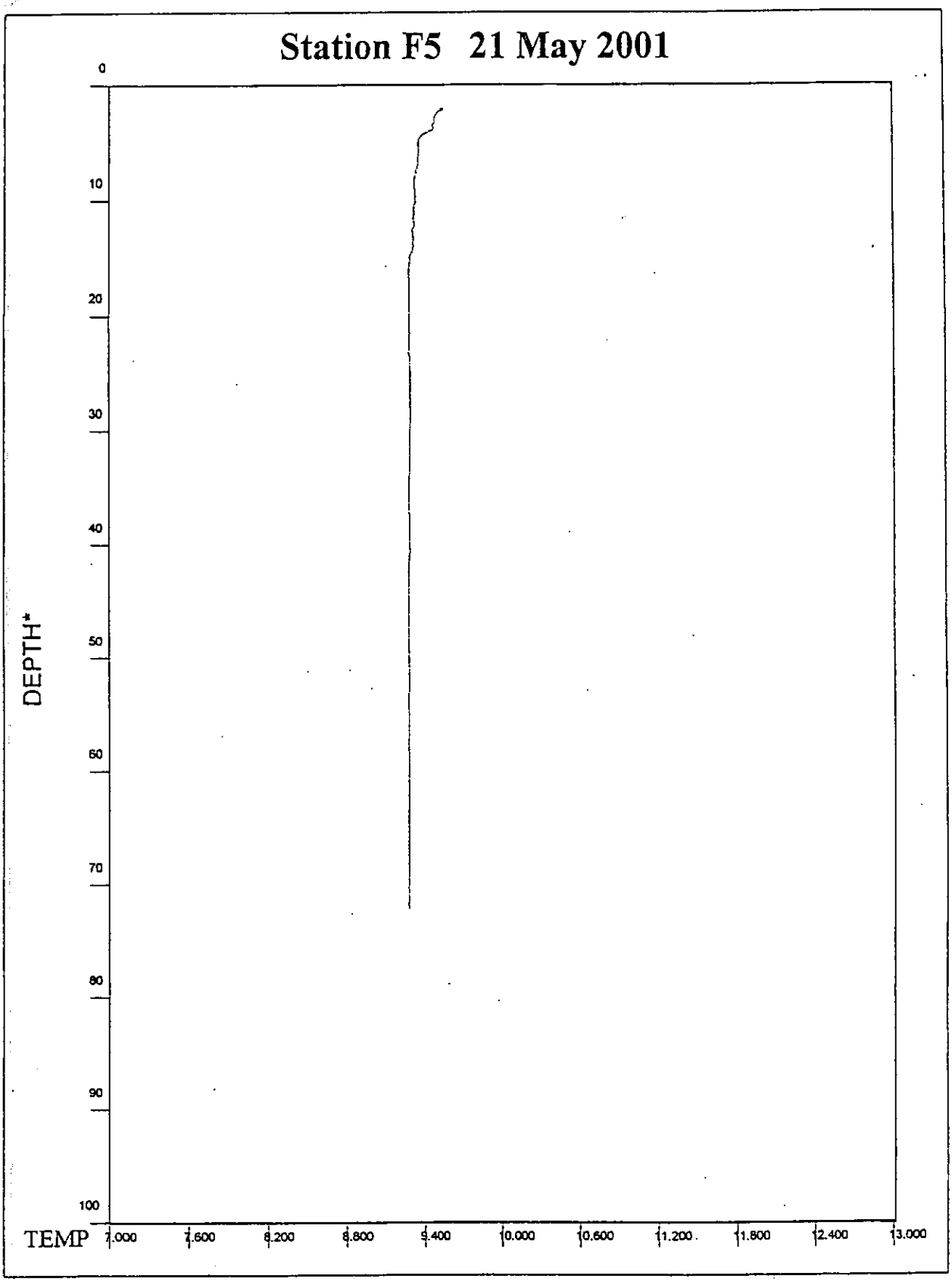
Station F5 21 May 2001
DEPTH*
0
10
20
30
40
50
60
70
80
90
100
TEMP
7.000
7.600
8.200
8.800
9.400
10.000
10.600
11.200
11.800
12.400
13.000

Figure 5.

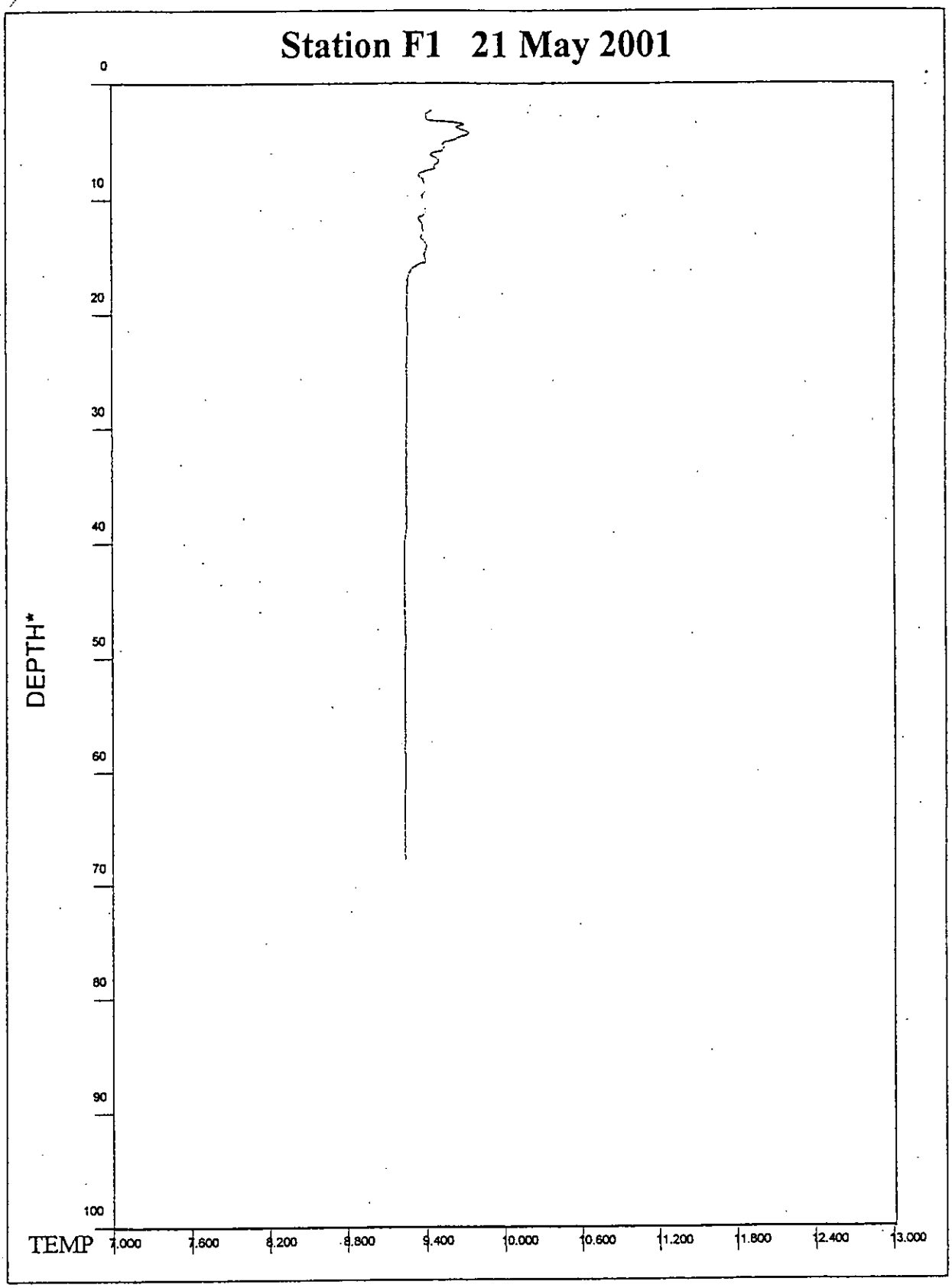
Station F1 21 May 2001
DEPTH*
0
10
20
30
40
50
60
70
80
90
100
TEMP
7.000
7.600
8.200
8.800
9.400
10.000
10.600
11.200
11.800
12.400
13.000

Figure 6.

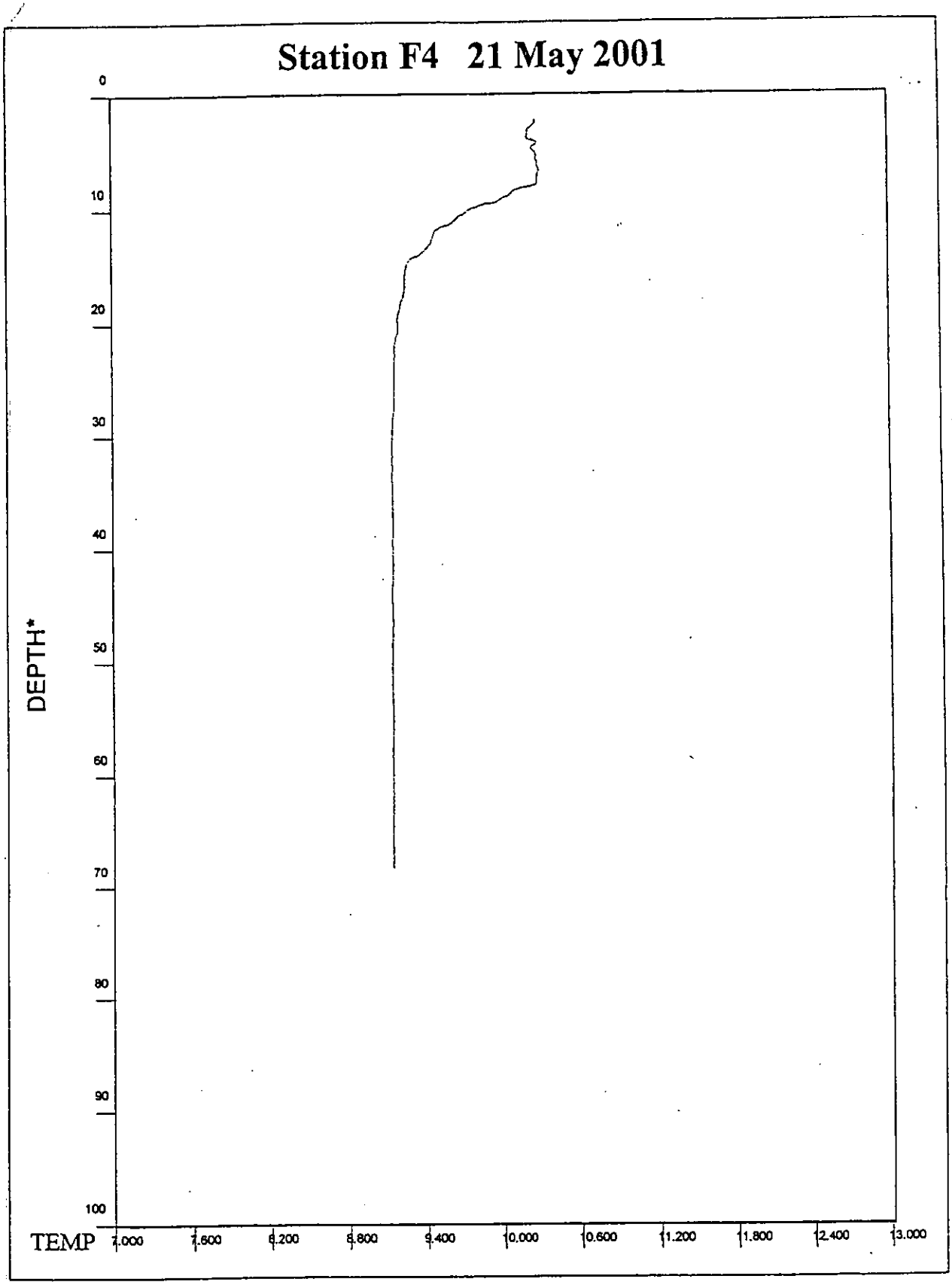
Station F4 21 May 2001
DEPTH*
0
10
20
30
40
50
60
70
80
90
100
TEMP
7.000
7.600
8.200
8.800
9.400
10.000
10.600
11.200
11.800
12.400
13.000

Figure 7.

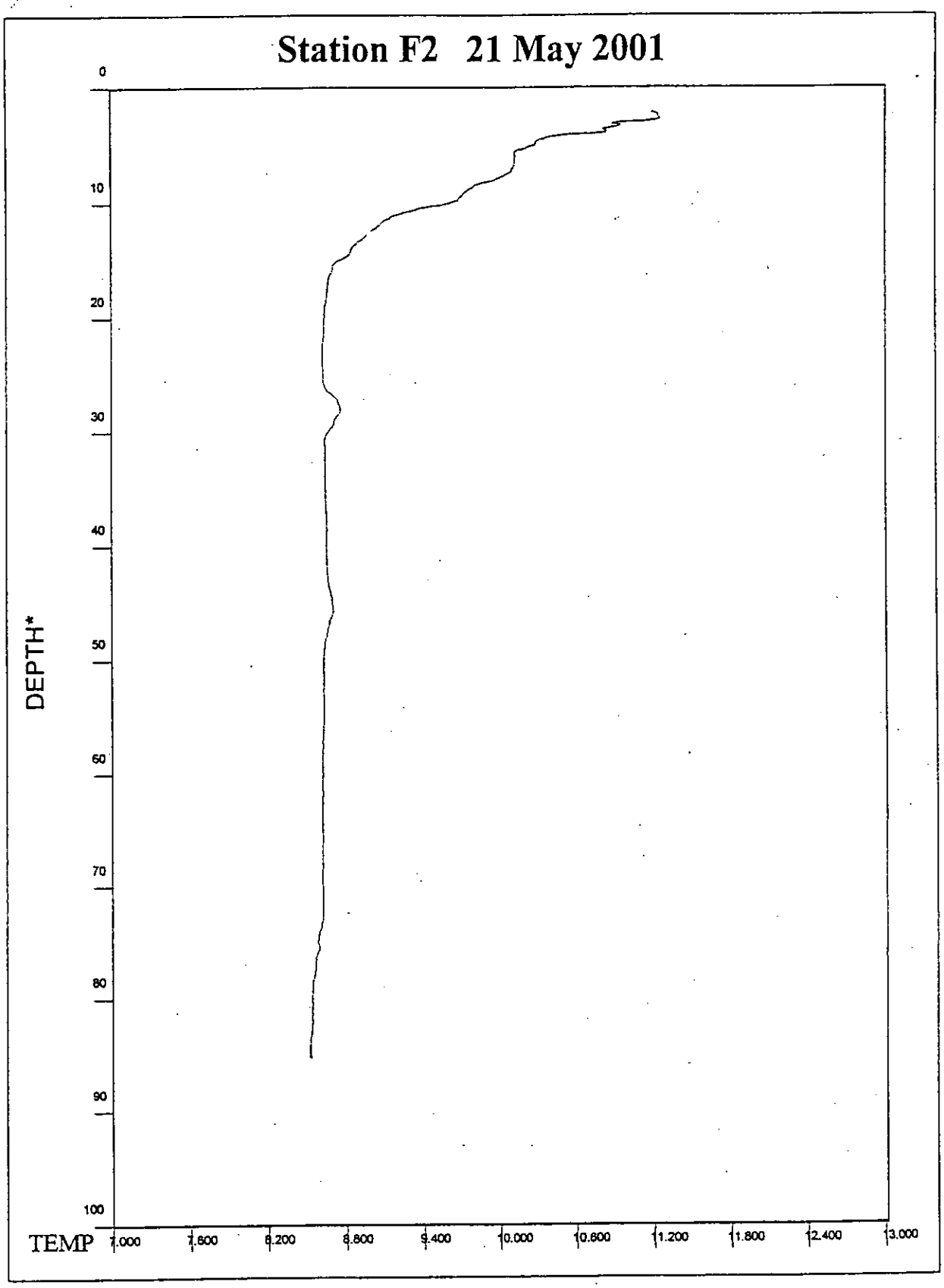
Station F2 21 May 2001
DEPTH*
0
10
20
30
40
50
60
70
80
90
100
TEMP
7.000
7.600
8.200
8.800
9.400
10.000
10.600
11.200
11.800
12.400
13.000

Figure 8.