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NORWEGIAN POLAR INSTITUTE

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NORSK POLARINSTITUTT
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Ecological processes in the marginal ice-zone of the northern Barents Sea

ICE-BAR 1995, Cruise Report

Printed June 1996
ISBN 82-7666-110-6

Edited by: **Stig Falk-Petersen and Haakon Hop**
Norwegian Polar Institute, Tromsø, 15

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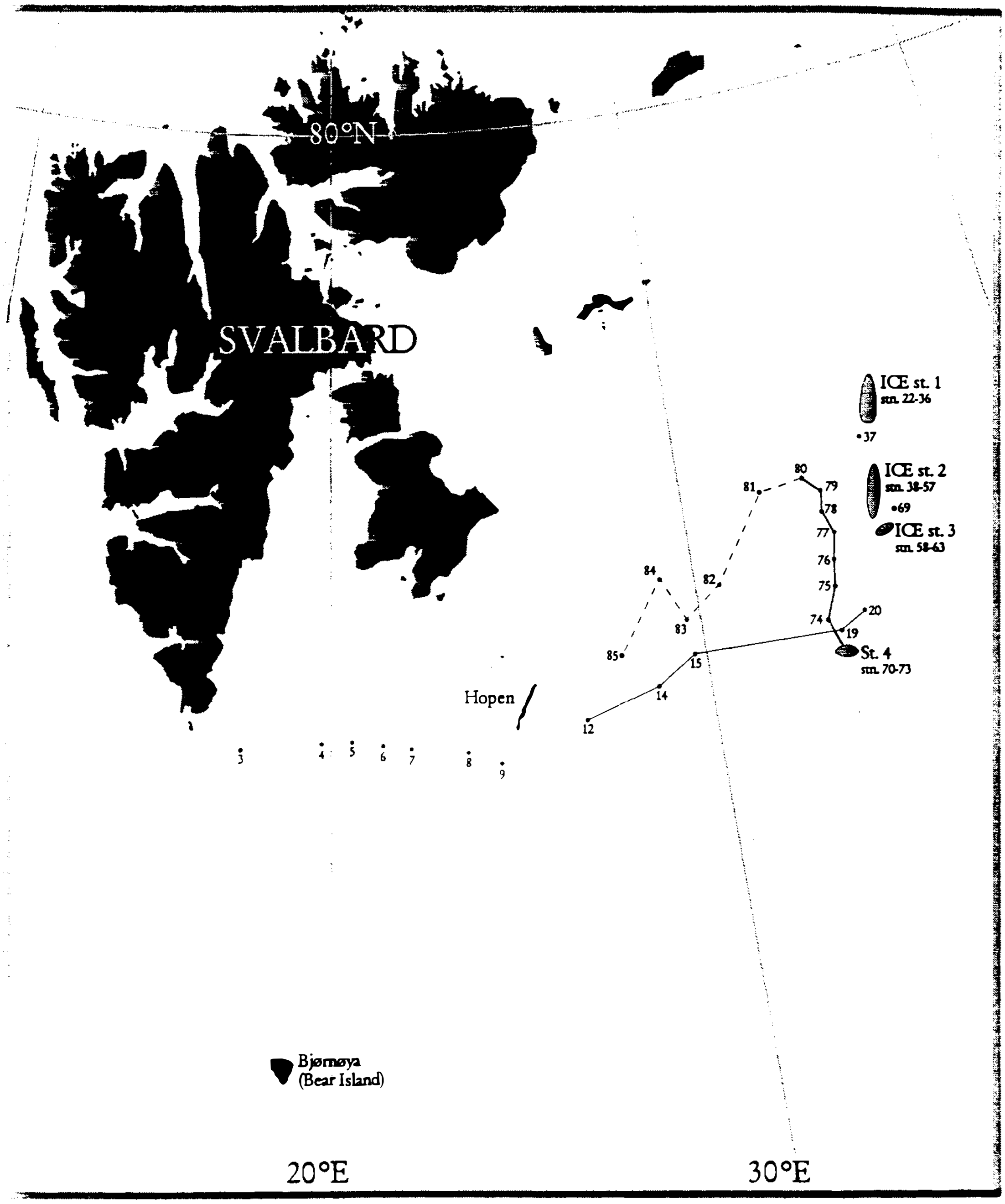

80°N
SVALBARD
ICE st. 1
stn. 22-36
37
ICE st. 2
stn. 38-57
69
ICE st. 3
stn. 58-63
81
80
79
78
77
76
75
74
84
82
83
85
20
19
St. 4
stn. 70-73
15
14
12
Hopen
3
4
5
6
7
8
9
Bjørnøya
(Bear Island)
20°E
30°E

CONTENTS

1. BACKGROUND

Marginal ice-zones are important areas ecologically because they represent relative productive areas in the northern Barents Sea where arctic water masses north of the Polar Front generally have low productivity. The area has complex ice structures with pack ice consisting of floes of different shapes, sizes, ages, and internal structures (i.e., crystallography, sediments, brine, nutrients). The presence of a melting ice-pack during spring and summer causes stable upper water layers with lower salinity. Stable water masses combined with sufficient irradiation, and nutrients result in enhanced production in the marginal ice-zone. Production of phytoplankton and ice-algae causes high production of temporary and permanent ice-fauna in these areas and there is probably a strong link between primary production and sympagic (ice-associated) fauna biomass. High primary production may be strongly coupled with secondary production of zooplankton, but also with benthic productivity through a vertical flux of biological material from the euphotic zone. Marginal ice-zones are also important for diversity at higher trophic levels, marine mammals and sea birds, but it is uncertain whether there is a direct connection between primary production and diversity of top predators or whether there is merely an ecotone effect resulting from increased habitat complexity in this area.

The overall goal of the ICE-BAR program is to understand the importance of the marginal ice-zone for the productivity and biodiversity in the northern Barents Sea. To achieve this goal it is important to understand the underlying physical and biological processes in the marginal ice-zone. Latitudinal transects (N-S) will be used to determine how oceanographic and ecological processes change across the marginal ice-zone from consolidated ice, through the ice-pack and out into open water. We will determine how physical and biological processes in the marginal ice-zone affect productivity, and whether there are links between primary productivity and diversity in the pelagic, sympagic and benthic communities. Furthermore, we will identify sympagic communities associated with different types of ice and perform detailed studies of the physical properties and topography of the ice itself. The multidisciplinary program will be the most appropriate way of answering process oriented questions, and we expect to eventually develop models for physical processes and quantify production, fluxes and transfers within the food web of the marginal ice-zone. We will also describe the trophic structure of the food web and determine contaminant levels in organisms at different trophic levels.

Below we outline an extensive sampling schedule for the ICE-BAR program which was carried out on the ice and in the water column on a transect across the marginal ice-zone during the June 1995 cruise with R/V 'Lance' in the northern Barents Sea.

Haakon Hop
Norwegian Polar Institute

2. SAMPLING PROGRAM

Ecological processes in the marginal ice-zone of the northern Barents Sea;
ICE-BAR 1995.

i) An international, multidisciplinary, arctic marine research program headed by the Norwegian Polar Institute.
ii) First cruise with R/V 'Lance' to the northern Barents Sea during June 9-30 , 1995.

Sampling program for marginal ice-zone transects

Stations:

A. Four main stations at a N-S transect, near longitude 35:
1) Solid ice pack
2) Broken up, intermediate area
3) Edge of ice pack
4) Open water outside

B. Three intermediate stations with oceanographic program only (1 hour per station).

The program:	Responsible:
1. Remote sensing	
ERS-1 and 2 - radar satellite	(Korsnes)
(ice-concentration and drift)	
AVHRR - NOAA/optic infrared images	(Korsnes)
(temperature, particle concentration)	
2. Ice packing	
Video recording of ice pack	(Korsnes)
3. Biodiversity at upper trophic levels	
Marine mammals and seabirds	(Bangjord/Kleivane)
Observations from ship	
(1 hour/station after arriving)	
4. Hydrometeorology	
Mini-CTD (structure, shear, stability)	(Korsnes/Orvik)
XCTD (structure, shear, stability)	(Shirasawa/Ikeda)
EMCM (Electromagnetic Current Meter)	(Shirasawa/Ikeda)
Anemometer - turbulent flux (temp./wind)	(Shirasawa/Ikeda)
Atmospheric boundary layer	(Shirasawa/Ikeda)
Carbon dioxide (air/water samples)	(Shirasawa/Ikeda)
Air temperature	(Ship officer)
Wind direction	(Ship officer)
Weather recordings	(Ship officer)
Currents/ship drift	(Ship officer)
Position/ship track	(Ship officer)

5. *Phytoplankton*	
Fluorescence profiles	(Sandberg)
Chlorophyll/biomass	(Sandberg)
(samples: 0, 5, 10, 15, 20, 30, 50, 100 m)	(Sandberg)
Carbon (0, 10, 20, 50 m)	(Sandberg)
Silicas (0, 10, 20, 50 m)	(Sandberg)
Nutrients (0, 10, 20, 50 m)	(Sandberg)
P/I-curves (Photosynthetic Irradiance)	(Sandberg)
Taxonomy (identification/counting)	(Sandberg/Okolodkov)
6. *Irradiance*	
Light/depth profiles (extinction)	(Sandberg)
Under-ice light measurements	(Sandberg/Divers)
(mid-day, before taking algal samples)	
7. *Ice/snow thickness*	
Snow thickness	(Sandberg)
Floe size, topography	(Hop/Lønne)
Ice depth recording	(Divers)
8. *Ice bottom topography*	
Visual categories of topography	(Divers)
Ice texture and algal coverage	(Divers)
Video recording	(Lønne/Divers)
9. *Ice cores (sectioned)*	
Crystallography	(Shirasawa/Ikeda)
Nutrient profiles	(Shirasawa/Ikeda)
Salinity profiles (brine)	(Shirasawa/Ikeda/ Korsnes)
Sediment content	(Korsnes)
Lipids	(Falk-Petersen)
Ice algae	(Okolodkov/Shirasawa)
10. *Ice temperature*	
Ice-surface temperature	(Sandberg)
Under-ice water temperature	(Sandberg/Divers)
11. *Ice-algae*	
Nutrients	(Sandberg/Divers)
Chlorophyll	(Sandberg/Divers)
Carbon	(Sandberg/Divers)
Phosphate	(Sandberg/Divers)
Salinity/brine channels	(Poltermann/Divers)
Stable isotopes	(Hop/Divers)
Lipids	(Falk-Petersen/Divers)
Taxonomy	(Okolodkov/Sandberg)
Persistent Organic Pollutants (POP's)	(Sandberg/Borgaa)
12. *Ice-fauna and sub-ice fauna*	
Semi-quantitative samples/ preserved in formalin for analysis of:	(Divers)
Taxonomy	(Hop/Lønne/Poltermann)
Size distribution	(Hop/Lønne/Poltermann)
Stomach content	(Hop/Weslawski)
Qualitative samples/suction pump	(Divers)

frozen in bags for later analysis of:

Stable isotope	(Hop)
Lipids	(Falk-Petersen)
Dry/wet weight	(Hop/Falk-Petersen)
POP's	(Borgaa)
Arctic cod trap set under ice to test out fishing capacity	(Hop/Divers)
Fish samples	(Hop)

13. *Pelagic fauna*

Polar cod stomach content	(Hop/Weslawski)
Pelagic Trawl (PPT)	(Falk-Petersen/Hop)
Tucker Trawl (TT)	(Falk-Petersen/Hop)
WP-2 zooplankton net (180 μm)	(Falk-Petersen)
WP-3 zooplankton net (1000 μm)	(Falk-Petersen)
Samples analysed for:	
Taxonomy	(Falk Petersen/Hop /Weslawski)
Stable isotopes	(Hop)
Lipids	(Falk-Petersen)
Dry/wet weight	(Falk-Petersen)
POP's	(Borgaa/Hop)
Population dynamics	(Falk-Petersen/Hop)

14. *Benthic samples*

Grab samples (n = 6 per station):	(Lønne)
Bottom Trawl (PBT)	(Falk-Petersen/Hop)
Taxonomy	(Lønne)
Biomass	(Lønne)
POP's (sediments)	(Lønne)

15. *Ecotoxicology*

Marine mammals/seabirds:	
Ringed seals (n=15)	(Bangjord/Kleivane)
Glaucous gulls (n=10)	(Bangjord/Kleivane)
Brunnich's guillemots(n=10)	(Bangjord/Kleivane)
Black guillemots (n=10)	(Bangjord/Kleivane)
Polar cod (n = 60)	(Borgaa)
Ice amphipods (Most abundant spp.)	(Borgaa)
Zooplankton (Three size groups)	(Borgaa)
Ice-algae (Diatoms)	(Borgaa)
Stable isotopes vs/accumulation of POP's	(Hop/Gabrielsen)

Samples for the ecotoxicology program will also be obtained from the area around Bjørnøya (sea birds and lower trophic levels). Seabirds were collected on the way up, whereas ringed seals and lower trophic levels (particularly *Hyas* crabs) will be collected on the way back.

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4. DATA LOG, ICE-BAR 1995

Date: 10.06.95

Activity: Physical oceanography

Sst	h gmt	Code	Depth	Position	Gear	Sample	Meas.depth	Rp
1	19:36	CTD1	448	7316.0N 1905.3E	EMCM	U,V,W,T	27	KS
3	22:57	CTD3	400	7336.0N 1905.0E	EMCM	U,V,W,T	27	KS

Activity: Phytoplankton

Sst	h	Position	Gear	Sample	Rp
	18:50	7316N 1905E	Pp.net	Qualit.	SS

Date: 11.06.95 Bear Island

Activity: Physical oceanography

Sst	h gmt	Code	Depth	Position	Gear	Sample	Meas. depth	Rp
4	00:08	T4	319	7340N 1905.0E	XBT	D,T	319	KS
5	01:47	CTD5	277	7346N 1905.0E	EMCM	U,V,W,T	27	KS
6	02:19	T6	253	7348N 1905.0E	XBT	D,T	253	KS
7	02:34	T7	224	7350N 1905.0E	XBT	D,T	224	KS
8	02:50	T8	200	7352N 1905.0E	XBT	D,T	200	KS
9	03:05	T9	179	7354N 1905.0E	XBT	D,T	179	KS
10	03:26	CTD10	173	7356N 1905.0E	EMCM	U.V,W,T	27	KS
11	03:50	T11	128	7358N 1905.0E	XBT	D,T	128	KS
12	04:11	T12	125	7400N 1905.0E	XBT	D,T	125	KS
13	04:25	T13	112	7402N 1904.8E	XBT	D,T	112	KS
14	04:40	T14	102	7404N 1905.0E	XBT	D,T	102	KS
15	05:00	CTD15	74	7406N 1904.9E	EMCM	D,T	27	KS
15	05:15	T15	74	7406N 1904.9E	XBT	U,V,W,T	74	KS
16	05:34	T16	73	7408N 1904.5E	XBT	D,T	73	KS
17	05:49	T17	66	7410N 1904.6E	XBT	D,T	66	KS
18	06:04	T18	63	7412N 1904.7E	XBT	D,T	63	KS
19	06:22	T19	59	7414N 1904.5E	XBT	D,T	59	KS
20	06:39	CTD20	56	7416N 1904.0E	EMCM	U,V,W,T	27	KS
20	06:47	T20	56	7416N 1904.0E	XBT	D,T	56	KS

Activity: Phytoplankton

Sst	h	Code	Position	Gear	Comments	Rp
	11:00		7420N 2020E	Niskin	Stable isotops, 10m	SS
	14:20	0611bj01.mer	7421N 2000E	Multipar	CTD/Fluorescence	SS

Activity: Zooplankton tows

Sst	h	Code	Position	Gear	Sample 1	Rp
21d	22:30			TT	POPs	KB

Activity: Trawling

Sst	h	Code	Position	Gear	Sample	Comments	Rp
21b	16:00			PBT	Fish larvae, "gapis"	Trawling depth 125m	SFP
21c	21:00			PPT		H2 took samples. Some *G. wilkitskii* and *T. inermis* were recorded in the net	SFP

Activity: Ecotoxcology

There were no sightings of ringed seals in the Bjørnøya area.
Glaucous gulls (n=15) and kittiwakes (n=10) were shot in the vicinity of Hvalrossbukta.

Date: 12.06.95. Storfjorden

Activity: Weather conditions

Sst	h gmt	Position	ch	vis	cc	wd	ws	°C	posc	ice
	00:00	750N 192E	4	97	7	36	02	-09	83	
	06:00	755N 180E	4	97	7	36	02	-18	93	XX1XX
	12:00									
	18:00	764N 176E	6	98	3	25	03	-14	104	45583

Activity: Physical oceanography

Sst	hr gmt	Code	Depth	Position	Gear	Sample	Ice condition	Rp
22a	09:30	XCTD1	324	7611.5N 1733.5E	XCTD	CTD	0.5n.m. off ice edge	KS
23b	11:00	01	324	7611.5N 1733.9E	Niskin	0m water	Tw=2.7C	KS
23b	11:10	06	324	7611.5N 1733.9E	Niskin	50m water		KS
23b	11:15	02	324	7611.5N 1733.9E	Niskin	100m water		KS
23b	11:55	03	324	7611.5N 1733.9E	Niskin	200m water	Tw=-1.1C	KS
23b	12:16	04	324	7611.5N 1733.9E	Niskin	300m water	Tw= -1.4C	KS
24a	14:15	XCTD2	258	7627.8N 1756.0E	XCTD	CTD	Very open drift ice	KS
24b	15:23	XCTD3	182	7636.9N 1821.5E	XCTD	CTD	Very open drift ice	KS
25b	22:55	XCTD4	264	7623.7N 1900.0E	XCTD	CTD	0.5n.m. off ice edge	KS
26a	23:34	XCTD5	277	7623.9N 1929.1E	XCTD	CTD		KS

Activity: Phytoplankton

Sst	hr	Code	Position	Gear	Rp
	11:00	0612sv01.mer	7611.7N 1731.7E	Multipar	SS

Activity: Benthos

Sst	h	Code	Depth	Position	Rp
22	11:18	IB9501-IB95001	329	7711.7N 1731.7E	OJL

Activity: Ecotoxicology

Heavy ice condition hindered seal hunting in the Storfjord area.

Date: 13.06.95

Activity: Weather conditions

Sst	hr gmt	Position	ch	vis	cc	wd	ws	°C	pasc	ice
	00:00	764N 195E	5	98	7	13	02	-13	180	6X180
	00:00	762N 230E	6	98	8	13	07	-11	104	1X180
	12:00	764N 258E	6	98	7	05	08	-20	104	13180
	18:00	763N 280E	4	97	8	36	11	-05	144	13180

Activity: Physical oceanography

Sst	hr gmt	Code	Depth	Position	Gear	Sample 1	Ice condition	Rp
27a	01:14	XCTD6	209	7624.3N 2029.6E	XCTD	CTD		KS
28a	02:55	XCTD7	245	7624.9N 2129.3E	XCTD	CTD		KS
29a	04:47	XCTD8	134	7622.4N 2230.0E	XCTD	CTD		KS
30a	06:33	XCTD9	87	7620.6N 2333.3E	XCTD	CTD		KS
31a	07:29	05	67	7619.8N 2400.0E	Niskin	20m water	Tw= -0.4C	KS
32a	08:49	XCTD10	60	7618.6N 2430.0E	XCTD	CTD	Very open drift ice	KS

Activity: Ecotoxicology

About 20 polar bear observations were made along the ice edge east of Hopen. Most of these observations were at or in the vicinity of seal carcasses. and an effort was made to collect seal samples. The specimens we could identify among the carcasses were harp seals, this was also the main species we observed in the water along the ice edge or resting on the ice.

Date: 14.06.95. Ice station 1

Activity: Weather conditions

Sst	hr gmt	Position	ch	vis	cc	wd	ws	°C	pasc	ice
	00:00	781N 343E	6	96	8	36	03	30	183	86003
	06:00	781N 342E	6	97	8	18	09	07	163	86003
	12:00	781N 342E	6	96	8	18	13	08	153	86003
	18:00	781N 342E	x	92	9	18	10	07	133	86003

Activity: Physical oceanography

Sst	hr gmt	Code	Depth	Position	Gear	Sample 1	Rp
36b	23:15	St15	249	7651.7N 3003.4E	ME-CTD		KAO
37a	01:15	St16	234	7654.3N 3059.7E	ME-CTD		KAO
37b	03.50	St17	210	7656.4N 3200.0E	ME-CTD		KAO
38a	05:20	St18	156	7700.2N 3301.2E	ME-CTD		KAO

39a	07:50	St19	168	7702.2N 3400.3E	ME-CTD		KA
40a	10:00	St20	172	7710.3N 3430.5E	ME-CTD		KAO
41a	21:20	St21	201	7710.3N 3416.9E	ME-CTD		KAO
41a	22:10	St07	201	78 04.8N 34 16.9E	Niskin	150 m water Tω=0.3C	KS
41a	22:10	St08	201	78 04.8N 34 16.9E	Niskin	5 m water Tω=-1.1.C	
41a	22:19	XCTD11	201	7804.8N 3416.9E	XCTD	CTD	KS

Activity: Ecotoxicology

"Ringed seal ice" with a variation of flat ice-floes and jumbled ice, was found around Ice station 1. A number of seals were observed on flat ice in the vicinity of "Lance", and in the period from 14 - 17 June ringed seals (n=10) were caught in this area. See sample description in table 5.3.1.
No birds were sampled at this station.

Date: 15.06.95. Ice station 1

Activity: weather conditions

Sst	h gmt	Position	ch	vis	cc	wd	ws	°C	posc	ice
	00:00	781N 343E	6	96	8	36	03	-30	183	86003
	06:00	781N 342E	6	97	8	18	09	-07	163	86003
	12:00	781N 342E	6	96	8	18	13	-08	153	86003
	18:00	781N 342E	x	92	9	18	10	-07	133	86003

Activity: Physical oceanography

Sst	h gmt	Code	Depth	Position	Gear	Sample 1	Sample 2	Rp
41c	08:00	CTD41	214	7805.6N 3417.2E	EMCM	U,V,W,T (27m)		KS
41c	08:15	St22	214	7805.7N 3417.1E	ME-CTD			KAC
42a	11:15	St23	225	7806.6N 3416.5E	ME-CTD			KAO
42b	14:00	St24	227	7807.8N 3417.2E	M-CTD	WS8 201m	WS9-5m	KAO
42b	14:00	CTD42	227	7807.8N 3417.2E	EMCM	U,V,W,T (27m)		KS
42b	14:40	09	227	7807.8N 3417.2E	Niskin	200 m Tω=0.9C		KS
42b	14:47	10	227	7807.8N 3417.2E	Niskin	5 m Tω=-1.2C		KS
42b	14:15	11	227	7807.8N 3417.2E	Niskin	2 m Tω= -1.7C		KS
42d	19:20	12	231	7809.2N 3416.6E	Niskin	2 m Tω= -1.7C		KS
42c	17:00	CTD42	233	7808.8N 3418.4E	EMCM	U,V,W,T (27m)		KS
42c	17:15	St25	233	7808.4N 3418.0E	M-CTD			KAO
42d	19:16	A059	231	7804.8N 3416.9E	Suction pump Air			KS
42d	19:30	A060	231	7804.8N 3416.9E	Suction pump Air			KS
42d	20:00	CTD42	231	7809.2N 3416.6E	EMCM	U,V,W,T (27m)		KS
42d	20:15	St26	231	7809.3N 3416.7E	M-CTD			KAO
43a	23:00	CTD43	206	7810.3N 3412.9E	EMCM	U,V,W.T (27m)		KS
43a	23:15	St27	205	7810.4N 3412.9E	M-CTD			KAO
43b	02:00	CTD43	217	7811.3N 3412.5E	EMCM	U,V,W,T(27m)		KS
43b	02:20	St28	217	7811.3N 3412.5E	M-CTD			KAO
43c	05:00	CTD43	226	7812.5N 3413.6E	EMCM	U,V,W,T (27m)		KS
43c	05:20	St29	226	7812.5N 3413.6E	M-CTD			RK
43e	08:00	CTD43	213	7812.4N 3411.6E	EMCM	U,V,W,T (27m)		KS
43f	11:00	CTD43	190	7812.9N 3407.4E	EMCM	U,V,W,T (27m)		KS
44a	14:00	CTD44	183	7814.2N 3406.8E	EMCM	U,V,W,T (27m)		KS

Activity: Ice core sampling

Sst	h gmt	Code	Position	Gear	Thickness	Snow layer (m)	Sample	Rp
41a	12:00	Core#4	7804.8N 3416.9E	CRREL drill	1.48		Structure brine ratio	KS
41a	12:00	Core#5	7804.8N 3416.9E	CRREL drill	1.32	0.1	Salinity Chl.a	KS

Activity: Phytoplankton

Sst	h	Code	Position	Gear	Sample	Rp
	13:50	0615bh01.mer	7807.3N 3416.6E	Multipar	Fluorescense/CTD	SS
	13:55	0615bh01.bnd	7807.3N 3416.6E	PNF300	UV. irradiance	SS
	13:00		7807.3N 3416.6E	Niskin	Chl.a, P/I, Si, CHN, nutrients, counting sampl.	SS
	14:00		7807.3N 3416.6E	Pp.net	Qual. netsample	YO
	17:00		7807.0N 3416.1E	Suction pump	Quant. ice algae, chl.a, counting sampl.	SS
	17:40		7807.0N 3416.0E	Thermometer, ruler, suction pump	Ice algae: chl.a, counting, snow layer thickness, temperature snow layer/water	SS

Date: 16.06.95. Ice station 1

Activity: Weather conditions

Sst	h gmt	Position	ch	vis	cc	wd	ws	°C	pasc	ice
	00:00	781N 342E	5	96	8	15	13	-20	113	86003
	06:00	782N 342E	5	96	8	12	11	-16	123	86003
	12:00	782N 341E	5	96	8	12	09	-25	153	86003
	18:00	782N 341E	5	96	8	13	07	-14	163	86003

Activity: Physical oceanography

Sst	h gmt	Code	Depth	Position	Gear	Sample1	Sample2	Rp
43b	02:20	St28	217	7811.3N 3412.5E	M-CTD			KAO
43c	05:20	St29	226	7812.5N 3413.6E	M-CTD			RK
43e	08:10	St30	213	7812.4N 3411.6E	M-CTD			KS
43f	11:15	St31	190	7812.9N 3407.5E	M-CTD	WS10-170m	WS11-10m	KAO
43f	11:38	St13	190	7812.9N 3407.4E	Niskin	10m water	Tω= -1.3C	KS
44a	14:30	St32	183	7814.3N 3407.0E	M-CTD			KAO
44d	17:10	St33	180	7815.0N 3408.7E	M-CTD			KAO
46a	23:30	St34	180	7815.6N 3406.4E	M-CTD			KAO
43f	13:30	Ba01	190	7812.9N 3407.4E	An.meter	3 D winds		KS
				7814.2N 3406.8E	An.meter	3 D winds		KS
				7814.7N 3407.7E	An.meter	3 D winds		KS
				7814.7N 3407.7E	An.meter	3 D winds		KS
				7815.0N 3408.7E	An.meter	3 D winds		KS
				7815.1N 3409.2E	An.meter	3 D winds		KS
				7815.1N 3409.2E	An.meter	3 D winds		KS
				7815.5N 3406.4E	An.meter	3 D winds		KS

Activity: Phytoplankton

Sst	h	Code	Position	Gear	Sample	Rp
	11:00		7812.4N 3412.5E	Pp. net	Qual. netsample, 0-30 M	SS
	11:05	0616bh02.mer	7812.4N 3412.5E	Multipar	Fluorescense/CTD	SS
	13:50	0616bh03.mer	7812.4N 3412.5E	Multipar	Fluorescense/CTD	SS
	13:50	0616bh02.bnd	7812.4N 3412.5E	PNF300	UV. irrandiance	SS
	14:00		7812.4N 3412.5E	Niskin	Quant. FL-max (10m)	YO
		0616bh03.bnd	7812.4N 3412.5E	PNF300, suction pump, net	Under ice irradiance, ice algae qualitative	SS
	16:30	0616bh04.mer	7814.7N 3407.7E	Multipar Niskin	Fluoresc., chl.a, lipid 10m	SS
	17:00		7814.0N 3406.0E	Suction pump, net	Qual. ice algae sampling (*Melosira*)	SS
	18:00	ICE st.	7814.9N 3408.0E	Suction pump, net	Ice algae (qual.), stable isotopes	SS

Activity: Benthos

Sst	h gmt	Code	Depth (m)	Position	Rp
45	20:25	IB95011-IB95123	181	7815.0N 3408.6E	OJL

Date: 17.06.95. Ice station 1

Activity: Weather conditions

Sst	h gmt	Position	ch	vis	cc	wd	ws	°C	pasc	ice
	00:00	782N 341E	5	96	8	13	06	-18	163	86003
	06:00	782N 341E	x	91	9	13	09	-18	173	86003
	12:00	782N 341E	x	93	9	13	05	-06	193	86003
	18:00	782N 341E	x	94	9	23	09	-13	193	86003

Activity: Physical oceanography

Sst	h gmt	Code	Depth	Position	Gear	Sample	Rp
46a	00:30	Ba. 02	180	7815.5N 3406.4E	Anemometer	3D winds	KS
46a	02:30	Ba. 02	180	7815.5N 3406.4E	Anemometer	3D winds	KS
46a	04:30	Ba. 02	180	7815.5N 3406.4E	Anemometer	3D winds	KS
46a	06:30	Ba. 02	180	7815.5N 3406.4E	Anemometer	3D winds	KS
46a	08:30	Ba. 02	180	7815.5N 3406.4E	Anemometer	3D winds	KS
46b	07:30	A061	180	7816.9N 3408.1E	Suction pump	Air	KS
46b	07:56	A063	180	7816.9N 3408.1E	Suction pump	Air	KS
46b	08:07	A064	180	7816.9N 3408.1E	Suction pump	Air	KS
46b	07:37	14	178	7816.9N 3408.1E	Niskin	2 m Tω= -1.4	KS
46b	07:58	15	178	7816.9N 3408.1E	Niskin	2 m Tω= -1.4	KS
46b	08:13	16	178	7816.9N 3408.1E	Niskin	2 m Tω= -1.4	KS
46c	09.20	St35	177	7816.9N 3408.4E	M-CTD		KAO

Activity: Zooplankton tows

Sst	h	Code	Position	Gear	Sample 1	Comments	Rp
	13:00-17:00			2 WP3	Population dyn., formaline		SFP
	13:00-17:00			6 WP3	POP		KB SFP
	13:00-17:00			4 WP3	3 bags copep 2 bags chaetog 1 bags krill	Samples frozen lipid, species, weight, length	SFP
	13:00-17:00			2 WP2	Population dyn., formalin		SFP

Date: 18.06.95.

Activity: Weather conditions

Sst	h gmt	Position	ch	vis	cc	wd	ws	°C	pasc	ice
	00:00	782N 341E	4	96	8	13	08	15	193	86003
	06:00	783N 341E	4	95	8	13	06	10	193	86003
	12:00									
	18:00	780N 340E	5	97	8	13	05	14	14	76081

Activity: Physical oceanography

Sst	h gmt	Code	Depth	Position	Gear	Sample 1	Sample 2	Rp
49b	13:08	12	197	7802.8N 3407.0E	XCTD	CTD		KS
49d	13:57	17	197	7802.8N 3407.0E	Niskin	10m	Tw=-0.3	KS
49d	14:00	18	197	7802.8N 3407.0E	Niskin	50m	Tw=-1.1	KS
49d	14:05	19	197	7802.8N 3407.0E	Niskin	100m	Tw=-1.2	KS
49d	14:10	20	197	7802.8N 3407.0E	Niskin	200m	Tw=-0.3	KS
49d	14:15	21	197	7802.8N 3407.0E	Niskin	0m	Tw=-1.0	KS
50a	16:00	st36	180	7804.9N 3359.2E	M-CTD			KAO
51a	21:15	st37	202	7759.3N 3356.6E	M-CTD			

Activity:Phytoplankton

Sst	h	Code	Position	Gear	Sample	Rp
	15:45	0618bh05.mer	7802.3N 3405.8E	Multipar. Niskin	Fluoresc., lpid and chl a 10m	SS

Activity: Benthos

Sst	h	Code	Depth	Position	Rp
48	10:00	IB95024-IB95032	240	7812.1N 3415.5E	OJL

Activity: Zooplankton tows

Sst	h	Code	Position	Gear	Sample 1	Rp
49	14:15	Large sample, divided on to glasses		TT	Population dynamic, formalin	SFP
49	14:45	Samples frozen for lipid and weights		TT	4 krill bags 1 amp. bag	SFP

49	19:00-21:00	Several hauls to collect fish larvae and POPs. Some amphipods for SFP		TT	Fish larvae POPs	KB

Activity: Trawling

Sst	h	Code	Position	Gear	Comments	Rp
49	1800			PPT	No fish or ampipods. Only a lot of *Sagitta* sp.	SFP

Activity: Ecotoxicology

In a flat ice area to the north of Ice station 2 (7739N 3454E), we observed about 15 ringed seals. Two of these were shoot and brought on board for further dissection at Ice station 2. See sample description in table 5.3.1.

19.06.95. Ice station 2

Activity: Weather conditions

Sst	h gmt	Position	ch	vis	cc	wd	ws	° C	pasc	ice
	00:00	777N 340E	4	96	8	13	03	-27	188	76041
	06:00	774N 341E	4	97	8	00	00	-25	183	76041
	12:00	776N 343E	4	97	8	00	00	-20	203	76041
	18:00	776N 343E	4	97	8	00	00	-45	193	76041

Activity: Ice core sampling

Sst	h gmt	Code	Position	Gear	Thickness	Snow layer (m)	Sample	Rp
52f	18:18	Core #1	7739.6N 3416.9E	CRREL dill	1.48		Structure brine ratio	KS
52f	18:18	Core #2	7739.6N 3416.9E	CRREL dill	1.34	0.04	Salinity, Chl.a.	KS

Activity: Physical oceanography

Sst	h.gmt	Code	Depth	Positon	Gear	Sample 1	Sample 2	Rp
51b	23:10	St38	195	7750.3N 3416.0E	M-CTD			KAO
52a	01:00	St39	187	7739.5N 3413.8E	M-CTD			KAO
52b	09:00	St40	175	7739.5N 3418.3E	M-CTD			KAO
52c	09:00	CTD52	180	7739.5N 3418.3E	EMCM	U,V,W,T		KS
52e	12:00	CTD52	193	7739.2N 3418.5E	EMCM	U,V,W,T		KS
52d	11:40	22	192	7739.2N 3418.6E	Niskin	2 m	Tw=-1.1,	KS
52d	11:41	A065	193	7739.2N 3418.5E	Suct pum	Air		KS
52e	12:00	St41	187	7739.3N 3418.5E	M-CTD	WS12-161m	WS13-11m	KAO
52e	12:15	23	192	7739.2N 3418.6E	Niskin		Tw=-1.4, 2 m	KS
52e	12:17	A066	193	7739.5N 3418.5E	Suct pump	Air		KS
52e	12:32	24	192	7739.2N 3418.6E	Niskin	10 m	Tw=-0.9	KS
52e	12:37	25	192	7739.2N 3418.6E	Niskin	100m	Tw=-1.4	KS
52e	12:58	76	192	7739.2N 3418.6E	Niskin	190m	Tw=-0.1	KS
52e	13:34	77	192	7739.2N 3418.6E	Niskin	150m	Tw=0.0 150m	KS
52e	12:30	78	192	7739.2N 3418.6E	Niskin		0m	KS

52c	12:30	79	192	7739.2N 3418.6E	Niskin	10m		KS
52e	12:30	80	192	7739.2N 3418.6E	Niskin	20m		KS
52c	12:15	81	192	7739.2N 3418.6E	Niskin	50m		KS
52f	15:00	CTD52	188	7739.2N 3416.6E	EMCM	U,V,W,T		KS
52g	18:00	CTD52	185	7739.6N 3416.8E	EMCM	U,V,W,T		KS
52h	21:00	CTD52	177	7739.8N 3416.8E	EMCM	U,V,W,T		KS
52h	21:00	82	176	7739.8N 3418.5E	Niskin	10m		KS

Activity:Phytoplankton

Sst	h gmt	Code	Depth	Position	Gear	Sample	Comments	Rp
	10:50			7739.5N 3418.3E	Multipar	CTD/fluoresc.	Unstable	SS
	10:20			7739.5N 3418.3E	Pp net	Netsamp. 0-30m	2 x 100 ml	SS
	13:30			7739.1N 3417.7E	Niskin	Chl. a, nutrients, carbon, silicate, counting samples, P/I, lipid (10m)	0-(5)-10-(15)-20-(30)-50 -(100) m	SS
	23:10			7739.0N 3417.0E	Niskin	Lipid/chl a 10m		SS SF

Date 20.06.95. Ice station 2

Activity: Weather conditions

Sst	h gmt	Position	ch	vis	cc	wd	ws	° C	pasc	ice
	00:00	776N 343E	x	93	9	00	00	-50	212	76041
	06:00	776N 343E	x	93	9	00	00	-31	212	76041
	12:00									
	18:00	776N 343E	x	94	9	20	06	-45	222	76041

Activity: Physical oceanography

Sst	h.gmt	Code	Depth	Position	Gear	Sample 1	Sample 2	Rp
53a	00:00	CTD53	177	7739.6N 3419.3E	EMCM	U,V,W,T		KS
53a	00:10	St45	175	7739.6N 3419.5E	M-CTD			KAO
53b	03:00	CTD53	181	7739.6N 3419.5E	EMCM	U,V,W,T		KS
53b	03:20	St46	170	7739.6N 3418.7E	M-CTD			KAO
53c	06:00	CTD53	169	7739.9N 3415 1E	EMCM	U,V,W,T		KS
53c	06:20	St47	165	7739.9N 3418.1E	M-CTD			KAO
53f	12:00	St48	165	7740.3N 3417.8E	M-CTD			KAO
53g	12:00	83	172	7740.4N 3418.0E	Niskin	2m	Tw= -1.1	KS
53g	12:05	A067	168	7740.3N 3417.7e	Suct pump	Air		KS
53g	12:18	A071	168	7740.3N 3417.7e	Suct pump	Air		KS
53g	12:21	84	172	7740.4N 3418.0E	Niskin	2m	Tw= -1.3	KS
53h	13:30	Ba 05	188	7740.4N 3418.0E	Anemeter	3D winds		KS
53h	14:00	Ba 05	188	7740.4N 3418.0E	Anemeter	3D winds		KS
53h	14:30	Ba05	188	7740.4N 3418.0E	Anemeter	3D winds		KS
53i	15:00	Ba05	166	7740.5N 3418.3E	Anemeter	3D winds		KS
53i	15:30	Ba05	166	7740.5N 3418.3E	Anemeter	3D winds		KS
53i	15:00	CTD53	169	7740.6N 3418.4e	EMCM	U,V,W,T		KS
53i	15:10	St49	165	7740.6N 3418.4E	M-CTD	WS15-50m		KAO
53i	15:21	85	172	7740.4N 3418.4E	Niskin	50 m	Tw= -0.7	KS
53i	15:28	86	173	7740.4N 3418.4E	Niskin	100 m	Tw=-0.9	KS
53i	19:50	st50	170	7742.4N 3421.5E	M-CTD			KAO

53j	16:00	Ba05	169	7741.2N 34184E				KS
53k	17:30	Ba.06	169	7741.2N 3418.8E				KS
53k	19:30	Ba06	169	7741.2N 3418.8E				KS
54a	21:00	CTD54	168	7742.8N 2423.2E	EMCM	U,V,W,T		KS
54a	21:10	St51	163	7742.8N 3422.0E	M-CTD			KAO
54a	21:30	Ba06	167	7742.7N 3422.9E				KS
54a	23:30	Ba06	167	7742.7N 3422.9E				KS

Activity: Phytoplankton

Sst	h	Code	Position	Gear	Sample	Comments	Rp
	09:00		7740N 3418E	Pp net	Qualitative 0-30m	2x100 ml	SS
	10:00		7740N 3418E	WP2	Qual. 0-10m	1x100 ml	SFP
	18:00		7740N 3418E	Suction p.	Ice algae, counting samples, carbon, phosphorus, silicas, lipid, chl.a	2 diff. areas Under ice station 2	SS

Activity: Zooplankton tows

Sst	h	Code	Position	Gear	Sample	Comments	Rp
54l	15:30-15:45		7749.4N 3438.3E	2 WP2	2 hauls for pop.dyn.	Formaline	SF P
54m	15:45- 16:00		7749.3N 3438.7E	1 WP3	1 haul for lipids and weights	1 bag chaetog. 3 bags copepods frozen	SF P

Date: 21.06.95. Ice station 2B

Activity: Weather conditions

Sst	h gmt	Position	ch	vis	cc	wd	ws	°C	pasc	ice
	00:00	776N 343E	x	94	9	20	08	+13	203	76041
	06:00	775N 344E	x	94	9	20	14	+01	188	76041
	12:00	778N 345E	x	93	9	17	16	+20	173	76041
	18:00	777N 343E	x	92	9	20	18	+10	173	76041

Activity: Physical oceanography

Sst	h. gmt	Code	Depth	Position	Gear	Sample 1	Sample 2	Rp
54b	00:00	CTD54	169	7743.6N 3426.9E	EMCM	U,V,W,T		KS
54b	00:10	St52	168	7743.7N 3426.7E	M-CTD			KAO
54b	01:30	Ba06	170	7743.6N 3427.0E	Anemeter	3 D winds		KS
54c	03:00	CTD54	166	7744.3N 3416.5E	EMCM	U,V,W,T		KS
54c	03:15	St53	166	7744.3N 3425.7E	M-CTD			KAO
54c	03:30	Ba06	167	7744.3N 3425.8E	Anemeter	3 D winds		KS
54c	04:30	Ba07	167	7743.6N 3425.8E	Anemeter	3 D winds		KS
54d	06:00	CTD54	168	7746.0N 3416.5E	EMCM	U,V,W,T		KS
54d	06:10	St54	163	7746.1N 3423.3E	M-CTD			KAO
54d	06:30	Ba07	167	7745.9N 3423.3E	Anemeter	3 D winds		KS
54e	08:30	Ba07	167	7747.4N 3425.0E	Anemeter	3 D winds		KS
54g	09.00	CTD54	167	7748.1N 3427.1E	EMCM	U,V,W,T		KS
54g	09:10	St55	170	7748.4N 3425.8E	M-CTD			KAO
	12:10	St56	166	7749.4N 3434.2E	M-CTD	WS16-77m		KAO
54h	10:30	Ba07	167	7748.4N 3428.1E	Anemeter	3 D winds		KS

54j	12:00	CTD54	167	7749.4N 3433.9E	EMCM	U,V,W,T		KS
54j	12:30	Ba07	175	7749.4N 3457.7E	Anemeter	3 D winds		KS
54j	12:43	XCTD13	175	7749.4N 3435.7E	XCTD	CTD		KS
54h	14:25	87	163	7749.4N 3434.9E	Niskin	75 m water	Tω=-1.4	KS
54h	14:32	88	163	7749.4N 3434.9E	Niskin	150 m water	Tω=0.3	KS
54h	14:35	89	163	7749.4N 3434.9E	Niskin	0 m water	Tω=-1.2	KS
55a	14:30	Ba07	175	7749.3N 3438.7E	Anemeter	3 D winds		KS
56a	15:10	St57	195	7736.8N 3419.8E	M-CTD			KAO
56c	22:10	St58	213	7730.4N 3429.5E	M-CTD			KAO

Activity: Phytoplankton

Sst	h	Code	Position	Gear	Sample	Rp
	11:20		7748N 3427E	Pp. net	Qual. 0-30m	SS
	14:00		7748N 3427E	Suction pump	Quant. ice algae, counting samples, chl.a, phosphorus, silicas, lipids, stable isotopes, carbon	SS
	14:30		7748N 3427E	Net	Qual. ice algae	SS

Activity: Benthos

sst	h	Depth (m)	Code	Position	Rp
54	16:15	178	IB95033-IB95045	7749.3N 3438.7E	OJL

Activity: Zooplankton tows (Open lead)

Sst	h	code	Position	Gear	Sample	Comments	Rp
56b	21:40 22:30		7736.9N 3420.3E	2TT Haul	1 haul pop.dyn., 15 min 1 haul for lip. and weight	1 bag krill 3 bags *Themisto* frozen	SFP
	22:30- 23:45		7736.9N 3420.3E	TT	Several hauls for POP's		KB

Date: 22.06.95. Ice station 3

Activity: Weather conditions

Sst	h. gmt	Position	ch	vis	cc	wd	ws	°C	pasc	ice
	00:00	775N 345E	x	93	9	17	10	+05	163	76041
	06:00	775N 345E	x	93	9	18	18	+09	143	76041
	12:00	775N 346E	x	92	9	20	18	+11	143	76041
	18:00	775N 346E	x	91	9	20	09	+12	153	76041

Activity: Physical oceanography

Sst	h gmt	Code	Depth	Position	Gear	Sample 1	Sample 2	Rp
57a	08:35	St59	197	7729.4N 3429.4E	M-CTD			KAO
57b	12:10	St60	195	7730.3N 3436.8E	M-CTD	WS17-146m	WS18-10m	KAO
57c	12:00	CTD57	195	7730.3N 3438.8E	EMCM	U,V,W,T		KS
57c	12:20	90	198	7730.3N 3439.3E	Niskin	150m water	Tw= -0.1	KS
57c	12:26	91	198	7730.3N 3439.3E	Niskin	10m water	Tw= -1.4	KS
57c	12:30	92	198	7730.3N 3439.3E	Niskin	100m water	Tw= -0.9	KS
57c	12:35	93	198	7730.3N 3439.3E	Niskin	50m water	Tw= -1.6	KS

57c	13:30	94	198	7730.3N 3439.3E	Niskin	2m water	Tw= -1.4	KS
57c	13:30	A 075	197	7730.0N 3438.9E	Suction p.	Air		KS
57c	13:40	A076	197	7730.0N 3438.9E	Suction p.	Air		KS
57c	13:43	95	198	7730.3N 3439.3E	Niskin	2m water	Tw= -1.4	KS
57d	15:00	CTD57	191	7729.8N 3444.3E	EMCM	U,V,W,T		KS
57d	15:15	St61	193	7729.8N 3444.3E	M-CTF			KAO
57g	18:00	CTD57	212	7731.5N 3445.6E	EMCM	U,V,W,T		KS
57f	18:15	St62	212	7731.5N 3445.6E	M-CTF			KAO
57i	21:00	CTD57	202	7732.9N 3452.6E	EMCM	U,V,W,T		KS
57i	21:15	St63	197	7733.0N 3452.3E	M-CTF			KAO

Activity:Phytoplankton

Sst	h	Code	Positon	Gear	Sample	Rp
	13:00		7730N 3436E	Pp net	Qual. 0-30	SS
	13:00		7730N 3436E	Niskin	Chl. a, 0-5-10-15-20-30-50-100 m	SS
	13:00		7730N 3436E	Niskin	Nutrients, silicas, carbon, P/I, counting samples	SS

Activity: Benthos

Sst	h	Code	Depth	Position	Rp
57	19:15	IB95046-IB95055	215	7730.9N 3445.5E	OJL

Activity: Ecotoxicology

There were no sealing activities at this station. Not ideal ice conditions for ringed seal "haul-outs". Kittiwakes (n=3), Brunnich's guillmots (n=9) and glaucous gulls (n=2) were collected both days. See sample description in table 5.3.1.

Date: 23.06.95. Ice station 3

Activity: Weather conditions

Sst	h.gmt	Position	ch	vis	cc	wd	ws	°C	pasc	ice
	00:00	775N 347E	x	91	9	20	11	+05	163	76041
	06:00	775N 347E	x	91	9	20	12	+10	143	76042
	12:00									
	18:00	775N 348E	x	93	9	20	20	+09	0064	76048

Activity: Ice core sampling

Sst	h gmt	Code	Position	Gear	Tickness	Snow layer (m)	Sample	Rp
59 c	12:54	Core #1	7739.2N 3456.4E	CRREL drill	0.72	0.035	Structure brine ratio	KS
59c	12:54	Core#2	7739.2N 3456.4E	CRREL drill	0.79	0.035	Salinity, chl.a	KS

Activity: Physical oceanography

Sst	h	Code	Depth	Position	Gear	Sample 1	Sample 2	Rp
58a	00:00	CTD58	187	7735.2N 3444.9E	EMCM	U,V,W,T		KS
58a	00:10	St64	188	7735.1N 3444.9E	M-CTF			KAO

58b	03:00	St65	189	7736.6N 3445.0E	M-CTD			KAO
58b	03:00	CTD58	189	7736.6N 3445.0E	EMCM	U,V,W,T		KS
58c	06:00	CTD58	183	7736.6N 3446.9E	EMCM	U,V,W,T		KS
58c	06:10	St66	182	7736.6N 3446.9E	M-CTD			KAO
58g	09:00	CTD58	175	7738.7N 3453.0E	EMCM	U,V,W,T		KS
58g	09:15	St67	175	7738.7N 3452.8E	M-CTD			KAO
59b	12:00	St68	175	7738.8N 3451.4E	M-CTD	WS19-145m	WS20-10m	KAO
59b	12:00	CTD59	178	7738.8N 3454.2E	EMCM	U,V,W,T		KS
59b	12:00	XCTD14	178	7738.8N 3454.2E	XCTD	CTD		KS
59b	12:20	96	183	7739.0N 3455.1E	Niskin	150m water	Tw= 0.8	KS
59b	12:23	97	183	7739.0N 3455.1E	Niskin	10m water	Tw= -0.7	KS
59b	12:27	98	183	7739.0N 3455.1E	Niskin	100m water	Tw= 0.2	KS
59d	15:00	CTD59	184	7739.1N 3456.5E	EMCM	U,V,W,T		KS
59d	15:20	99	181	7739.2N 3457.0E	Niskin	10m water	Tw= -1.2	KS
59d	15:30	St69	184	7739.1N 3456.5E	M-CTF	WS21-10m		KAO

Activity: Zooplankton tows

Sst	h	Code	Position	Gear	Sample	Comments	Rp
58d	08:50		7737.0N 3447.6E	WP2	2 hauls Pop.dyn.	Formalin 100-0m	SFP
58h	10:20		7738.5N 3450.4E	WP3	2 hauls Pop.dyn.	Formalin 100-0 m	SFP
59c	14:30		7739.2N 3456.4E	WP3	Lipids and weigths	1 bag *Themisto* 1 bag copepods c.g. 2 bags copepods c.h. 1 bag gross sample	SFP

Date: 24.06.95. Open water station

Activity: Weather conditions

Sst	h gmt	Position	ch	vis	cc	wd	ws	°C	pasc	ice
	00:00	772N 345E	x	93	9	24	18	+08	0064	0xx8x
	06:00	770E 345E	x	92	9	23	15	+18	0004	0xx8x
	12:00	769N 339E	x	93	9	27	16	+18	9984	
	18:00	769N 340E	x	93	9	26	16	+18	9984	

Activity: Physical oceanography

Sst	h gmt	Code	Depth	Position	Gear	Sample 1	Sample 2	Rp
60f	09:00	CTD60	123	7655.5N 3405.6E	EMCM	U,V,W,T		KS
60f	09:15	St70	122	7655.5N 3405.6E	M-CTD	WS22-101m	WS23-10m	KAO
60f	09:18	100	126	7655.6N 3405.7E	Niskin	100m water	Tw= -1.2	KS
60f	09:25	101	126	7655.6N 3405.7E	Niskin	10m water	Tw=0.5	KS
60i	10:58	A077	120	7653.6N 3357.2E	Suction p.	Air		KS
60i	11:10	102	125	7653.6N 3357.2E	Niskin	2m water	Tw= 0.8	KS
60i	11:11	A078	120	7653.6N 3357.2E	Suction p.	Air		KS
60i	11:15	103	126	7653.6N 3357.2E	Niskin	2m water	Tw= 0.8	KS
60i	12:00	CTD60	125	7853.6N 3356.4E	EMCM	U,V,W,T		KS
60i	12:10	St71	125	7653.7N 3356.4E	M-CTF			KAO
61b	15:00	CTD61	108	7652.7N 3341.3E	EMCM	U,V,W,T		KS
61b	15:10	St72	105	7653.6N 3357.2E	M-CTF			KAO

61b	15:15	XCTD15	106	7652.7N 3341.6E	XCTD	CTD		KS
61b	15:18	112	106	7652.7N 3341.6E	Niskin	35m water	Tw= 0.8	KS
61f	19:30	St73	130	7654.8N 3411.6E	M-CTF			KAO

Activity: Phytoplankton

Sst	h	Code	Position	Gear	Sample	Rp
	12:00		7655N 3403E	Pp net	Qual. net sample 0-30m	SS
	12:00		7655N 3403E	Niskin	Chl.a, 0-5-10-15-20-30-50-100 m	SS
	12:00		7655N 3403E	Niskin	Nutrients, counting samples, silicas, carbon, lipid	SS
	17:15		7655N 3403E	Niskin	Chl. a and lipids 35m	SS

Activity: Zooplankton tows

Sst	h	Code	Position	Gear	Comments	Rp
60a	09:00	1 haul for pop.dyn. divided on two boxes	7656.9N 3415.5E 7655.6N 3415.5E 7655.6N 3355.0E	5 TT hauls	Bags frosen lipids, *Themisto* *G. wilkitskii* *Onisimus*	SFP H2 KB
60e	11:00	15 min. 15m			Krill	
60h	13:10	depth. Samples for POP collected by KB	7653.4N 3359.3E		*Calanus hyperboreus* *Calanus* with distinct red sac lipid *Calanus glacialis* *Calanus* mass sample	SFP H2
60i	14:00	Samples for lipids collected by SFP Samples for ISO collected by H2				
61	16:10	2 hauls for pop.dyn. 100-0m	7653.6N 3341.0E	2WP2		SFP
61	17:20	2 hauls for pop.dyn 100-0m	7652.6N 3350.3E	2WP3		SFP

Activity: Trawling

Sst	h	Depth	Postition	Gear	Sample	Rp
61		20		PPT	*G.wilkitzkii*, arrow worm, kelly fish, *Themisto*	H2
		70		PPT	*G.wilkitzkii*, arrow worm, jelly fish, *Themisto*, krill	H2
		Bottom		PBT	Polar cod, liparids,	H2

Activity: Ecotoxicology

There were no seal sightings in the waters around this station. Effort was concentrated upon different trawl activities to obtain polar cod and zooplankton.

Date: 25.06.95. Open water station

Activity: Weather conditions

Sst	h gmt	Position	ch	vis	cc	wd	ws	°C	pasc	ice
	00:00	776N 335E	5	96	8	26	10	+18	9974	
	06:00	777N 328E	5	95	4	30	18	-02	0004	00080
	12:00	773N 313E	5	96	6	30	20	+06	0054	38080
	18:00	769N 295E	6	97	2	30	17	+19	0054	38080

Activity: Physical oceanography

Sst	h gmt	Code	Depth	Position	Gear	Sample 1	Sample 2	Rp
62a	21:30	St74	160	7703.9N 3334.1E	M-CTF			KAO
63a	22:45	St75	142	7713.3N 3333.1E	M-CTF			KAO
63b	00:15	St76	140	7723.3N 3333.1E	M-CTF			KAO
63c	01:15	St77	160	7730.2N 3326.4E	M-CTF			KAO
63d	02:20	St78	182	7736.3N 3320.0E	M-CTF			KAO
63f	03:15	St79	163	7742.6N 3319.7E	M-CTF			KAO
63g	04:50	St80	169	7747.0N 3255.9E	M-CTF			KAO
63g	06:32	XCTD 16	152	7743.7N 3159.1E	XCTD	CTD		KS
63h	06:40	St81	152	7743.7N 3159.2E	M-CTF			KAO
63i	11:20	63I	167	7719.7N 3124.8E	XBT	T,D		KS
63j	12:10	St82	184	7715.8N 3059.4E	M-CTF			KAO
64a	13:05	64A	196	7710.7N 3030.0E	XBT	T,D		KS
64b	14:10	St83	222	7705.2N 2959.2E	M-CTF			KAO
64b	15:00	64B	223	7702.2N 2930.0E	XBT	T,D		KS
65a	21:10	XCTD 17	189	7713.7N 2859.6E	XCTD	CTD		KS
65b	21:15	St84	187	7713.6N 2858.4E	M-CTF	WS24-148m	WS25-10m	KAO
65c	10:05	113	193	7712.4N 2858.2E	Niskin	10m water	Tw= -0.3	KS
65c	10:05	114	193	7712.4N 2858.2E	Niskin	150 waterm	Tw= -1.3	KS
65c	10:15	115	193	7712.4N 2858.2E	Niskin	50m water	Tw= -0.2	KS

Activity: Benthos

Sst	h	Code	Depth	Position	Rp
64	18:00	IB95056-IB95068	240	7656.6N 2932.5E	OLJ

Activity: Ecotoxicology

Along the ice edge Bruunich's guillemots (n=1) and black guillemots (n=7) were shoot in the vicinity of 'Lance'.

Date: 26.06.95. Open water station

Activity: Weather conditions

Sst	h	pos	ch	vis	cc	wd	ws	°C	pasc	ice
	00:00	771N 289E	6	97	2	30	09	+03	0064	38080
	06:00	770N 287E	7	98	1	30	08	-04	0064	38080

Activity: Physical oceanography

Sst	h gmt	Code	Depth	Position	Gear	Sample 1	Sample 2	Rp
66e	08:47	66E	130	7749.2N 2830.0E	XBT	T,D		KS
66f	09.40	St85	147	7648.1N 2756.8E	M-CTF			KAO
66i	13:25	66I	122	7641.5N 2730.0E	XBT	T,D		KS
	14:48	29307	80	7638.9N 2630.0E	XBT	T,D		KS
	15:25	95009	60	7639.1N 2600.0E	XCTD	CTD		KS
	16:08	29308	32	7637.2N 2530.0E	XBT	T,D		KS
	22:42	29309	58	7623.3N 2500.0E	XBT	T,D		KS

Activity: Trawling

Sst	h	Code	Position	Gear	Comments	Rp
65A	22:05		7710.9N 2905.4E	PPT	70 min haul. No samples taken	LK

Activity: Ecotoxicology

To the north east of Hopen (7645 N, 2748 E) in drifting ice, harp seals (n=10) were shot from a rubber boat in the vicinity of 'Lance'. Glaucous gulls (n= 12) were obtained near the northern part of Hopen.

Date: 27.06.95 Open water station

Activity: Zooplankton tows

Sst	h	Code	Position	Gear	Sample	Comments	Rp
66e	09:30		7651.6N 2850.6E	TT	POP	Along the ice edge	KB/LK

Activity: Physical oceanography

Sst	h gmt	Code	Depth	Position	Gear	Sample		Rp
	00:52	95010	67	7604.8N 2400.0E	XCTD	CTD		KS
	03:12	29310	61	7546.0N 2300.0E	XBT	T,D		KS
	05:20	95011	40	7521.7N 2100.0E	XCTD	CTD		KS
	07:45	29311	59	7456.9N 2100.0E	XBT	T,D		KS
	09:52	95012	66	7439.5N 2000.0E	XCTD	CTD		KS
	13:42	29312	36	7425.1N 1920.8E	XBT	T,D		KS
68a	12:46	A079	37	7424.3N 1918.1E	Suction p.	Air		KS
68a	13:02	A080	37	7424.3N 1918.1E	Suction p.	Air		KS
68a	12:45	116	35	7424.3N 1918.1E	Niskin	2m water	Tw= 2.2	KS
68a	13:05	117	37	7424.3N 1918.1E	Niskin	2m water	Tw= 2.2	KS

Activity: Trawling

Sst	h	Code	Position	Gear	Sample	Comments	Rp
66a	00:40		7712.4N 2856.2E	PPT	Samples for POP	Along the ice edge	KB LK
66b	01:50		7712.2N 2852.0E	PPT	Samples for POP	Along the ice edge	KB LK
66d	09:00		7651.9N 2853.5E	PPT	Stable isotopes	Along the ice edge	H2

Activity: Ecotoxicology

Crabs were obtained by diving (H2, MP) near Bear Island.

5. SCIENTIFIC RESULTS

5.1 Marine biology, ice fauna and flora

5.1.1 Primary Production

by Stig Sandberg/Else Nøst Hegseth

Introduction

Marginal ice zones (MIZ) are recognized as sites of enhanced primary production. Several studies have verified that high production is a result of light availability in the stable, upper meltwater layer. In the Barents Sea, ice edge blooms are found in some situations. They are not always present due to the fact that a bloom needs time to develop and concequently a favorable situation must have lasted for an extended period. High winds may create deep vertical mixing, or the ice cover may blow over an incipient bloom and trap it under the ice. In the outer part of the MIZ high chlorophyll concentrations may be found at 20-40 m depth, indicating that a bloom has already preceded in this area.

The primary production in the ice edge zone is the sum of pelagic production (60-65 %) and the ice algal production (35-40 %, Hegseth 1996). The main objective of the botanical part of the «ICE-BAR 1995» has been to study distribution and biomass of phytoplankton and ice algae in the MIZ, as well as pelagic primary production in early summer, as part of a larger project on temporal and spatial distribution, magnitude and partitioning of primary production in the ice edge zone in relation to environmental conditions, and its importance to the higher trophic levels.

Methods and preliminary results

Phytoplankton was sampled quantitatively (water bottles to 100 m) and qualitatively (net samples to 50 m). At four stations in a transect from the ice edge zone into the ice (76-78° N, 34° E) samples for chlorophyll, particulate matter (carbon, nitrogen, silica), nutrients and primary production were collected (Chapter 2. Sampling program). Fluorescence profiles and under-water irradiance were also included. Chlorophyll was analysed fluorometrically on board, while samples for particulate matter and nutrients were brought back (frozen) for later analyses in the lab on land. Production measurements from 4 different depths were performed on board in a deck incubator. Filters were brought back frozen to be counted in the scintillation counter on land.

Ice algae were sampled at the three stations within the ice-covered areas from 78° N to the ice edge. Sampling was performed by divers using a hand-held electric suction sampler, and quantitative samples were collected within defined areas on the under-side of the ice. The sampling program included cell counting/identification, chlorophyll, particulate carbon, nitrogen, phosphorus, silica, lipid, stable isotopes and persistant organic pollutants (POP). Environmental parameters such as water temperature/salinity, nutrients, under-ice irradiance, ice thickness and structure were also included. At three occations ice cores were taken, cut into layers and melted. Each fraction was examined for chlorophyll content and algal species composition.

The distribution of the phytoplankton showed a classical situation with low biomass in the ice-covered areas. At the stations furthest away from the ice edge the biomass was mainly found in the upper layers above the pycnocline situated at 15-20 m (see 5.2.1.). In the ice edge zone biomass was higher, but still concentrated in the upper 20 m above the pycnocline. The enhanced biomass was, however, not more than 1/5 of what has been recorded in ice edge blooms earlier. The reason for this can not be explained until more samples have been analysed. At the open water station the bloom was obviously over, and the biomass was mainly found as a deep chlorophyll maximum at 50 m depth (Fig. 5.1.1.1), in spite of the fact that a strong pycnocline was present at 15 m depth (Fig. 17 & 26, 5.2.1.).

The samples in the MIZ, and in particular in the open water, exhibited the largest species diversity, including such species that normally occurs in summer, indicating a populationin a later stage in succession (see 5.2.2).

The distribution of the biomass in the ice-covered areas seemed to be a consequence of the hydrophysical situation with a strong pycnocline limiting a stable upper layer from the deeper strata, preventing mixing deeper than 20 m. The extent of the euphotic zone (light > 1 % of surface light intensity) in this period was 35-40 m in the day, varying according to particle content in the water masses and weather conditions. The primary production, as expressed from Natural Profiling Fluorometer (PNF-300), showed a tendency to peak at about 15 m in the ice edge station (Fig. 5.1.1.2) in contrast to the stations in closer pack ice where maximum production was found close to the surface layers.

In the open water station outside the ice both biomass and production (Fig. 5.1.1.3) showed a deep maximum, 50 m and 30 m, respectively. But biomass was sampled in the middle of the day, whereas production profiles were recorded in the evening, and we do not know if biomass and production peaks were more correspondent during the day. Light measurements revealed an euphotic zone of 30 m in the evening, decreasing to 25 m at midnight, when the midnight sun was shining. Production was still fairly high, but maximum was now found at about 20 m. Consequently, in the open water station maximum production and euphotic zone extention were closely correlated, whereas the biomass distribution was uncoupled from both.

The chemical composition of the phytoplankton revealed a high degree of non-algal material in the samples, expressed by the low chlorophyll content compared to particulate carbon and nitrogen. Cell counting and identification will later give more detailed information about the particulate matter.

The ice algal biomass in the Barents Sea is mainly found as layers or strands attached to the under-side of the ice. The chlorophyll content of the ice cores confirmes that there is very little algae inside the ice (Fig. 5.1.1.4), in contrast to the sea ice of the Antarctic. The sub-ice biomass was rather low, varying from 1.5 to 6 mg m^{-2} of chlorophyll. This is less than 1/10 of the biomass formerly reported from the Barents Sea in April, indicating that melting may have affected the ice algal layer which loosens rapidly and disintegrates into the water masses when ice melting starts. Temperature in the surface water layers indicated that melting had started, and a less saline upper layer confirmed this. The under-ice irradiance in the middle of the day was not more than 8-10 % of the surface irradiance, but values as high as 150 $\mu mol\ m^{-2}\ s^{-1}$ is more than adequate for algal growth; it is probably well on the saturation side, and for some species may even be limiting (Hegseth 1992). The ice algae had started to concentrate in lumps, which is usual at this time of the year. Long strands, up to 2 m length, of the diatom *Melosira arctica* were for the first time recorded growing under first-year ice in the Barents Sea. Unfortunately there are no quantitative data from these strands, but the biomass must necessarily be high. One thread in a strand of 2 m may consist of 15-20 000 cells, and assuming a growth period of 3 months, the growth rate will be in accordance with what has previously been found for other ice algal assemblages in the Barents Sea (Hegseth 1992).

References

Hegseth EN (1992) Sub-ice algal assemblages of the Barents Sea: Species composition, chemical composition, and growth rates. Polar Biol. 12:485-496

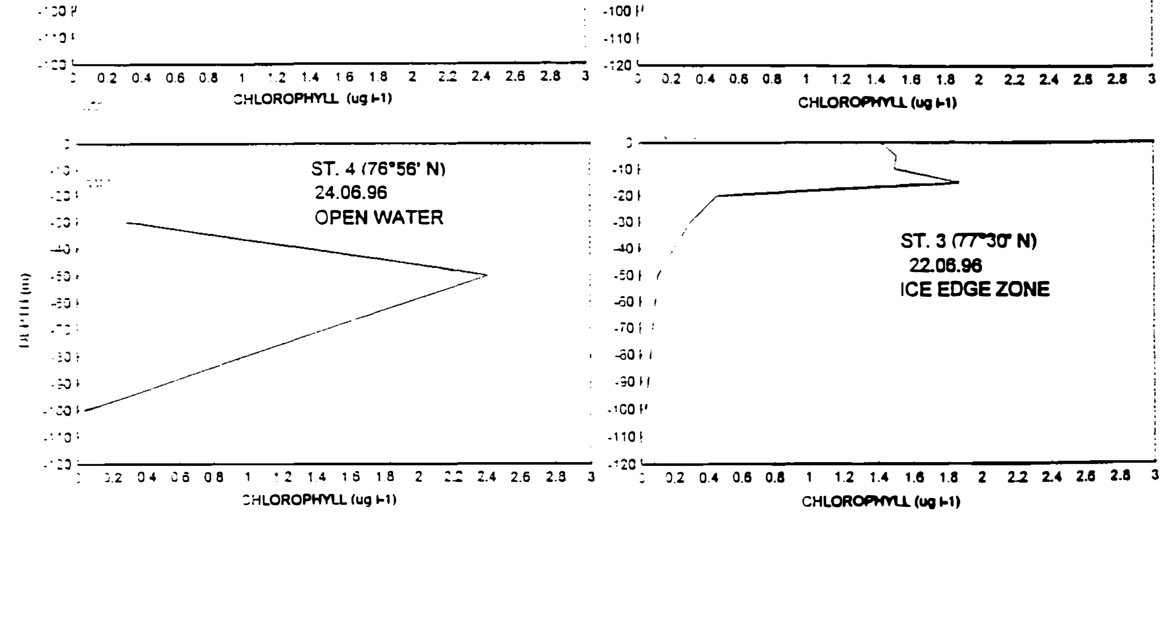
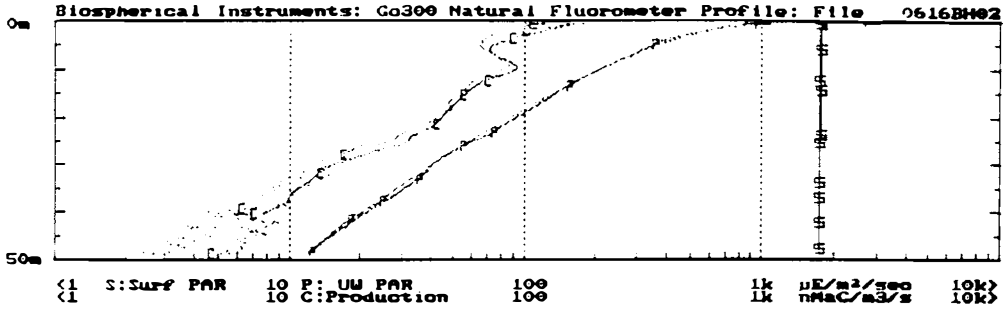


Fig. 5.1.1.1 Distribution of chlorophyll in the water masses on a transect from the drift ice (78° N) into open water (76°55' N) at 34° E in the Barents Sea in June 1995.



Depth range	Mean	PAR	RefPAR	kPAR	% PAR	Temp	LuChl	Ff	Prod	Chla
Surface mean:	0.7	1075.242	1773.558	n.a.	n.a.	-1.29°	65.101	n.a.		
1.1 - 6.0	3.4	486.765	1760.890	0.217	27.64%	-1.57°	20.455	191.905	96.9144	0.21
6.0 - 11.0	8.6	244.939	1758.367	0.103	13.93%	-1.65°	12.761	96.796	84.5758	0.22
11.2 - 16.0	13.6	151.928	1756.142	0.085	8.65%	-1.74°	7.498	55.153	63.6078	0.20
16.1 - 20.8	18.5	102.239	1754.193	0.079	5.83%	-1.85°	4.793	34.863	48.9699	0.19
21.0 - 25.8	23.4	68.965	1753.505	0.082	3.93%	-1.88°	2.904	21.221	34.6916	0.17
26.1 - 30.7	28.3	45.981	1752.651	0.073	2.62%	-1.89°	1.433	10.358	19.4098	0.12
31.0 - 36.0	33.5	32.938	1752.140	0.064	1.88%	-1.96°	0.860	6.091	12.1422	0.10
36.3 - 40.7	38.5	23.146	1751.172	0.073	1.32%	-2.05°	0.553	3.990	8.4431	0.10
41.0 - 45.9	43.5	16.375	1750.747	0.063	0.94%	-2.43°	0.407	2.883	6.3470	0.10
46.3 - 48.6	47.7	12.728	1750.208	0.054	0.73%	-2.43°	0.281	1.956	4.5099	0.09

File name: 0616BH02.BND; size: 7999bytes; written: 6-16-1995 421 scans
Profile ended: 06-16-1995 14:56:21
Comment: Ovskyet, god sikt.
Units are meters, PAR: µE/m²/s, kPAR:1/meters, Temp Degrees C.
Diffuse attenuation coefficient for PAR (Kpar) in 1/meters, 15 point smooth.
Natural Fluorescence in nE/m2/s/str from chlorophyll, Producted production in nM carbon/m3/sec.
Chlorophyll (Chla) is in mg/m cubed assuming ac(PAR) = .04 and QE(F) = .045
Production assumes: a(683)= .5, QE(C/F)= 2.4; kcf= 133
Battery voltage range during profile 12.08391 to 12.15325
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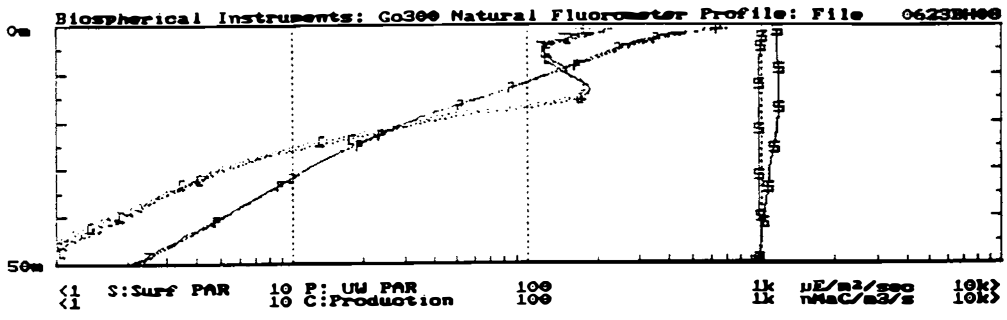
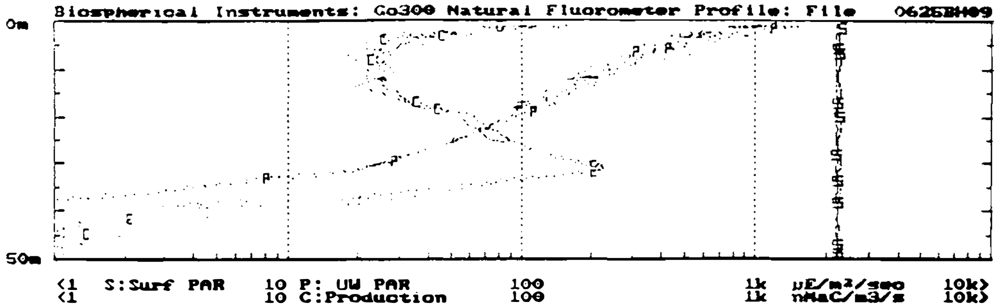


Depth range	Mean	PAR	RefPAR	kPAR	% PAR	Temp	LuChl	Ff	Prod	Chla
Surface mean:	0.9	631.321	1153.804	n.a.	n.a.	-1.34°	52.995	n.a.		
1.0 - 5.9	3.4	329.013	1036.754	0.198	31.73%	-1.61°	23.911	213.991	146.0107	0.35
6.1 - 10.9	8.4	158.815	1069.754	0.131	14.85%	-1.54°	15.362	121.747	137.3593	0.44
11.0 - 15.9	13.5	81.453	1083.623	0.141	7.52%	-1.54°	14.119	113.638	171.7986	0.79
16.1 - 21.0	18.5	38.816	1077.237	0.136	3.60%	-1.55°	4.406	35.685	68.5602	0.48
21.2 - 26.0	23.6	21.461	1055.347	0.104	2.03%	-1.60°	1.081	8.211	18.4139	0.21
26.1 - 30.7	28.4	13.257	1030.242	0.089	1.29%	-1.65°	0.397	2.949	6.8602	0.12
31.0 - 36.0	33.5	8.717	1015.830	0.082	0.86%	-1.67°	0.214	1.565	3.6589	0.10
36.1 - 40.9	38.5	5.733	1003.713	0.082	0.57%	-1.68°	0.125	0.912	2.1728	0.09
41.0 - 45.9	43.5	3.798	988.731	0.085	0.38%	-1.69°	0.076	0.560	1.3494	0.08
46.1 - 50.9	48.5	2.449	973.671	0.088	0.25%	-1.70°	0.045	0.335	0.8164	0.08

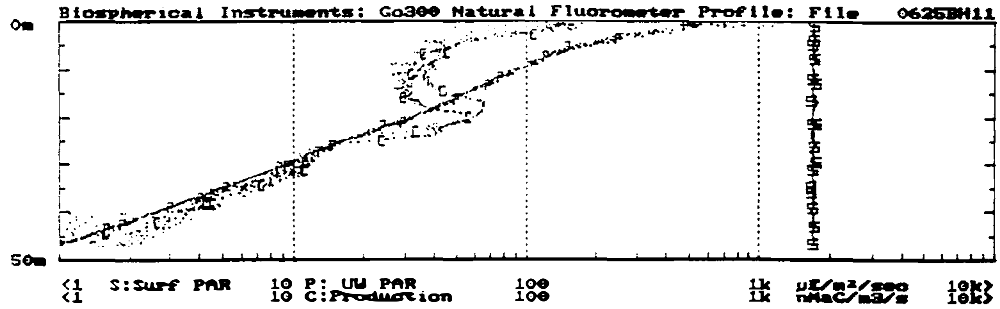
File name: 0623BH08.BND; size: 10697bytes; written: 6-23-1995 563 scans
Profile ended: 06-23-1995 11:27:41
Comment: skyet, dårlig sikt, yr/regn
Units are meters. PAR: µE/m²/s, kPAR:1/meters. Temp Degrees C.
Diffuse attenuation coefficient for PAR (Kpar) in 1/meters. 15 point smooth.
Natural Fluorescence in nE/m2/s/str from chlorophyll, Producted production in nM carbon/m3/sec.
Chlorophyll (Chla) is in mg/m cubed assuming ac(PAR) = .04 and QE(F) = .045
Production assumes: a(683)= .5, QE(C/F)= 2.4; kcf= 133
Battery voltage range during profile 13.02487 to 13.03973
SERIAL #:9011 07-05-1990

Fig. 5.1.1.2. Surface light (S), under-water light (P) and production (C) measured at mid-day at two ice-covered locations in the Barents Sea in June 1995: a) Station 1, b) Station 3



Depth range	Mean	PAR	RefPAR	kPAR	% PAR	Temp	LuChl	Ff	Prod	Chla
Surface mean:	0.0	0.000	0.000	n.a.	n.a.	0.00°	0.000	n.a.		
1.1 - 6.0	3.0	718.437	2235.951	0.321	32.13%	0.64°	16.650	193.463	64.8626	0.13
6.1 - 11.0	8.4	304.397	2232.097	0.133	13.64%	0.50°	4.104	32.634	26.0533	0.06
11.2 - 15.8	13.1	174.553	2226.070	0.099	7.84%	-0.70°	3.131	23.543	25.4200	0.08
16.0 - 20.7	18.2	108.206	2222.339	0.089	4.87%	-1.64°	4.189	31.104	42.2634	0.16
21.0 - 26.0	23.8	61.706	2229.127	0.122	2.77%	-1.78°	5.734	44.889	75.1850	0.42
26.1 - 30.7	28.9	30.286	2231.881	0.175	1.36%	-1.91°	9.247	78.900	158.6989	1.59
31.0 - 36.0	33.5	9.243	2223.299	0.424	0.42%	-2.03°	4.606	51.151	117.0594	3.18
36.3 - 39.3	38.0	0.934	2221.672	0.297	0.04%	-2.10°	0.532	6.077	18.6277	3.90

File name: 0625BH09.BND; size: 7809bytes; written: 6-25-1995 411 scans
Profile ended: 06-25-1995 19:42:29
Comment: klart sol
Units are meters, PAR: uE/m²/s, kPAR:1/meters, Temp Degrees C.
Diffuse attenuation coefficient for PAR (Kpar) in 1/meters, 15 point smooth.
Natural Fluorescence in nE/m2/s/str from chlorophyll, Producted production in nM carbon/m3/sec.
Chlorophyll (Chla) is in mg/m cubed assuming ac(PAR) = .04 and QE(F) = .045
Production assumes: a(683)= .5, QE(C/F)= 2.4; kcf= 133
Battery voltage range during profile 13.02983 to 13.03973
SERIAL #:9011 07-05-1990



Depth range	Mean	PAR	RefPAR	kPAR	% PAR	Temp	LuChl	Ff	Prod	Chla
Surface mean:	0.0	0.000	0.000	n.a.	n.a.	0.00°	0.000	n.a.		
1.0 - 5.9	3.6	273.485	1716.170	0.254	15.94%	-1.33°	10.254	101.986	73.4546	0.19
6.0 - 11.0	8.4	112.883	1712.895	0.124	6.59%	-1.25°	3.539	27.785	36.9180	0.14
11.1 - 16.0	13.5	64.453	1707.914	0.106	3.77%	-1.42°	2.744	20.875	34.3543	0.18
16.1 - 21.0	18.4	38.995	1706.509	0.110	2.29%	-1.58°	3.424	26.354	49.6087	0.39
21.1 - 25.9	23.3	20.855	1705.375	0.138	1.22%	-1.67°	2.023	16.237	34.1978	0.42
26.0 - 30.7	28.3	11.179	1705.264	0.116	0.66%	-1.66°	0.686	5.309	12.2436	0.27
31.0 - 36.0	33.6	5.965	1701.341	0.124	0.35%	-1.41°	0.421	3.304	7.7280	0.31
36.1 - 40.9	38.5	3.170	1704.102	0.131	0.19%	-1.21°	0.206	1.638	3.9364	0.29
41.0 - 45.9	43.5	1.633	1705.879	0.142	0.10%	-0.69°	0.101	0.810	1.9680	0.28
46.1 - 47.0	46.7	0.994	1707.746	0.141	0.06%	-0.47°	0.059	0.478	1.2068	0.27

File name: 0625BH11.BND; size: 13566bytes; written: 6-25-1995 714 scans
Profile ended: 06-25-1995 23:50:11
Comment: klart, sol
Units are meters, PAR: µE/m²/s, kPAR:1/meters, Temp Degrees C.
Diffuse attenuation coefficient for PAR (Kpar) in 1/meters, 15 point smooth.
Natural Fluorescence in nE/m2/s/str from chlorophyll, Producted production in nM carbon/m3/sec.
Chlorophyll (Chla) is in mg/m cubed assuming ac(PAR) = .04 and QE(F) = .045
Production assumes: a(683)= .5, QE(C/F)= 2.4; kcf= 133
Battery voltage range during profile 13.03478 to 13.04964
SERIAL #:9011 07-05-1990

Fig. 5.1.1.3. Surface light (S), under-water light (P) and production (C) at an open water station outside the ice edge in the Barents Sea in June 1995: a) Evening (kl.20), b) Midnight

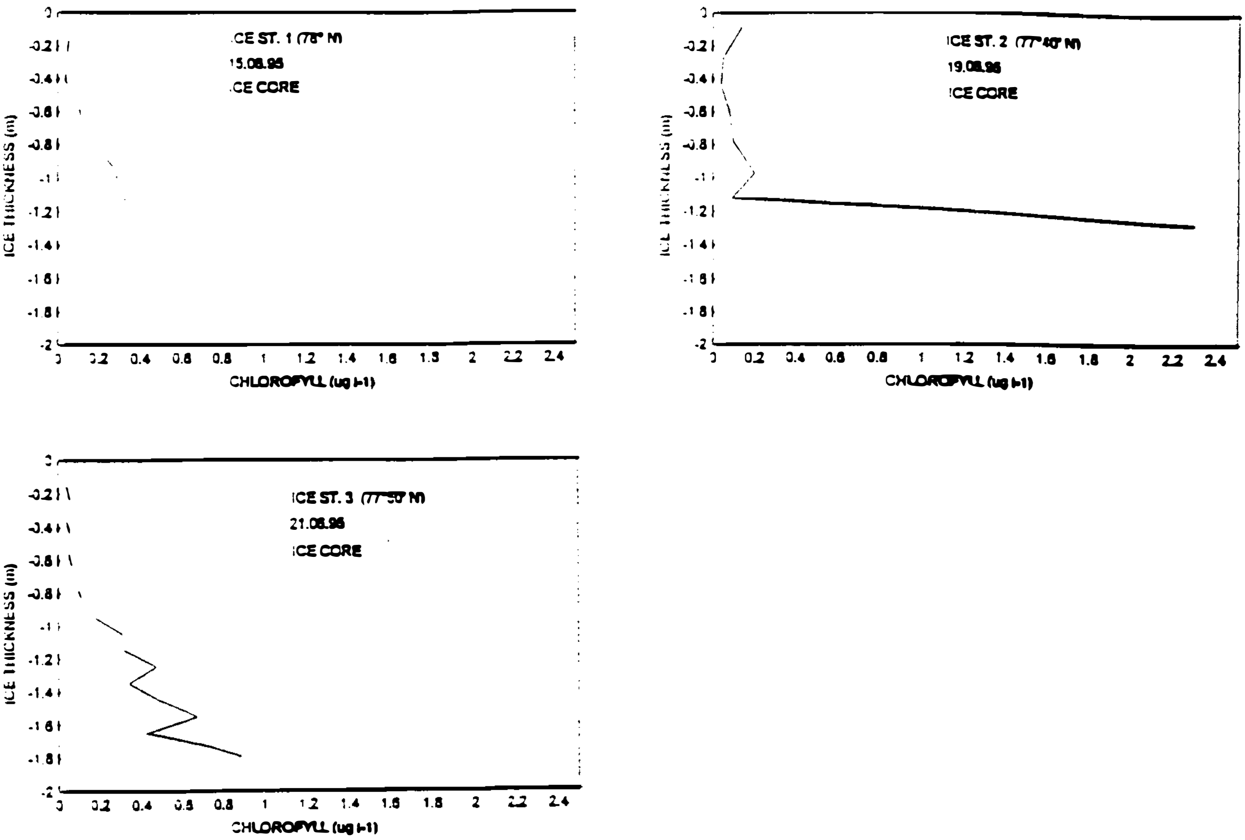


Fig. 5.1.1.4. Distribution of chlorophyll inside the ice at three different locations in the drift ice at 77-78° N in the Barents Sea in June 1995

5.1.2 Biodiversity and taxonomy of phytoplankton and ice-algae

(Phytoplankton and sea-ice algae collected from the Barents Sea during the cruise of the R/V 'Lance', in June 1995).

by Yuri B. Okolodkov

Introduction

Studies on the biodiversity of the phytoplankton and sea-ice algae were included in the programme of the cruise mainly because of their importance for the primary production in the marginal ice zone in seasonally ice-covered Arctic areas. Primary production consists of contributions of isolated species, having defined taxonomic position and possessing their peculiar features, and depends on differences between various communities. The most important tasks of taxonomic phycological studies during the cruise were to identify species, to determine the most abundant of them, and to study the diversity of assemblages (communities) in relation to ice conditions.

Material and Methods

During ICE-BAR 1995 expedition, 27 stations were carried out in the period from 10 to 27 June 1995. Phytoplankton was sampled by stainless steel bucket from the surface and by plankton net with mouth 29 cm, mesh 24 µm, from the depth of 20 m to the surface. The algae from the samples taken by bucket were further concentrated using the reverse-filtration device and nuclepore filters, the pore size 1µm, the volume of the filtered water varying from 2 l to 10 l.

The samples of ice algae inhabiting the lower surface of the ice floes, and lumps floating freely between them were gathered manually by divers. Two samples of the algae from the crushed ice were collected by bucket. In addition, several ice-cores were taken by Cherepanov's ice-corer, inner diameter 9 cm, and sectioned by handsaw directly on the ice. Then they were left to melt at the temperature 7-20°C and fixed without concentration. The algae from three cores were wholly concentrated using nuclepore filters. More thorough sampling was carried out at three stations of longitudinal transect from the area with thick first-year ice to the open sea, referred to as Ice stations 1, 2 and 3 in the text.

After preliminary investigation under the microscope, the samples were fixed with Lugol solution with acetic acid added so as to get a 0.4 % final solution or with formaldehyde neutralized with hexamethylentetramine to a final concentration 1-2 %. Compound Leitz Laborlux S and Wild M11 microscopes equipped with the objectives 10/0.25 Ph and 40/0.65 Ph and with facilities to get brightfield and darkfield illumination as wel as phase-contrast effect were used, the total magnification was 100-400. Identifications of considerable part of species were not definitive, since it requires preparation of permanent slides and studies on the morphology in laboratory conditions with the aid of comprehensive literature.

Results

Lists of algal species found in every sample at every station are given in Supplement. On 10-14 June, at stations 1-6, 8, 10 and 11 the surface phytoplankton community was represented mainly by *Chaetoceros fragilis*, *Eucampia groenlandica* and *Phaeocystis* sp., the ice being not observed or the ice density being up to 8/10. At stations 7, 9 and 12, *Fragilariopsis oceanica*, *Pseudo-nitzschia* cf. *seriata* and *Thalassiosira* cf. *antarctica* prevailed. At stations 1-10 the number of species was low, not more than 6 species per station. At stations 11 and 12 it increased up to 14.

At *ICE STATION 1* different communities were found. In the surface layer of the water column *Gymnodinium* sp. and *Chaetoceros* cf. *gracilis* predominated, and the number of species was low (10). In shuga with surrounding water, between floes, the total number of species was 28, *Fragilariopsis oceanica, Nitzschia frigida, Navicula pelagica, Chaetoceros wighamii and Thalassiosira* cf. *minima* being prevailing. Under the first-year ice, the strands up to approx. 2 m long attached to the lower ice surface were found. They were formed by the dominant species *Melosira arctica* and three epiphytic diatom species attached to the *Melosira* colonies, *Attheya septentrionalis, Pseudogomphonema arcticum* and *Synedropsis hyperborea* as subdominant species; the diversity of the community was comparatively low (10 species). Some chains of *M. arctica* were avoid of epiphytes, but on the others the number of cells of epiphytic species exceeded that of *M. arctica* itself by factor of 5. At the same time, the species composition of lumps found under the neighbouring floes was different. They included *Fragilariopsis oceanica* as dominant species and *Attheya septentrionalis*, *Synedropsis hyperborea* and *Nitzschia promare* as subdominant species, the number of cells in the lumps reaching 20.

At *ICE STATION 2*, in the water column a prasinophyte, preliminary identified as *Resultor mikron*, 2.5-3.0 µm in diam., was dominating species. The species composition in the samples taken from the lower ice surface varied from one locality to another even within the same floe. The dominant and subdominant species were *Nitzschia frigida, Navicula kariana/transitans, N. septentrionalis, Melosira arctica, Fragilariopsis oceanica, Synedropsis hyperborea* and *Attheya septentrionalis*. The number of species in some lumps exceeded 30.

A lot of slim, bacteria inhabiting it, protozoans and many empty frustules of diatoms were observed. In a cave, below the first-year ice-floe of about 1-1.5 m thick, *M. arctica* formed long strands up to 2 m long being predominant.

At *ICE STATION 3*, with the ice density of 4/10 to 7/10, in the water column, *Dinobryon balticum, Fragilariopsis oceanica, Thalassiosira* cf. *antarctica and Chaetoceros fragilis* prevailed, the number of species being about 30. A number of thecate dinoflagellate species of the genus *Protoperidinium*, not found at the previous stations, were found. At station of the same transect performed in the area with no ice, the same species were found but *F.oceanica* dominated in the water column.

At the stations situated along the marginal ice zone, in a distance of 0.3-1.5 km of the ice edge in the open sea, on 25-27 June, many flagellates were found. Naked dinoflagellates and craspedophytes (choanoflagellates) were distinguished by greater diversity in the water column.. *Gymnodinium* sp., *Dinobryon balticum* and *Heterocapsa rotundata* being dominant. At station near the Bear Island, *Phaeocystis* bloom was observed.

Discussion

On the whole, the species composition of phytoplankton and sea-ice algae collected during the cruise is characteristic of Arctic region. The *Melosira arctica* assemblages deserve special attention. Syvertsen (1991) considers *M. arctica* typical for multi-year ice in the northern Barents Sea. Also in multi-year ice, *M. arctica* was reported as a dominant species in the sub-ice assemblages in the Barents Sea by Hegseth (1992). However, Grishchenko (pers. comm.) observed the *Melosira* strands in summer 1970 and 1974, and Melnikov and Bondarchuk (1987) observed them in summer 1977 attached to first-year ice 1.7-2.0 m thick, some strands being 4 to 6 m long. In July 1991, *Melosira* strands were found in the area west and north of Spitsbergen, especially in melting first-year ice (Rachor 1992). In June 1993, Gutt (1995) recorded the assemblages composed mainly of *M. arctica* under first-year ice off NE Greenland. Hellum (1994) found *M. arctica* associated with both first-year and multi-year ice during the same cruise in Greenland waters (see also von Quillfeldt, 1996). Thus, at present, the preference of *M. arctica* to the ice of certain age is unclear.

As concerns the importance of the *Melosira* community, 'its contribution to the biological productivity may be essential' (Melnikov and Bondarchuk 1987: 321), however, *M. arctica* does not seem to play an important role as food for the sympagic fauna (see the references in Gutt, 1995). Calculated area in the Arctic occupied by the *Melosira* assemblages constitutes 2% of the total area covered with ice (Melnikov and Bondarchuk 1987).

The species composition of the algae in isolated lumps, often found under the ice floes in summer, may vary even within the same floe. There are some species such as *Fragilariopsis oceanica*, *Nitzschia frigida* and *Navicula pelagica* which are known to develop in abundance both in the lower ice surface and in water column. Just these species are potential contributors to phytoplankton spring bloom, in the first place, representing an inoculum.

N. frigida community was found to be typical for the first-year ice in the Barents Sea (Syvertsen 1991), and our studies confirm these results. One may add that abundance of slime, bacteria and protozoans along with *N. frigida* empty frustules still united in arborescent "colonies" may be considered as evidences of the aged community.

In the water column of the marginal ice zone, mostly nanoplanktonic species predominated. Similar situation was found in the fjords of West Spitsbergen where 50-85 % of total production of phytoplankton took place in the size fraction less than 20 µm, i.e.nanoplankton (Eilertsen *et al.*, 1989).

Acknowledgements

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Supplement 1:

Preliminary station lists of plankton and sea-ice algae, collected in the cruise of the R/V Lance, in June 1995 (ICE-BAR 1995)

St. 1. 10 June. 7326.N 1904.8E. No ice. In water column, depth 0 m
Gymnodinium sp.

St. 2. 11 June. 7422.N 1950.E. No ice. In water column, depth 0 m
Phaeocystis sp.

St. 3. 12 June. 7619.8N 1744E. No ice. In water column, depth 0 m
Phaeocystis sp. - dominant
Eucampia groenlandica - subdominant
Thalassiosira nordenskioeldii
T. cf. *kryophila*
Chaetoceros cf. *fragilis*
Nitzschia sp., associated with *Phaeocystis* sp.

St. 4. 12 June. 7611.7N 1733.9E. No ice. In water column, depth 0 m
Nitzschia sp., associated with *Phaeocystis* sp.
Leucocryptos marina
Gymnodinium sp. 1, epi- and hypocone conical, length>width

St. 5. 12 June. 7631N 1808E. Ice density 1/10. In water column, depth 0 m
Chaetoceros cf. *fragilis*, in slim - dominant
Eucampia groenlandica - subdominant
Cylindrotheca closterium
Nitzschia sp.

St. 6. 12 June. 7639.4N 1811.0E. Ice density 8/10. In water column, depth 0 m
Chaetoceros cf. *fragilis*, in slim - dominant
Eucampia groenlandica - subdominant
Cylindrotheca closterium
Nitzschia sp.
Navicula kariana/transitans
Gymnodinium sp.
Pinnularia quadratarea, a frustule

St. 7. 13 June. 7620.9N 2322.0E. Ice density 1/10. In water column, depth 0 m
Fragilariopsis oceanica - dominant
Chaetoceros cf. *fragilis* - subdominant
Pseudo-nitzschia cf. *seriata* - subdominant
Thalassiosira cf. *antarctica* - subdominant

St. 8. 13 June. 7621.5N 430.0E. No ice. In water column, depth 0 m
Chaetoceros cf. *fragilis* - dominant
Nitzschia sp.
Gymnodinium sp.
Fragilariopsis oceanica
Bicosta spinifera

St. 9. 13 June. 7631.9N 2712.8E. Ice density 2-3/10. In water column, depth 0 m
Fragilariopsis oceanica - dominant?
Gymnodinium sp. 1
Thalassiosira cf. *kryophila*
Chaetoceros cf. *fragilis*
Phaeocystis sp. ?

St. 10. 13 June. 7631.9N 2712.8E. Ice density 1-3/10. In water column, depth 0 m
Chaetoceros cf. *fragilis* - dominant?
Nitzschia sp.

St. 11. 14 June. 7702.1N, 3400.0E. Ice density 8/10. In water column, depth 0 m
Chaetoceros cf. *fragilis*
Thalassiosira cf. *kryophila*
Fragilariopsis oceanica
Nitzschia longissima
Entomoneis paludosa var. *hyperborea*
Navicula kariana/transitans
Nitzschia frigida
Nitzschia sp.
Rhizosolenia hebetata f. *semispina*
Thalassiosira cf. *antarctica*
Peridiniella danica
Dinobryon balticum
Phaeocystis sp. ?
Protoperidinium pellucidum

St. 12. 14 June. 7740.3N 3445.0E. Ice density 7/10. In water column, depth 0 m
Fragilariopsis oceanica - dominant
Pseudo-nitzschia cf. *seriata*
Nitzschia sp.
Entomoneis cf. *kryophila*
Thalassiosira cf. *decipiens*
Gymnodinium sp. 1
Gymnodinium sp. 2, with a notch at antapex and rounded epicone
Pyramimonas sp.

Bicosta spinifera

St. 13/Ice st. 1. 14 June. 7804.3N 3419.0E. Ice density 8/10. In shuga.
Fragilariopsis oceanica - dominant
Nitzschia frigida - subdominant
Navicula pelagica - subdominant
Chaetoceros wighamii - subdominant
Thalassiosira bioculata - subdominant
T. nordenskioeldii
T.gravida ?, unless *Porosira glacialis*
Cylindrotheca closterium
Navicula directa
N. kariana/transitans, mostly frustules
N. vanhoeffenii
Pseudo-nitzschia cf. *seriata*
P. cf. *delicatissima*
N. promare
Fragilariopsis cylindrus
Eucampia groenlandica
Bacterosira batyomphala
Chaetoceros cf. *gracilis*
Chaetoceros sp. 1, cells solitary or in short chains, setae straight
Chaetoceros sp. 2, cells smaller than in *C. wighamii*, chains bended
Attheya septentrionalis
Entomoneis paludosa var. *hyperborea*
E. cf. *kjellmanii*
Stenoneis inconspicua var. *baculus*, a frustule
Synedropsis hyperborea
Dinobryon faculiterum
Phaeocystis sp. ?
Parvicorbicula socialis
Flagellates unidentified

St. 14/Ice st. 1. 15 June. 7805.5N 3417.5E. Ice density 8/10.
In water column, depth 0 m
Gymnodinium sp. 1 - dominant
Chaetoceros concavicornis
Nitzschia sp.
Fragilariopsis cylindrus
Navicula pelagica
Thalassiosira cf. *decipiens*
Heterocapsa rotundata,
Gymnodinium sp. 2
Chlorophyta: Volvocales gen. sp.
Bicosta spinifera

St. 14/Ice st. 1. 15 June. Ice density 8/10. In ice core No 3, height 150 cm
Nitzschia frigida
Fragilariopsis cylindrus

Other pennates, cells solitary
Algae gen. sp. ?, without flagella

St. 14/Ice st. 1. 16 June. Ice density 8/10. In water column, depth 15 m (max fluorescence)
Chaetoceros cf. *gracilis* - dominant
Chrysophyta/Prymnesiophyta gen. sp. ?, flagella not observed - dominant
Chaetoceros convolutus
Dinobryon faculiferum
Peridiniella danica
Dinoflagellata: Gymnodiniales resting spores ?, mostly in capsules

St. 15/Ice st. 1. 15 June. Ice density 8/10. On the lower ice surface. Collected by M. Poltermann and Y. Okolodkov from two different ice-floes (in the first case long strands of algae, in the second - small-sized lump in the cavity)
Melosira arctica - dominant
Attheya septentrionalis, epiphyte on *M. arctica* - subdominant
Pseudogomphonema arcticum, epiphyte on *M. arctica* - subdominant
Synedropsis hyperborea, epiphyte on *M. arctica* - subdominant
Fragilariopsis oceanica - subdominant
Pseud-nitzschia cf. *delicatissima*
Pseudogomphonema cf. *groenlandicum*
Nitzschia promare
Cylindrotheca closterium
Navicula kariana/transitans

St. 15/ Ice st. 1. 15 June. Ice density 8/10. Algae collected by O.J.Lønne from the upper and lower underwater surfaces within a large cave formed by two overlapping ice-floes.
Fragilariopsis oceanica - dominant
Attheya septentrionalis - subdominant
Nitzschia promare - subdominant
Synedropsis hyperborea - subdominant
Porosira glacialis ?, solitary and in chains of up to 15 cells
Nitzschia promare
Thalassiosira bioculata
Melosira arctica
Cylindrotheca closterium
Navicula kariana/transitans
N. septentrionalis, frustules
Pseudogomphonema cf. *septentrionalis*
Pseudo-nitzschia cf. *delicatissima*
Hantzschia weyprechtii
Pleurosigma cf. *stuxbergii*
Pleurosigma sp.
Nitzschia sp.
Dictyocha speculum
Dinoflagellate cysts 1, small
Dinoflagellate cysts 2, 2-2.5 times longer

St. 16. 18 June. 7803.2N 3400.1E. Ice density 7/10. In crushed first-year ice.
Navicula kariana/transitans - dominant
Nitzschia promare - dominant
Synedropsis hyperborea- dominant
Nitzschia frigida -subdominant ?
Attheya septentrionalis - subdominant ?
Nitzschia longissima
Nitzschia sp., long
Pseudo-nitzschia cf. *delicatissima*
Hantzschia weyprechtii
Pleurosigma cf. *stuxbergii*
Thalassiosira cf. *kryophila*
Cylindrotheca closterium
Entomoneis kjellmanii
Fragilariopsis oceanica
F. cylindrus
Pinnularia quadratarea
Flagellates
Cysts ?, 13 µm in diam., spiny

St. 17. 18 June. 7756.5N 3356.7E. Ice density 7-8/10. In water column, depth 0 m
Fragilariopsis oceanica - dominant
Chaetoceros cf. *fragilis* - subdominant
Nitzschia frigida - subdominant
Synedropsis hyperborea
Pseudo-nitzschia cf. *delicatissima*
Navicula pelagica
Thalassiosira sp.
Entomoneis paludosa var. *hyperborea*
Navicula sp., smaller than *N. kariana*
Nitzschia promare
Cylindrotheca closterium
Attheya septentrionalis
Hantzschia weyprechtii
Protoperidinium cf. *bipes*
Gymnodinium sp.
Parvicorbicula socialis
Algae gen. sp., 5 µm in diam.
Flagellate algae gen. sp.

St. 18. 18 June. 7739.6N 3414.7E. Ice density 7/10. In water column, depth 0 m
Fragilariopsis oceanica - dominant
Attheya septentrionalis
Chaetoceros cf. *gracilis*
Synedropsis hyperborea
Thalassiosira cf. *minima/kryophila*
Pseudo-nitzschia cf. *delicatissima*
Amphidinium sphenoides

St. 19/Ice st. 2. 19 June. 7739.0N 3418.0E. Ice density 7-8/10. Ice algae taken by M. Poltermann and O.J. Lønne from the vertical and lower surfaces of the ice-floes.
Nitzschia frigida - dominant
Synedropsis hyperborea - dominant
Attheya septentrionalis
Navicula kariana/transitans, inc. many empty frustules
Cylindrotheca closterium
Nitzschia promare
N. angulata
Nitzschia sp., long, with tapering ends
Pseudo-nitzschia cf. *delicatissima*
Hantzschia weyprechtii
Pseudogomphonema arcticum
Fragilariopsis oceanica
F. cylindrus
Thalassiosira cf. *kryophila*
T. cf. *antarctica*
Navicula cf. *kryokonites*
N. pelagica
N. directa
N. vanhoeffenii
N. cf. *novadecipiens*
N. cf. *glaciei*
Entomoneis paludosa var. *hyperborea*
E. cf. *kryophila*
E. kjellmanii
Bacterosira fragilis
Chaetoceros wighamii
Porosira glacialis
Pennatophyceae gen. sp., short, solitary
Pinnularia quadratarea
Diploneis cf. *litoralis*
Amphora cf. *laevissima*
Algae gen. sp. ?, cells globular, with spines
Dinoflagellate cysts, with spines
Flagellate algae, different species, rather often

St. 19/Ice st. 2. 20 June. Ice density 7-8/10. Haul by plankton net, mesh 25 µm, 20-0 m.
Resultor mikron - dominant
Fragilariopsis oceanica - subdominant
Nitzschia frigida - subdominant
Synedropsis hyperborea
Attheya septentrionalis
Chaetoceros convolutus
C. concavicornis
Chaetoceros sp., apertures narrow, setae thin
Paulsenella chaetoceratis, attached to *C. concavicornis*
Pseudo-nitzschia cf. *delicatissima*

Thalassiosira sp.
Entomoneis paludosa var. *hyperborea*
Flagellate algae, with 1 short flagellum
Dictyocha speculum

St. 20/Ice st. 2. 21 June. 7749N 3436E. Ice density 7-8/10. Ice algae, strands up to 2 m long, taken by H. Hop in a tunnel under the ice-floe 1 m thick.
Melosira arctica - dominant
Attheya septentrionalis - dominant
Navicula septentrionalis - subdominant
Synedropsis hyperborea - subdominant
Nitzschia frigida
N. promare
Nitzschia laevissima
Pseudo-nitzschia cf. *delicatissima*
Pseudogomphonema arcticum
Navicula kariana/transitans
Cylindrotheca closterium
Porosira glacialis ?
Chaetoceros concavicornis
Flagellates

St. 20/Ice st. 2. 21 June. Ice density 7-8/10. Ice algae taken from the bottom layer of ice floe 1-1.5 m thick by O.J. Lønne; quantitative sample.
Nitzschia frigida, inc. colonies with empty frustules - dominant
Navicula kariana/transitans - dominant
Fragilariopsis oceanica - subdominant
Cylindrotheca closterium
Porosira glacialis ?
Nitzschia promare
Nitzschia laevissima
Attheya septentrionalis
Entomoneis kryophila
E. kjellmanii
Synedropsis hyperborea
Pseudogomphonema cf. *septentrionalis*
Thalassiosira cf. *kryophila*
Flagellates - not many
Protozoans, slim, bacteria.

St. 20/Ice st. 2. 21 June. Ice density 7-8/10. Ice algae taken from the bottom layer of ice floe 1-1.5 m thick by O.J. Lonne: qualitative sample.
Navicula septentrionalis - dominant
Melosira arctica - dominant
Synedropsis hyperborea - dominant
Pennates, short, solitary and in pairs
Cylindrotheca closterium
Pseudogomphonema cf. *septentrionalis*
Navicula cf.*kariana/ transitans*

Nitzschia promare
N. frigida, inc. colonies with empty frustules
Nitzschia laevissima
Fragilariopsis oceanica
Pseudo-nitzschia cf. *delicatissima*
Attheya septentrionalis
Entomoneis paludosa var. *hyperborea*
Flagellates
Protozoans, bacteria

St. 21/Ice st. 3. 22 June 7730.2N 3436.1E. Ice density 7/10. Haul by plankton net, 20-0 m.
Fragilariopsis oceanica - dominant
Thalassiosira gravida - dominant
Dinobryon balticum - dominant
Chaetoceros fragilis - subdominant
Thalassiosira nordenskioeldii
T. cf. *decipiens*
Entomoneis paludosa var. *hyperborea*
E. kryophila
Synedropsis hyperborea
Navicula vanhoeffenii
Chaetoceros concavicornis
C. convolutus
Pseudo-nitzschia cf. *seriata*
Nitzschia promare
Porosira glacialis ?
Rhizosolenia hebetata f. *semispina*
Eucampia groenlandica
Nitzschia frigida, also empty frustules and decaying cells in colonies
Dinoflagellate cysts
Protoperidinium bipes
P. brevipes
P. cerasus
P. islandicum
Diplopsalis tenticula
Dictyocha speculum

St. 21/Ice st. 3. 22 June. 7730.2N 3436.1E. Ice density 7/10.
In water column, depth 0 m.
Fragilariopsis oceanica - dominant
Thalassiosira cf. *antarctica* - dominant
Chaetoceros fragilis - dominant
Dinobryon balticum - subdominant
Navicula vanhoeffenii
Eucampia groenlandica
Cylindrotheca closterium
Synedropsis hyperborea
Pennates, 5-6 µm long

Dinobryon faculiferum
Parvicorbicua socialis
Gymnodinium sp., 25x12 µm, epicone conical
Gymnodinium sp., 21.5-22.5x15 µm, epi- and hypocone rounded
Gyrodinium cf. *spirale*
Gyrodinium sp.

St. 22/Ice st. 3. 23 June. 7736.9N 3447.2E. Ice density 4/10 In water column,depth 0 m.
Fragilariopsis oceanica - dominant
Thalassiosira cf. *antarctica* - dominant
Chaetoceros fragilis - subdominant
Nitzschia cf. *seriata*
N. frigida, decaying
Cylindrotheca closterium
Entomoneis paludosa
Dinobryon balticum
Dictyocha speculum
Gyrodinium cf. *spirale*
G. cf. *fusus*
G. cf. *aureolum*
Dinoflagellata: Gymnodiniales resting spores ?, in capsules
Gymnodinium spp. (2 species)
Protoperidinium conicoides

St. 23/St. 4. 24 June 7855.6N 3405.3E. No ice. In water column, depth 0 m.
Chaetoceros fragilis - dominant
Eucampia groenlandica
Dinobryon balticum
Dictyocha speculum
Gymnodinium sp.

St. 23/St. 4. 24 June No ice. Haul by plankton net, 20-0 m.
Dinobryon balticum - dominant
Chaetoceros fragilis - dominant
Thalassiosira gravida subdominant
Chaetoceros decipiens
C. convolutus
C. concavicornis
C. socialis
Rhizosolenia hebetata f. *semispina*
Eucampia groenlandica
Thalassiosira nordenskioeldii
Coscinidiscus sp.
Actinocyclus ehrenbergii
Nitzschia sp., associated with *Phaeocystis* sp.
Navicula kariana/transitans
Entomoneis sp.
Dictyocha speculum
Phaeocystis sp. ?. decaying

Protoperidinium islandicum
P. ovatum
P. brevipes
P. pallidum
P. pellucidum
Diplopsalis tenticula

St. 24. 25 June. 7747.0N 3255.9E. Among isolated ice-floes, in a distance of 1 mile from the ice edge. In water column, depth 0 m.
Gymnodinium sp. 1 - dominant
Dinobryon balticum - dominant
Heterocapsa rotundata - subdominant
Thalassiosira sp.
Nitzschia frigida
Fragilariopsis oceanica ?
Chaetoceros cf. *gracilis*
Pyramimonas sp., 18x10 µm and 10x7 µm (two species?)
Katodinium sp., 25x11 µm
Gymnodinium sp., epicone rounded, with notch at antapex
Gymnodinium sp. 3, 12.5x10 µm, compressed dorso-ventrally, epicone rounded, hypocone larger than epicone, with notch at antapex
Gymnodiniales cysts ?, in capsule, chloroplasts golden
Peridiniella danica, 17.5x15 µm
Algae gen. sp. ?, globular, 14x10 µm

St. 24. 25 June. Haul by plankton net, 20-0 m.
Fragilariopsis oceanica ?
Dinobryon balticum
Thalassiosira sp.
Nitzschia frigida
Attheya septentrionalis
Pyramimonas sp., small

St. 25. 25 June. 7712.3N 2856.2E. In water column, depth 0 m.
Heterocapsa rotundata - dominant
Chaetoceros cf. *gracilis*
Thalassiosira nordenskioeldii
Thalassiosira sp.
Pyramimonas sp., 7.5x5 µm
Pyramimonas sp., 12.5x7.5 µm
Dinobryon faculiferum
Phaeocystis sp. ?
Salpingoeca sp.
Ochromonas sp. 8-9x6 µm
Gymnodinium sp. 16x13 µm
Gymnodinium sp. 1
Gymnodiniales cysts ?
Amphidinium sphenoides

Peridiniella danica

St. 26. 26 June. 7646.3N 2757.4E. In a distance of 400 -500 m from the ice edge. In water column. depth 0 m.
Eucampia groenlandica
Thalassiosira sp.
Rhizosolenia hebetata f. *semispina*
Chaetoceros convolutus
C. cf. *gracilis*
Nitzschia sp. ?, 35 µm long
Pennates, 5 µm long
Bicosta spinifera
Salpingoeca sp.
Desmarella sp. ?
Parvicorbicula sp.
Leucocryptos marina, 25 µm long
Heterocapsa rotundata
Gyrodinium spirale
Gymnodinium sp., 15 µm long
Peridiniella danica
Flagellates unidentified. 5-8 µm

St. 27. 27 June. 7423.9N 1913.8E. No ice. Haul taken by plankton net, 20-0 m.
Phaeocystis sp. - dominant
Rhizosolenia setigera - subdominant
Navicula sp., solitary
Navicula sp., solitary, 155 µm long, rhomboid
Thalassiosira sp.
T. nordenskioeldii
Odontella aurita, a frustule
Chaetoceros sp., 7.5 µm in diam.
Pseudo-nitzschia cf. *seriata*
Flagellates

St. 27. 27 June. No ice. In water column. depth 0 m.
Rhizosolenia setigera - dominant
Pseudo-nitzschia cf. *seriata*
Phaeocystis sp. ?. isolated cells
Flagellates 3-7 µm in diam.

Seaweeds collected during the cruise with the R/V 'Lance' in June 1995

by Yuri B. Okolodkov

Collection of seaweeds was not planned for the cruise. However, opportunity to disembark on Hopen Island and Bear Island as well as work of the diving team at the shore of Bear Island allowed us to collect a sample from Hopen Island and 4 samples from Bear Island. Out of 5 samples, 4 of them were taken from littoral and 1 from sublittoral. The samples were transported to the Komarov Botanical Institute to be identified by experienced taxonomists.

5.1.3 Quantitative sampling of ice-fauna on ice floes

by Haakon Hop, Ole Jørgen Lønne and Michael Poltermann

Background

The sympagic, or ice-associated, community is predominately located on the underside of the ice in where the organisms feed on ice algae (e.g., *Melosira arctica*), or prey on each other. The sympagic community may vary with the age of the ice (i.e. first year ice versus multiyear ice), the complexity of the habitat, the sediment load in the ice, and with the life cycle of organisms. This fauna consists of organisms living their whole life in the drifting sea-ice, but also stages of pelagic and benthic organisms finding the ice habitat favourable at certain times of year (e.g., Horner 1989; Lønne and Gulliksen 1991). The interface between ice and sea water provides a habitat, which has been described as an upside-down benthic environment (Mohr and Tibbs 1963), although the habitat is more dynamic and may undergo radical changes in structure and composition in response to seasonal melting and freezing as well as physical forcing. Key components of the sympagic fauna are amphipods, particularly *Gammaracanthus, Gammarus*, *Aperusa* and *Onisimus* species (e.g., Lønne and Gulliksen 1991). In addition, the polar cod (*Boreogadus saida*) is part of the ice associated fauna, and this species is also a key component the pelagic food chains in the Arctic (Welch *et al.* 1992).

Sampling of ice fauna

Under ice fauna was sampled by electrical suction samplers operated by SCUBA-divers (Lønne 1989); the team of divers consisted of Haakon Hop (NP), Ole Jørgen Lønne (Apn) and Michael Poltermann (AWI). We attempted to sample the ice-fauna quantitatively, and several methods were evaluated:

1) Sample within the area of a plastic barrel attached to the pump.
2) Sample within the larger frame-work of markers put under the ice.
3) Index sampling of organisms: 5 minute sampling of all organisms seen without reference to unit area.

The two first methods were impractical for two reasons. They covered too small of an area with the density of organisms being relatively low, and there were problems with air bubbles emitted by divers working in the same area for an extended period. The last method was the most practical, but it will only give relative abundance values. However, until further changes can be made in the diving procedures, such as diving with closed systems based on oxygen, the third methods is preferable. It was therefore the main method used for semi-quantitative sampling on the different stations on the transect across the marginal ice-zone.

We also attempted to describe the topography of under-ice surfaces, and evaluated:

1) Classification based on visual observation.
2) Video recording by hand-held video camera.

The first method was very subjective, and given that the ice undersurface often is very complex it is difficult to come up with simple classifications schemes. A relatively complex classification surface we attempted to use (Poltermann classification scheme below) gave inconsistent results. The second method has some advantages since the images can be discussed at a later time, but a proper classification is still difficult when the camera is operated by a diver. A third, method which was not attempted on this cruise, could involve a high resolution upward looking sonar, possibly combined with a photographic technique. The photographic techniques could for instance be an arm with a videocamera mounted on it, which could be turned in a circle under the ice to film the image recorded by the sonar. This would give a more objective description of the undersurface of the ice which could then be used to describe habitat complexity based on geometry analysis.

Ice-fauna composition

The ice fauna in the northern Barents Sea consisted of only four species of amphipods; *Gammarus wilkitzkii*, *Apherusa glacialis*, *Onisimus nanseni* and *O. glacialis*. The most abundant species were *A. glacialis* and *G. wilkitzkii*, whereas the other two species generally had low relative abundance. Many of the female *G. wilkitzkii* had young attached, or they had been recently released and thus contributed greatly to the abundance (see tables and figures). Samples of amphipods, particularly *G. wilkitzkii*, were preserved for later analysis of stomach contents.

Polar cod were often observed inside ice floes in caves and cavities with brackish meltwater or in brine channels. They were mainly age-1 individuals, although older individuals were also present. We used the suction sampler with a modified long nozzle to sample about 40 juvenile polar cod, and they were analyzed for stomach content. Most of the stomachs were half-full to full, and contained exclusively calanoid copepods (adults and copepodites). One sample of 35 juvenile Arctic cod was also obtained by bottom trawl near Station 4 (open water), and these cod had a more diverse diet, including copepods, krill and amphipods. All stomachs were preserved for later analysis to compare diets of sympagic and benthic feeding Arctic cod juveniles (age-1).

Trophic levels

Mass samples of sympagic amphipods, polar cod, and ice-algae were collected for later analysis for stable isotopratios to determine trophic levels (Hobson and Welch 1992). In addition, samples were collected from the associated pelagic system (algae, krill, copepods, amphipods). Samples from both the sympagic and pelagic system will be analysed for stable isotopes, lipids and toxic components (ecotoxicology program). The accumulation of toxic components in food chains can thus be correlated with trophic levels, and the lipid composition will be important in later description of transfer processes.

Topography of under-ice surfaces (scheme after Michael Poltermann, AWI)

Main Type

U I - even smooth surface
- relative smooth
- even

Sub-Type

U I-A - quite even
- only few small holes (1-2 cm)

U I-B - bigger craters and holes (5-80 cm)
- holes very often with regular contour

U I-C - a lot of regular distributed depressions and craters (20-70 cm)
- a lot of small holes (0.5-3 cm)
- "crater-landscape"

U I-D - narrow groove-similar structures
- very small holes (< 2 cm)

U I-E - several thin layers of ice one on each other
- hollow spaces with a lot of holes in their walls
- 3-dimensional labyrinth

U II - wrinkle-similar surface
- the surface looks like the lower part from egg-boxes
- only few bigger depressions and craters (> 5 cm)
- very often a lot of small holes (< 5 cm) or a 3-D labyrinth

U III- rugged rough surface
- rugged

<u>Sub-Type</u>

U III-A - mediocre rugged
- regular distributed rounded elevations
- unregular holes and depressions

U III-B - intensive and unregular rugged
- soft-rounded elevations with small holes (1-3 cm)
- a lot of bigger holes and craters (> 5 cm)
- "crater-landscape"

U III-C - extremely intensive rugged
- relatively thin and sharp elevations
- very complicated 3-D labyrinth
- structure like a sponge

Topography of ice-floe borders

<u>Main Type</u>

R I - wrinkle-similar border
- mediocre rounded and regular distributed elevations
- relatively few holes only

R II - vertical structured borders
- vertical grooves
- relatively regular distributed small holes (1-3 cm)

R III - corroded borders
- intensively corroded ice
- surface like a sponge with small holes and craters

Sub-Type

R III-A	- intensively corroded border - relatively vertical - often with a convex border shape
R III-B	- intensively corroded border - double-border - deep horizontal crevice

R IV - combined borders
- combination of different ice-structures

Sub-Type

R IV-A	- grooves in the upper part of the border - more or less smooth lower part - mostly in the upper part smaller holes than in the lower
R IV-B	- the lower part of the border is protruded - a lot of holes with different sizes - particularly vertical grooves in the upper part

Sampling stations.

Date: 15 June, 1995
Station: ICE-1
Flow size: size several km^2
Age: 1st year
Ice surface temp: 0°C
Thin snow: -0.5°C
Water temp: -2.0 to -1.5°C
Topography: Flat, wrinkle similar surface, little algae on undersurface
Thickness: 2.4 m at 10 m dist. from edge

Date: 16 June, 1995
Station: ICE-1
Dive: QS-1
Sampled by: OJL
Distance from edge: 2.20 m
Ice thickness: 1 m, size several km^2
Plot size: 2.00 x 3.30 x 1.40 x 3.30 m
Surface: Mostly flat, few pressure ridges. More complex edge structures.
Topography: Flat, only few craters (5-15 cm), complex structures near edge. Two floes submerged, trench in between.
Sample: Mainly *G. wilkitzkii, Boreogadus saida* - preserved

Date: 16 June, 1995
Station: ICE-1
Dive: QS-2
Sampled by: MP
Distance from edge: 6 m, size several km^2
Ice thickness: lower point at 2.6 m, trench at 1.5 m, general surface at 2.2 m
Plot size: 3.20 x 5.00 x 2.80 x 3.00 m
Topography: Flat, only few craters (5-15 cm)
Some big pieces of ice under the flow, difficult to scale topography
Sample: Mainly *G. wilkitzkii* - preserved
Brownish color of ice on the undersurface. Algae/detritus in some small holes.

Date: 16 June, 1995
Station: ICE-1
Dive: QS-3
Sampled by: OJL
Distance from edge: 2.20 m
Ice thickness: 1 m, size several km^2
Plot size: 1.50 x 2.30 x 1.00 x 2.60 m
Topography: Flat, even, some large salt channel openings
Sample: Empty

Date: 16 June, 1995
Station: ICE-1
Dive: QS-4
Sampled by: MP
Distance from edge: 4-5 m
Ice thickness: 1 m, size ???
Plot size: 3.00 x 3.90 x 2.30 x 3.60 m
Topography: Even, smooth surface, bigger craters and holes (I-B)
Long strands of *Mellosira* (up to 2 m).
Sample: Mainly *G. wilkitzkii*, lots of *Apherusa* surrounding strands.
Brine channel salinity: 34 o/oo (no freshwater layer)

Date: 20 June, 1995
Station: ICE-2
Dive: QS-5
Sampled by: MP
Distance from edge: 3-4 m
Ice thickness: 1-2 m
Pot: 4 x 5 min sampling
Surface: Flat portion, some pressure ridges/blocks nearby.
Topography: Even surface, few brine channels (10 cm max).
Lots of algae, lumps on the flat surface.
Sample: Mainly *G. wilkitzkii*, few *Apherusa*.

Date: 20 June, 1995
Station: ICE-2
Dive: QS-6
Sampled by: MP
Distance from edge: 4-5 m
Ice thickness: 1-2 m, approx. size 50 x 50 m
Plot: 4 x 5 min sampling
Surface: Almost flat surface.
Topography: Even surface, few brine channels (10 cm max).
Lots of algae, lumps on the flat surface.
Sample: Mainly *G. wilkitzkii*, few *Apherusa*.
Brine salinity: 32 o/oo

Date: 21 June, 1995
Station: ICE-2
Dive: QS-7
Sampled by: MP
Distance from edge: 2; 5-10; 10-14
Ice thickness: 2-2.5 m, size approx. 50 x 50 m
Plot: 3 x 5 min sampling
Surface: Flat part, some ridges other part
Topography: large scale three-dimensional surface
Lots of ice algae as lumps in brine channels, detritus lumps.
Sample: Moderate *G. wilkitzkii*, few *Apherusa*

Date: 21 June, 1995
Station: ICE-2
Dive: QS-8
Sampled by: MP
Distance from edge: 1-3 m
Ice thickness: 0.3 m, size 26 x 27 m
Plot: 2 x 5 min sampling
Surface: Flat, uniform
Topography: Three-dimensional surface
Brownish layer of ice algae on the undersurface, detritus lumps.
Sample: Few *Apherusa*

Date: 22 June, 1995
Station: ICE-3
Dive: QS-9
Sampled by: MP
Distance from edge: 1-3 m
Ice thickness: 2-5 m, size 21 x 21 m
Plot: 3 x 5 min sampling
Surface: Flat with some blocks and ridges.
Topography: Three-dimensional surface, flat with 10-15 holes.
No algae.
Sample: Mostly *Apherusa*, small *G.wilkitzkii*, big ones only in few places.

Date: 22 June, 1995
Station: ICE-3
Dive: QS-10
Sampled by: H2
Distance from edge: 3; 5-10; 3 m
Ice thickness: 0.9-1.10 m, size 21 x 19.5 m
Plot: 3 x 5 min sampling
Surface: Flat, uniform.
Topography: Flat with some brine channels
No algae.
Sample: Mostly *Apherusa*, small *Apherusa* and small *G. wilkitzkii*, big ones only in few places, several *Onisimus nanseni*.

Date: 23 June, 1995
Station: ICE-3
Dive: QS-11
Sampled by: MP
Distance from edge: 3-5; 3-5; 1 (edge) m
Ice thickness: 1 m, size 22 x 36 m
Plot: 4 x 5 min sampling
Surface: Flat, uniform
Topography: Flat, wrinkled (classical UII), no three-dim.
No algae.
Sample: Mostly *Apherusa* on the edge, some places on the middle were *G. wilkitzkii*.

Date: 22 June, 1995
Station: ICE-3
Dive: QS-12
Sampled by: OJL
Distance from edge: 1-20 m
Ice thickness: 3- 5 m, size 27 x 18 m
Plot: 3 x 5 min sampling
Surface: Ridges along edge, meltwater pool 3 x 3 m on top, flat sections on one side.
Topography: Three floes on top of each other, the lowest one multiyear, complex three dimensional
No algae.
Sample: Mostly large *G. wilkitzkii*, some large *Onisimus nanseni*.

Quantitative sampling of ice-fauna on ice floes

Table and figure legends

Table 5.1.3.1 Abundance and biomass of 5 min. samplings during ICE-BAR 1995.

Table 5.1.3.2 Stomach content analysis of *Gammarus wilkitzkii*

Table 5.1.3.3 Anlysis of $\delta^{13}C$ and $\delta^{15}N$ in organisms in the marine food web of the marginal ice-zone of the norhtern Barents Sea, 1995. Means and S.E are given.

Fig. 5.1.3.1 Abundance of four ice-assosiated amphipods

Fig. 5.1.3.2 Estimated percentage age groups of four ice amphipods from all sampling stations

Fig. 5.1.3.3 Length frequency of polar cod given as fork length at the four main stations

Fig. 5.1.3.4 Relationships between $\delta^{13}C$ and $\delta^{15}N$ values for organisms in the marine food web of the marginal ice-zone of the northern Barents Sea, 1995. Sample sizes are indicated.

Fig. 5.1.3.5 Ranges of $\delta^{15}N$ values for organisms in the marine food web of the marginal ice-zone of the northern Barents Sea, and their approximate trophic position (assuming an enrichment value of + 3.8 o/oo).

Table 5.1.3.1 Abundance and biomass of 5 min. samplings during ICE-BAR 1995.

Abundance and Biomass of 5 min samplings during ICE-BAR 1995

G.w.-*Gammarus wilkitzkii* ; A.g.-*Apherusa glacialis* ; O.n.-*Onisimus nanseni* ; O.g.-*Onisimus glacialis*

First Results G.w. ( ) - without animals, born in 1995 !

Date	Sample	Number				Biomass (g)				
		G.w.	A.g.	O.n.	O.g.	G.w.	A.g.	O.n.	O.g.	
16.06.95	OS-1	29 (24)	25	1	0	2.81	0.39	<0.01	0	Area-sample 2.0x3.3x1.4x3.3 m
16.06.95	OS-2	30 (21)	17	0	0	1.79	0.29	0	0	Area-sample 3.2x5.0x2.8x3.0 m
16.06.95	OS-3	0	0	0	0	0	0	0	0	Area sample 1.5x2.3x1.0x2.6 m
16.06.95	OS-4	22 (19)	111	1	1	0.77	0.31	<0.01	<0.01	Area-sample 3.0x3.9x2.3x3.6 m
20.06.95	OS-5	21	0	0	0	3.49	0	0	0	
20.06.95	OS-5	16	0	0	0	2.41	0	0	0	
20.06.95	OS-5	8 (6)	13	0	0	0.54	0.18	0	0	
20.06.95	OS-5	25 (14)	12	0	0	2.32	0.1	0	0	
20.06.95	OS-6	5	0	1	0	0.5	0	0.08	0	
20.06.95	OS-6	14 (8)	2	0	0	1.29	<0.01	0	0	
20.06.95	OS-6	16	0	0	0	2.91	0	0	0	
20.06.95	OS-6	14 (12)	2	3	1	1.89	<0.01	0.12	0.01	
21.06.95	OS-7	8 (3)	21	0	0	0.79	0.14	0	0	
21.06.95	OS-7	8	5	0	1	1.44	0.06	0	<0.01	
21.06.95	OS-7	5 (1)	26	0	1	0.14	0.2	0	<0.01	
21.06.95	OS-8	0	10	0	0	0	0.05	0	0	
21.06.95	OS-8	1 (0)	29	0	0	<0.01	0.15	0	0	
22.06.95	OS-9	154 (27)	8	17	5					
22.06.95	OS-9	47 (20)	6	1	0					
22.06.95	OS-9	2 (1)	16	0	2					
22.06.95	OS-10	0	29	0	8					
22.06.95	OS-10	5	17	0	2					
22.06.95	OS-10	1	47	0	2					
23.06.95	OS-11a	91 (5)	149	0	1					
23.06.95	OS-11a	15 (2)	108	1	0					
23.06.95	OS-11b	68 (33)	10	13	4					
23.06.95	OS-11b	92 (46)	1	7	0					
23.06.95	OS-12	80 (46)	4	2	0					
23.06.95	OS-12	216 (95)	5	3	0					
23.06.95	OS-12	118 (97)	4	3	0					

Table 5.1.3.2 Stomach content analysis of *Gammarus wilkitzkii*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Remarks	immature	immature	immature	immature	adult	immature	empty marsupium	adult	juvenile	immature	juvenile	immature	immature	immature
Sex	female	female	female	male	male	female	female	male		female		male	male	male
Size	13.00	20.00	21.00	24.00	22	22.00	30.00	31.00	11.00	23.00	11.00	23.00	32.00	16.00
Station	Ice-3	Ice-1	Ice-1	Ice-3	Ice-1	Ice-1	Ice 2	Ice-3	Ice-1	Ice-1	Ice 2	Ice 2	Ice 4	Ice-1
Fragm of Copepoda	3.01	4.12	90.54	3.89	10.04			1.61	0.17		0.61	1.42	1.49	0.62
Cryptomonas sp.	17.94		3.38	12.68	36.50		31.66	65.48	21.17		76.59	45.84	40.56	
Fragillariopsis sp.	17.94	7.32		0.60		64.81	22.61		35.29	50.75			34.77	95.75
Nitzschia cf. seriata	15.34	7.32	3.38	19.02		0.46		10.91	42.34		0.46	26.19		0.06
Gonioceros simplex	5.98			4.23			2.26	5.46		1.49	10.94	13.10		3.55
Gymnodinium sp.		3.66			0.22		4.52	2.73						
Pennatae small	12.04	18.30		46.48			36.18				10.94	13.10		
Thalassiosira antarctica			0.01										5.79	
Navicula sp.	11.96	47.59		0.12		0.46						0.36		
Nitzschia sp	9.12			2.11	0.11				0.68					
Nitzschia sp. sigmoidal			0.01			1.39		0.17						0.02
Tintinids	0.08						0.41						11.59	
Cilliatae													5.79	
Cylindrotheca closterium			0.07			16.20	2.26							
Gomphonemma sp.				2.11		0.46				4.48				
Phaeocystis pouchetti														
Armoured Dinoflagellates			0.85						0.34					
Chaetoceros cf. borealis			0.03		5.21									
Chaetoceros decipiens			0.01											
Flagellatae non det					41.72									
Harpacticoidea														
Naupli					0.76									
Nitzschia cf. delicatissima				8.45				13.64						
Nitzschia closterium		3.66								31.34				
Thalassiosira sp.											0.46			
faecal pel					0.22									
fragm. of diatom's frustules						16.20								
Amphipoda fragm				0.30										
Gymnodinium simplex														
Gymnodinium sp. II					5.21									
Gyrodinium sp.		7.32												
Gyrosigma sp.		0.23												
Navicula cf. transitans			0.01											
Navicula sp. II	0.08													
Navicula v. small	0.23													
Nitzschia cf. neofrigida	5.98													
Nitzschia cylindrus										8.96				
Nitzschia cylindrus	0.15													
Nitzschia sp. long										2.99				
Pseudogomphonema sp.			1.69											
Sceletonemma costatum	0.15													
Synedra sp.		0.46												
Number of items	14	10	11	11	9	7	7	7	6	6	6	6	6	5

	15	16	17	18	19	20	21	22	23	24	25	26	27
Remarks	empty marsupium	juvenile	immature	empty marsupium	immature	immature	juvenile	juvenile	immature	immature	immature	adult	immature
Sex	female		male	female	male	female			female	female	female	male	male
Size	42.00	12.00	14.00	29.00	20.00	23.00	11.00	10.00	21.00	18.00	22.00	25.00	20.00
Station	Ice-1	Ice-1	Ice 2	Ice 2	Ice 3	Ice 4	Ice 1	Ice-1	Ice 3	Ice 3	Ice 2	Ice 2	Ice 3
Fragm of Copepoda		8.53	12.51	0.50	0.00	0.42		0.18	50.0	9.69	0.21	2.28	100
Cryptomonas sp.	79.17			99.12	0.43	41.49	62.50	63.04				97.72	
Fragillariopsis sp.	8.33		57.77				25.00	36.78		87.08			
Nitzschia cf. seriata							12.50						
Gonioceros simplex													
Gymnodinium sp.	4.17												
Pennatae small													
Thalassiosira antarctica		44.88	0.83			16.60			25.00				
Navicula sp.													
Nitzschia sp		1.71											
Nitzschia sp. sigmoidal													
Tintinids				0.13									
Cilliatae			28.88			41.49							
Cylindrotheca closterium													
Gomphonemma sp.													
Phaeocystis pouchetti					98.93						99.79		
Armoured Dinoflagellates													
Chaetoceros cf. borealis													
Chaetoceros decipiens		44.88											
Flagellatae non det	4.17												
Harpacticoidea				0.25						3.23			
Naupli									25.00				
Nitzschia cf. delicatissima													
Nitzschia closterium													
Thalassiosira sp.	4.17												
faecal pel													
fragm. of diatom's frustules													
Amphipoda fragm													
Gymnodinium simplex					0.64								
Gymnodinium sp. II													
Gyrodinium sp.													
Gyrosigma sp.													
Navicula cf. transitans													
Navicula sp. II													
Navicula v. small													
Nitzschia cf. neofrigida													
Nitzschia cylindrus													
Nitzschia cylindrus													
Nitzschia sp. long													
Pseudogomphonema sp.													
Sceletonemma costatum													
Synedra sp.													
Number of items	5	4	4	4	4	4	3	3	3	3	2	2	1

Table 5.1.3.2 Continued

Station	28	29	30	31	32	33	34	35	36	37	38	39	40	
Station	Ice 4	Ice 4	Ice 1	Ice 2	Ice 2	Ice 3	Ice 3	Ice 3	Ice 3	Ice 4	Ice 2	Ice-3	Ice-3	
Size	130.00	128.00	114.00	113.00	114.00	123.00	130.00	121.00	122.00	122.00	142.00	19.00	124.00	
Sex	male	female				female		female	female	female	male		male	
Remarks	adult	empty marsupiu	juvenile	juvenile	juvenile	immature	mating stage	immature	immature	immature	empty	juvenile empty	adult empty	F%
fragm of Copepoda	0.38	0.58	100	100	100	100	100		100	100				77.50
Cryptomonas sp.	99.60													45.00
Fragilariopsis sp.														35.00
Nitzschia cf. seriata														27.50
Gonioceros simplex														20.00
Gymnodinium sp.		99.42												15.00
Pennatae small														15.00
Thalassiosira antarctica														15.00
Navicula sp.														12.50
Nitzschia sp.														12.50
Nitzschia sp. sigmoidal														10.00
Tintinids														10.00
Cilliatae														7.50
Cylindrotheca closterium														7.50
Gomphonemma sp.														7.50
Phaeocystis pouchetii								100						7.50
Armoured Dinoflagellates														5.00
Chaetoceros cf. borealis														5.00
Chaetoceros decipiens														5.00
Flagellatae non det														5.00
Harpacticoidea														5.00
Naupli														5.00
Nitzschia cf. delicatissima														5.00
Nitzschia closterium														5.00
Thalassiosira sp.														5.00
faecal pel														2.50
fragm of diatom's frustules														2.50
Amphipoda fragm														2.50
Gymnodinium simplex														2.50
Gymnodinium sp. II														2.50
Gyrodinium sp.														2.50
Gyrosigma sp.														2.50
Navicula cf. transitans														2.50
Navicula sp. II														2.50
Navicula v. small														2.50
Nitzschia cf. neofrigida														2.50
Nitzschia cylindrus														2.50
Nitzschia cylindrus														2.50
Nitzschia sp. long														2.50
Pseudogomphonema sp.														2.50
Sceletonemma costatum														2.50
Synedra sp.														2.50
Number of items	2	2	1	1	1	1	1	1	1	1	0	0	0	

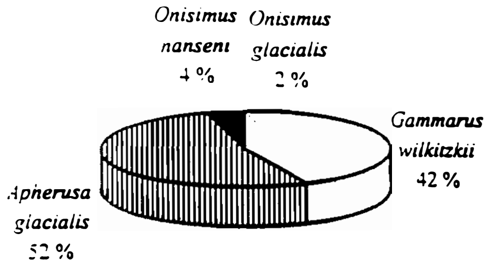
Table 5.1.3.3 Anlysis of $\delta^{13}C$ and $\delta^{15}N$ in organisms in the marine food web of the marginal ice-zone of the norhtern Barents Sea. 1995. Means and S.E are given.

Stable isotopes

Species	Sample	Size	Tissue	Sex	$\delta^{13}C_{PDB}$	$\delta^{15}N_{air}$	Mean $\delta^{13}C$	Mean $\delta^{15}N$	S.E. $\delta^{13}C$	S.E. $\delta^{15}N$
Phytoplankton	49				n.a.	3.10				
Ice algae	26				-18.40	7.20				
Ice algae	27				-18.50	4.90				
Ice algae	28				-17.30	3.50				
Ice algae	29				-18.70	6.50	-18.23	5.53	0.31	0.83
Apherusa glacialis	16		t		-18.90	7.70				
Calanus	23	sm	t		-19.50	9.00				
Calanus	24	sm	t		-19.40	10.90				
Calanus	25	sm	t		-19.50	9.20				
Calanus	26	sm	t		-19.70	8.90				
Calanus	27	sm	t		-19.50	8.90	-19.52	9.38	0.06	0.43
Calanus	20	la	t		-20.50	n.a.				
Calanus	21	la	t		-18.80	12.00				
Calanus	22	la	t		n.a.	8.70	-19.65	10.35	0.85	1.65
Krill	1		t		-20.70	11.80				
Krill	2		t		-20.90	11.60				
Krill	3		t		-21.80	9.40				
Krill	4		t		-21.30	9.10	-21.18	10.48	0.24	0.71
Onisimus nanseni	13		t		-20.20	11.30				
Gammarus wilkitzkii	7	juv	t		-20.60	15.40				
Gammarus wilkitzkii	8	juv	t		-20.80	7.50				
Gammarus wilkitzkii	9	juv	t		-20.40	11.40	-20.60	11.43	0.12	2.28
Hermit crab	61		m		-18.10	11.80				
Themisto libellula	15	juv	t		-20.50	9.70				
Themisto libellula	14	ad	t		n.a.	14.00		11.85		
Hyas crab	40	juv	m		-19.40	12.50				
Hyas crab	41	juv	m		-19.30	11.20	-19.35	11.85	0.05	0.65
Squid	56				n.a.	12.20				
Hyas crab	44	ad	m		-18.90	12.50				
Hyas crab	45	ad	m		-18.80	12.10	-18.85	12.30	0.05	0.20
Clione	17				-22.80	12.80				
Clione	18				n.a.	12.20				
Clione	19				-23.00	n.a.	-22.90	12.50	0.10	0.30
Gammarus wilkitzkii	5	ad	t		-20.80	11.60				
Gammarus wilkitzkii	6	ad	t		-20.50	14.30	-20.65	12.95	0.15	1.35
Arrow worms	10				-20.50	14.30				
Arrow worms	11				-20.90	12.80				
Arrow worms	12				-20.60	13.80	-20.67	13.63	0.12	0.44
Polar cod 4	28	juv	m		-21.20	13.20				
Polar cod 4	29	juv	m		-20.90	12.80				
Polar cod 1-3	34	juv	m		-21.00	15.00				
Polar cod 1-3	35	juv	m		-21.20	12.40	-21.08	13.35	0.08	0.57
Polar cod 4	30	ad	m		-20.70	14.70				
Polar cod 4	31	ad	m		-20.50	13.20				
Polar cod 1-3	32	ad	m		-20.40	13.30				
Polar cod 1-3	33	ad	m		-21.10	13.80	-20.68	13.75	0.15	0.34
Kittiwake	125		m	m	-20.20	13.00				
Kittiwake	128		m	m	-19.80	14.30				
Kittiwake	131		m	m	-20.40	16.00	-20.13	14.43	0.18	0.87
Kittiwake	122		m	f	-20.00	13.60				
Kittiwake	126		m	f	-20.30	13.60				
Kittiwake	130		m	f	-20.30	13.30	-20.20	13.50	0.10	0.10
Atlantic cod	52		m		-20.30	16.00				
Atlantic cod	53		m		-20.70	14.20				
Atlantic cod	54		m		-20.60	13.70				
Atlantic cod	55		m		-21.10	13.00	-20.68	14.23	0.17	0.64
Harp seal	37		m	m	-18.60	16.10				
Harp seal	99		m	m	-19.40	14.70				
Harp seal	102		m	m	-20.30	14.40				
Harp seal	106		m	m	-19.50	14.40	-19.45	14.90	0.35	0.41
Harp seal	92		m	f	-19.90	13.80				
Harp seal	95		m	f	-19.40	14.80	-19.65	14.30	0.25	0.50
American Plaice	57		m		-18.70	14.80				
American Plaice	58		m		-18.00	16.00				
American Plaice	59		m		-19.90	14.10				
American Plaice	60		m		-18.40	14.80	-18.75	14.93	0.41	0.39
Ringed seal	75		m	m	-19.60	13.30				
Ringed seal	30		m	m	-20.70	14.60				
Ringed seal	36		m	m	-20.90	14.60	-20.40	14.17	0.40	0.43
Ringed seal	62		m	f	-19.70	17.00				
Ringed seal	63		m	f	-20.10	16.10				
Ringed seal	38		m	f	-20.00	14.90	-19.93	16.00	0.12	0.61
Glaucous gull	107		m	m	-19.20	16.30				
Glaucous gull	110		m	m	-19.40	15.90				
Glaucous gull	113		m	m	-19.40	15.80				
Glaucous gull	115		m	m	-19.40	15.20	-19.35	15.80	0.05	0.23
Glaucous gull	116		m	f	-20.00	15.50				
Glaucous gull	121		m	f	-19.90	15.90	-19.95	15.70	0.05	0.20

Haakon Hop Norwegian Polar Institute 1996

Abundance of four ice-associated amphipods from quantitative samples during ICE-BAR 1995



Abundance of four ice-associated amphipods from quantitative samples during ICE-BAR 1995 (included *Gammarus wilkitzkii*, born 1995)

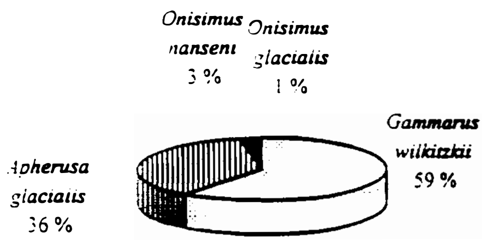


Fig. 5.1.3.1 Abundance of four ice-assosiated amphipods

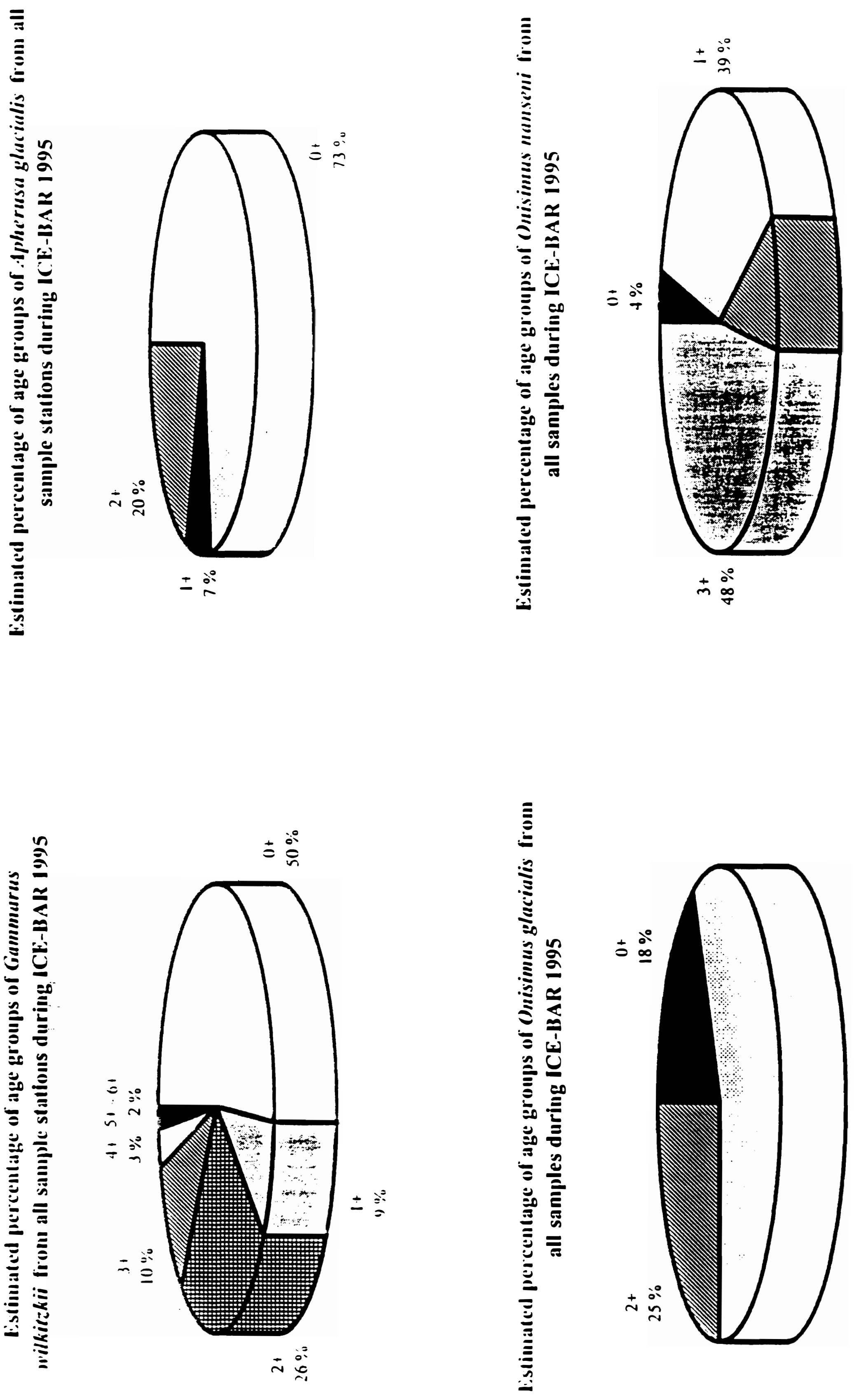


Fig. 5.1.3.2 Estimated percentage age groups of four ice amphipods from all sampling stations

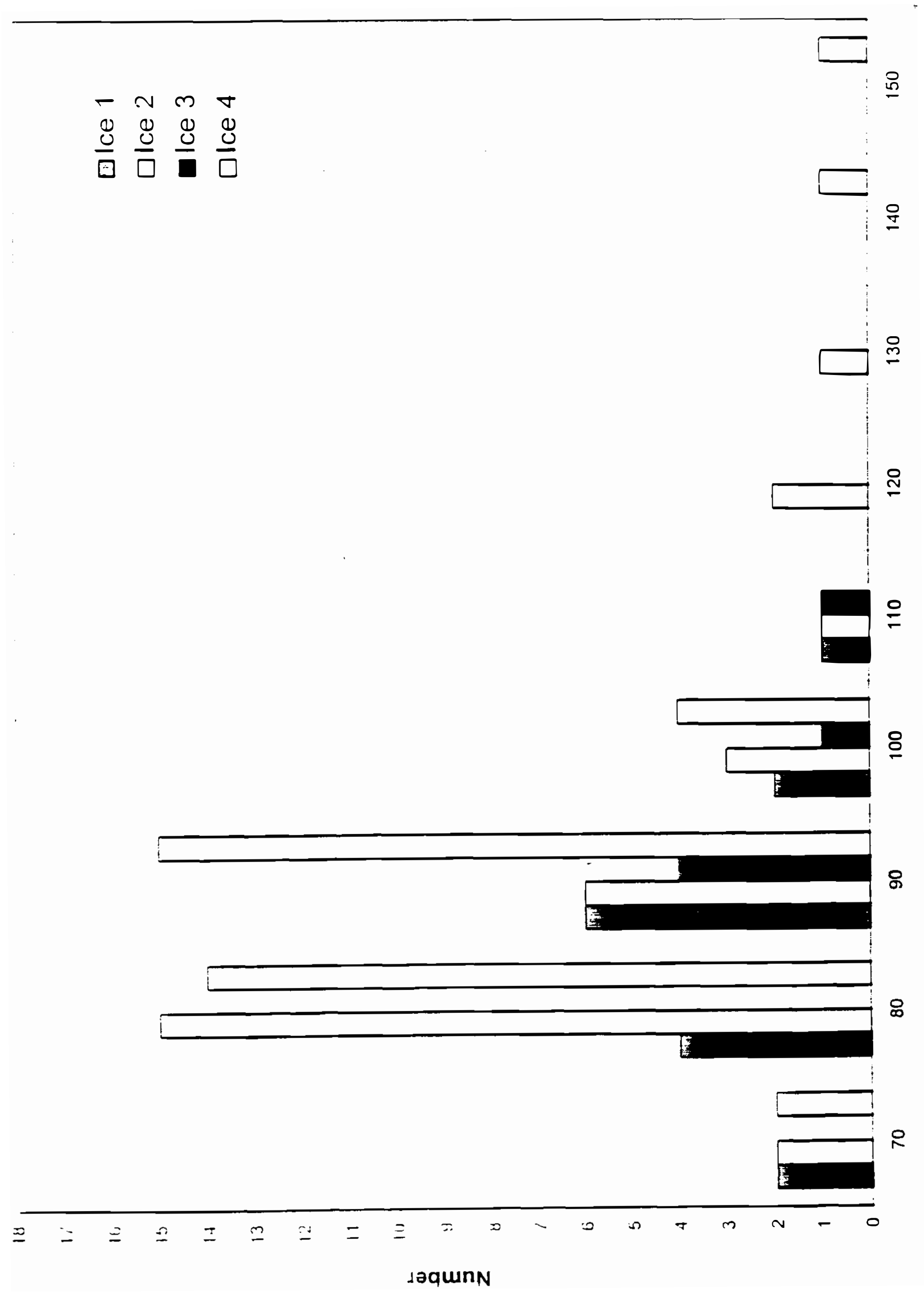


Fig. 5.1.3.3 Length frequency of polar cod given as fork length at the four main stations

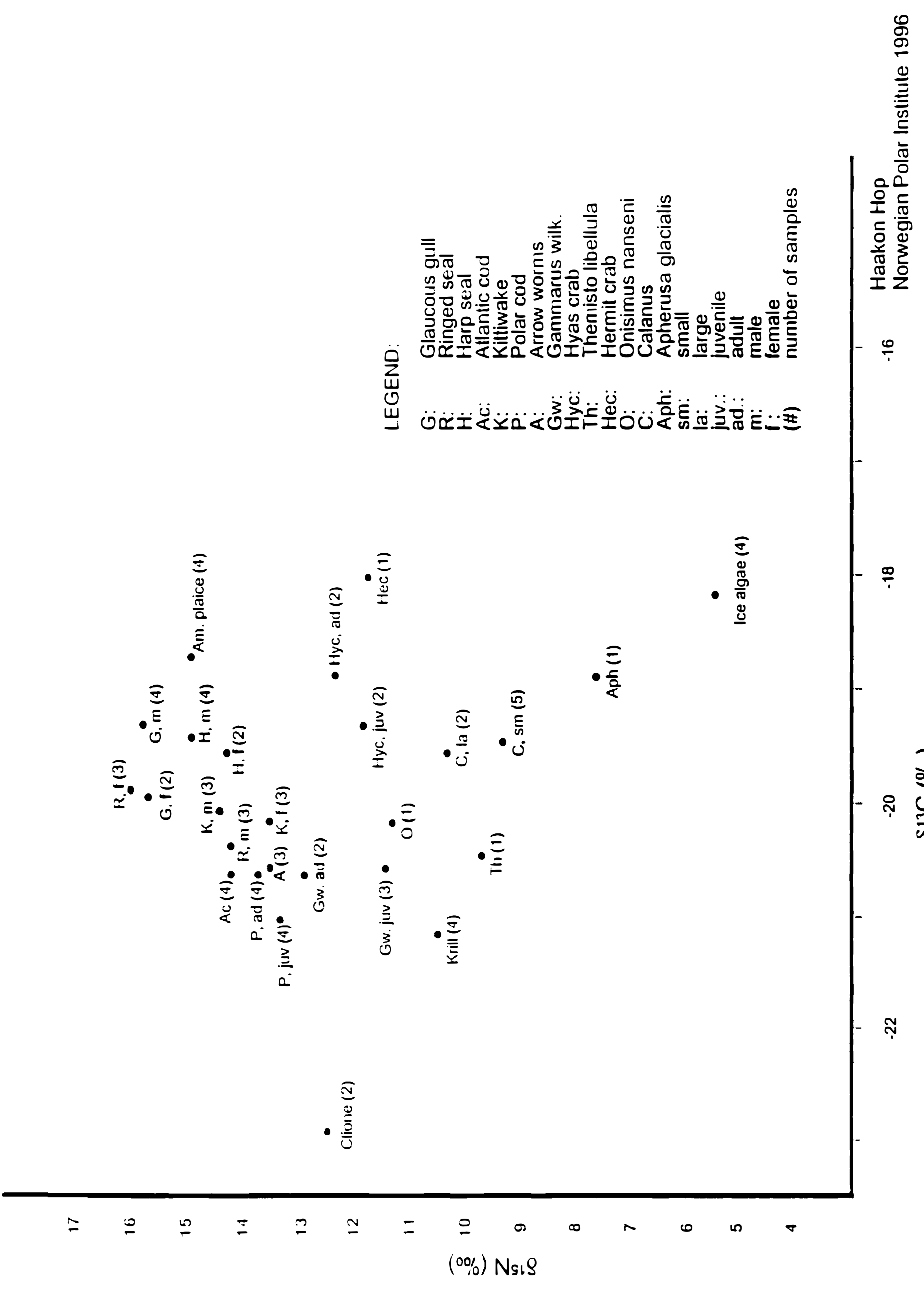


Fig. 5.1.3.4 Relationships between δ^{13}C and δ^{15}N values for organisms in the marine food web of the marginal ice-zone of the northern Barents Sea. 1995. Sample sizes are indicated.

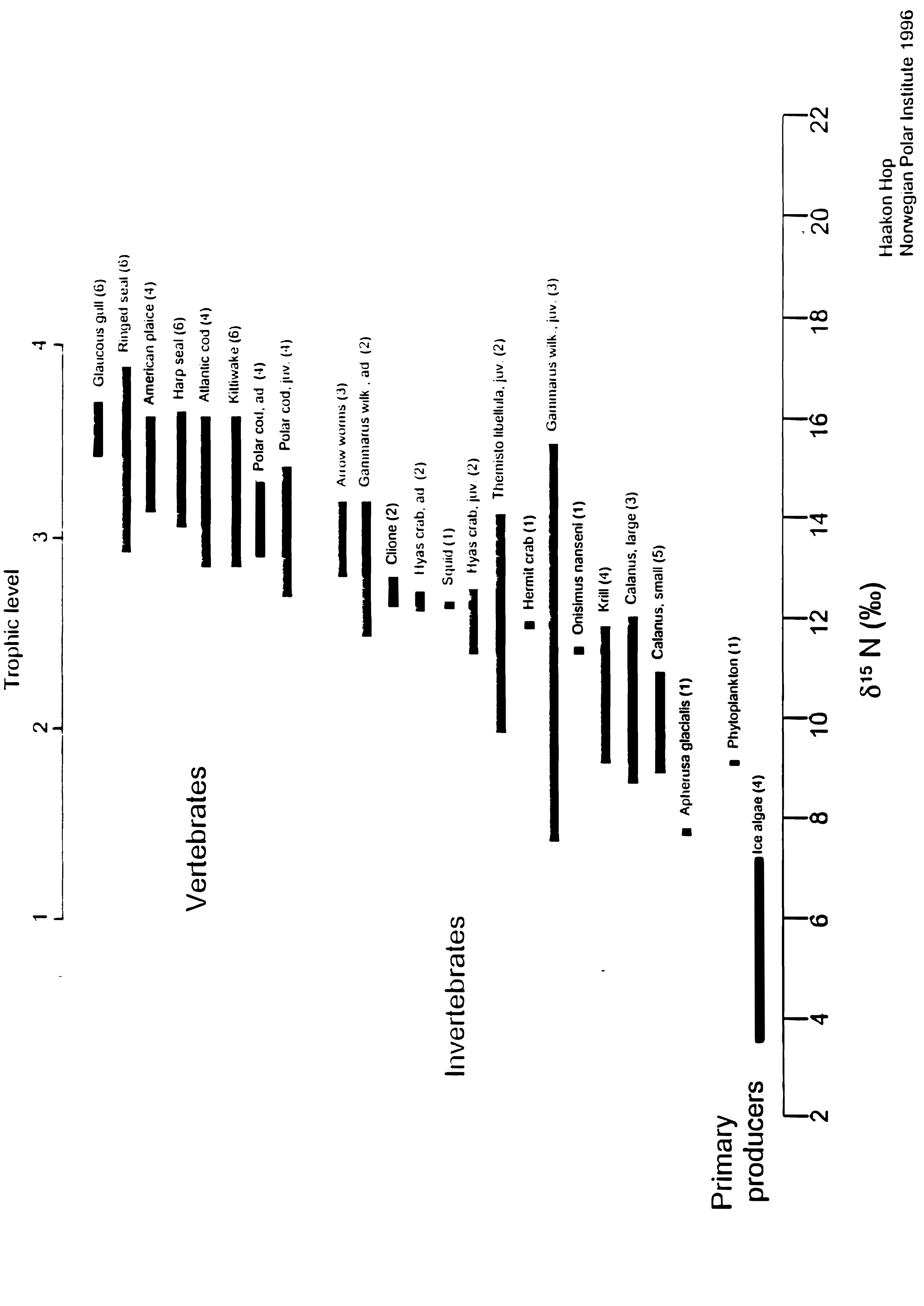


Fig. 5.1.3.5 Ranges of $\delta^{15}N$ values for organisms in the marine food web of the marginal ice-zone of the northern Barents Sea, and their approximate trophic position (assuming an enrichment value of + 3.8 o/oo).

5.1.4. Zooplankton

Zooplankton and lipid studies

by Stig Falk-Petersen and Haakon Hop

Rationales

1. Zooplankton studies in the Arctic Ocean and in the adjacent seasonal ice-covered seas have been limited (Sakshaug and Skjoldal 1989, Conover and Huntley 1991). The zooplankton stocks and species composition are however key factors which directly affects the primary production as well as the vertical carbon flux. Wassmann and Slagstad (1993) have shown that during the sprig bloom, copepod over-wintering success, the timing of their ascent from hibernation, population density and grazing pressure in the surface waters are factors that exert control on "successful" retention of the primary produced energy in the pelagic ecosystem or the loss of primary produced matter by sedimentation. Zooplankton together with ice-fauna is also the direct link between the primary producers and the fish stocks, the marine mammals and the sea birds (Falk-Petersen et al. 1990).
2. The extreme oscillations of abiotic factors is the critical factor structuring the Arctic marine biotic systems. Pelagic marine herbivores exposed to such marked variation in available food have responded, *inter alia*, by storing large amount of lipids as energy reserves (Lee and Hirota 1973). The lipid level increases from 10-20% in phytoplankton to 50-70% in herbivorous zooplankton and ice-fauna (Sargent and Falk-Petersen 1988, Hagen et al. 1995). This increase in lipid level is probably one of the most fundamental and key specialications in Arctic bioproduction. The dramatic accumulation of oil provides the large stocks of Arctic fish, birds and mammals with energy-packed food to sustain them over the winter.

The main objectives of this investigation is therefore to study the community structure of zooplankton and the lipid chemistry of the primary producers, zooplankton, ice-fauna and fish in ice-covered waters.

Material and methods

Sampling and sampling stations are presented in table .

The primary producers.

Ice-algae was sampled by divers using a hand held electric suction pump or a hand held nets. The samples was immediately frozen or added chloroform/methanol (2:1) (C/M) and frozen. Phytoplankton was sampled quantitatively by water bottles, filtered. The filters was stored frozen on bottles with Teflon stoppers on C/M. All samples are analysed for lipid classes and fatty acids at the University of Stirling.

Zooplankton and ice fauna.

Zooplankton were sampled quantitatively with a WP-2 or WP-3 net and stored on formaline. The sampled was analysed for the zooplankton composition at the Institute of Oceanology, Sopot.

Zooplankton for lipid analyses were sampled by a WP-3 net or a Tucker trawl (0.5 mm net mesh). Ice-fauna was sampled by divers using a hand held suction pump. Larger animals were frozen single while copepods were frozen 10 by 10 in plastic bags. Size, wet-and dry weight and total lipid content have been measured for krill, copepods and amphipods.

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5.1.5 Benthic macrofauna and sediment

by O. J. Lønne

Rationale

This part of the program is aimed to be an integral part of the ICE-BAR 95; the benthic sampling covers the same stations as the sympagic and pelagic programs. It will further contribute to projects within the research programs of the "Polar Environmental Centre". In particular the projects "Taxonomic studies of the benthos of the northern European seas" (Biodiversity in the European Arctic and the Barents region) and the "Exotoxicology" program. The benthic sampling program will also supplement Akvaplan-niva's baseline studies of pollutants and the biodiversity and community studies of the benthic fauna of the Barents Sea.

Sampling was carried out for the following purposes:
Surface sediments (0-1 cm) for studies of persistent organic compounds, metals and radionucleides, grain size distribution and content of organic carbon and nitrogen.
Benthic macrofauna, community structure analysis and distribution of species.

Sampling program

Six benthic stations were sampled along the cruise track.

Akvaplan-niva´s sampling programme for contaminants in sediments, and for benthic fauna community studies.

Station no.	Position	Depth (m)	Date	Time	Sample ID
22	7711.7N 1731.7E	329	120695	11:18	IB95001-IB95010
45	7815.0N 3408.6E	181	160695	20:25	IB95011-IB95123
48	7812.1N 341.5E	240	180695	10:00	IB95024-IB95032
54	7749.3N 3438.7E	178	210695	16:15	IB95033-IB95045
57	7730.9N 3445.5E	215	220695	19:15	IB95046-IB95055
64	7656.6N 2932.5E	240	250695	18:00	IB95056-IB95068

Types of samples collected, together with notes on packaging and collecting implements used, quantity sampled.
Surface sediment samples (0-1 cm upper layer of the sediment in van Veen grab)

Analysis	Container	Amount	Notes
PCB´s/THC	Sterile glass jar	3/4 full	Collected with metal spoon
Metals	250 ml plastic jar/ plastic bag	1/2 full	Collected with plastic spoon
Grain size/PAH´s/ TOC/TN/ Radionucleides	Plastic bag	Approx. 100 g.	Collected with metal/plastic spoon
Biodiversity and Community studies	3 l plastic buckets.	1-2 buckets depending on amount of material	Preserved in 4% buffered formalin

Sampling procedures and quality assurance

Quality assurance

A chronological deck log concurrent with the NP CTD log, was kept by the Apn participant. The following information is given:

date, time
station number
position
sample number
type of equipment used
depth (m)
remarks

Sampling equipment

The bottom sampling equipment used by Apn was deployed from the main deck using Apn´s 10 mm wire and the ships main hauling winch. The ships meter wheel was used to determine the amount of wire paid out.

The van Veen grab

A 40 kg van Veen grab with a surface sampling area of 0.1 m^2 was used. Where appropriate, additional weights of 30 kg were used according to the sediment type encountered. The grab had hinged and lockable inspection flaps with a mesh diameter of 0.5 mm. These where covered by additional rubber flaps, allowing water to pass freely through the grab descent through the water column, to minimize the pressure wave below the instrument, which can "blow off" the top surface of the sediment during sampling. On ascent, the rubber flaps are closed to minimize the water turbulence inside the grab. As a further precaution against sediment loss during sampling, the winch speed was lowered for the last meters of descent.

Sediment sampling

Sub-samples of surface sediment for analysis of contaminants, total organic carbon/nitrogen and grain size were taken from the upper 0-1 cm sediment layer. Samples for analyses of contaminants, TOC/TN and grain size were frozen immediately at -18°C.

Benthic macro-fauna samples

The loaded grab was received onto the washing table (or into a plastic container for later washing on the table) and the condition of the sample was examined through the inspection flaps. Samples which have appeared to have lost some of the surface sediment layer were rejected. The volume of approved samples was measured with a calibrated measuring stick and the samples was emptied onto the table. The fine "fluffy" surface layer was gently washed into sieves immersed in running sea water, to minimize damage to small soft bodied animals. The mesh is constructed of round holes with a diameter of 1 mm. The material retained on the screen after washing was decanted into sample buckets. The clay portion of the sample was then washed separately. The sieved samples were fixed in a 10- 15% borax buffered, pH neutral formaline solution.

Position fixing

Our positions were given by the satellite navigation system used by RV 'Lance'.

Preliminary results

The positions for grab-sampling were selected based on the following criteria:
1) to cover the same stations as for sea ice community- and planktonic- studies within the pack ice.
2) to cover areas with enhanced sedimentation, i.e. the deeper areas within the seasonally ice-covered Barents Sea and preferably in areas not previously covered by Apn. Common to all samples were the low diversity and the low species abundance. Tube dwelling Polychaetes dominated in numbers in the samples. The top 1-3 cm of sediment typically consisted of a brown fluffy sediment overlying a compact grayish clay layer. Only fine sediment without stones and pebbles where encountered.

5.1.6. Biodiversity at upper trophic levels

by Georg Bangjord

Table 5.1.6.1. Marine mammals and seabirds observations from the ice-zone transects. Number in parentheses are from one-hour observations when arriving at the stations.

SPECIES	1) STATION 1	STATION 2	STATION 3	STATION 4
Birds Fulmar (*Fulmarus glacialis*)	4(4)	3	17 (3)	(13)
Common eider (*Somateria mollissima*)	4 female	1 female		
Purple sandpiper (*Calidris maritima*)	1 juv.	1 juv.		
Pomarine skua (*Stercorarius pomarinus*)	1	22 (2)	2	1
Herring gull (*Larus argentatus*)	(1)			
Glaucous gull (*Larus hyperboreus*)	16 (16)	2	2	2
Black backed gull (*Larus marinus*)	(2+1juv.)	1		2
Kittiwake (*Rissa triadactyla*)	(43)	(55)	14	27 (6)
Ivory gull (*Pagophila eburnea*)	71 (17)	40	5	
Little auk (Alle alle)	(2)	2	15	2
Brünnich guillemots (*Uria lomvia*)	(2)	2	12	15 (3)
Black guillemots (*Cepphus grylle*)	7 (5)	1 (1)		1
Snow bunting (*Plectrophenax nivalis*)	1 female			
Mammals Polar bear (*Ursus maritimus*)	4	1	6	
Bearded seal (*Erignathus barbatus*)		1		
Ringed seal (*Phoca hispida*)	about 30		1	
Harp seal (*Phoca groenlandica*)			1?	

1) Stations description next page

I. STATION COMMENTS

Station 1, 15-17 June (Large ice-floe "fast ice")
7805N 3417E to (drift) 7820.6N 3407.1E
One hour observation from 08:00-09:00, 15 June. Good conditions. 100% clouds. Fair wind from south. The table includes observations from three trips on a large ice floe north of the ship.

Station 2, 19-21 June (Big drift-ice)
7739.5N 3417.3E drift to ...
One hour observation from 08:30-09:30, 19 June. Good conditions. 100% clouds. No wind. Only observations from the ship or close to the ship.

Station 3, 22-23 June (Thin drift-ice)
7729.9N 3433.6E drift to...
One hour observation from 12:20-13:20, 22 June. Bad conditions. Fog and 13 knot wind from south.

Station 4, 24 June (Open sea)
7657.3N 3417.9E to 7655.1N 3410.8E.
One hour observation from 08:30-09:30, 24 June. Bad conditions. Fog and 10 knot wind from south.

SPECIES COMMENTS

A. Seabirds

Fulmar
Uncommon, mainly single individuals. Tendency for birds (4-5) to follow in the wake of the ship. At Station 3 the species was more common that at the previous stations. For instance were 17 individuals observed at one ice floe near the ship at 23 June. All individuals were of the dark color variant, except for one individual at Station 4.

Common eider
Two migratory observations, one with four females and one with a single female. Probably young, non-reproductive birds, on their way to the northern islands.

Purple sandpiper
One yearling bird was several times observed at Station 1, on the way to Station 2 and at Station 2. The behavior of the individual was not normal, and it seemed low on energy.

Pomarine skua
Single individuals and grouped with up to 15 birds were observed daily in the pack ice. Most birds passed by, although in some instances the birds pursued the kittiwakes that were fishing for Arctic cod in the area. There were observed more than 60 adult birds, of which two were dark phase.

Herring gull
One adult bird of western Siberian race, followed the ship from Station 1 on 15 June. It was also observed near the ship on 16 June.

Glaucous gull

Few migrating through. Exclusively 1-5 year old birds. No fully birds with fully adult plumage were observed. The large number of Glaucous gulls at Station 1, was because birds were attracted to seal carcasses that had been sampled on the ice.

Black backed gull

Few migrating through the area. only 1-4 year old birds. Three individuals at Station 1 were probably also attracted to the seal carcasses.

Kittiwake

Up to 80 birds followed the ship during most of its voyage through the drifting ice pack. About 5% of the birds were one year old. The rest seemed to be fully mature individuals, but the proved to be 2-3 year old individuals when confirmed by sampling (10 individuals).

Ivory gull

Common as single individuals or in smaller groups in the drifting ice pack. The high numbers at Station 1 was because of available seal carcasses. About 10% of the birds were yearlings; in a group of 71 at Station 1, six individuals were yearlings. Most were apparently in mature plumage, although it is probably relatively young birds because the orbital was veak on most of them. Mating was observed at Station 1.

Little auk

Single individuals and smaller flocks up to 15 individuals were observed sporadically in the pack ice, mainly in connection with larger leads of open water in the ice. In total, less than 30 individuals were observed.

Brünnich guillemots

Single individuals and smaller flocks of up to 11 individuals were observed sporadically in the drift ice, mainly in larger leads in the ice. Several of the birds were observed at a close distance and were determined to be yearlings. Nine birds were shot at Station 3, and all of these were young birds, mainly 2-3, possibly 4 years of age. Only migratory individuals were observed at Station 4.

Black guillemots

Single individuals and smaller groups of up the seven were seen sporadically in the ice pack, mainly in vicinity of larger leads in the ice. There were observed < 15 individuals during the entire transect. All individuals that were examined closely had gray markings in the bright wing patch, which indicates young birds.

Snow bunting

One female was observed by the ship at Station 1 on 17 June.

B. Marine mammals

Polar bear

The polar bears that were observed at Stations 1 and 2 were mainly young solitaire animals. One sow with a two year old cub were observed just south of Station 2. The minimum of four bears observed at Station 1 were probably there because available carcasses from the seal hunt. At Station 3, two bears were older males. In total, 18 bears were observed at the transect, and a minimum of 39 bears were observed during the entire cruise.

Ringed seal

At the northernmost part of the transect ringed seals were only observed on the large flat sections of large ice floes, or in the water close to these floes. A minimum of 30 individuals were observed at Station 1 and 15 individuals at Stations 1 and 2. One individual was observed in the drifting ice pack at Station 3.

Bearded seal
Scarce with only single individuals. Three individuals were observed north of Station 3.

Harp seal
Harp seals were not observed north of Station 3. At Station 3 there were observed a couple of animals which might have been harp seals.

5.2 Oceanography

5.2.1 Hydrography

by Kjell Arild Orvik and Vasiliij L. Kuznetsov

TABLES AND FIGURES: SEE APPENDIX 4

Introduction

The main aim of the hydrographic/oceanographic subprogram as a part of the multidisiplinary program ICE BAR 1995 was to survey hydrographic conditions and underlying physical processes along a transect through the marginal ice zone and adjacent open water. The physical processes are also important as basic information for the biological investigations in the marginal ice zone. Representative stations were selected along the 35 deg. latitudinal transect through the thick first-year ice with stations in consolidate ice, intermediate thick first-year ice, near the ice border and in open water. The stationary stations were completed with CTD stations in between to make a better resolution of lateral changes. Additionally, standard CTD sections as across Bear Island Channel and from Svalbard to the 35 longitude were performed to survey large-scale water mass variabilities. During the extensive biological programs over 2-3 days at each *ICE STATION*, CTD profiles were obtained every 3rd hour. The hydrographic observations were completed by fluorescence and XCTD/ current meters profiling by the Japanese scientific group. These simultaneous observations will make it feasible to perform a more thorough investigation of mixed layer processes.

The hydrographic parameters, temperature and salinity were obtained by using a OTS1500 CTD sonde, some profiles were completed by fluorescence observations. For calibration of conductivity sensor/salinity, water samples were taken regularly at different depths. A preliminary post processing of the CTD data was performed onboard by using numerical programs as Multipar, Surfer and Gunplot and some results are presented graphically. The OTS1500 sonde was used because the main instrument. the Neil Brown, CTD showed unreliable data for pressure and conductivity and was cut out after few casts. A test cast was performed before departure Tromsø and then the instrument worked satisfactorily.

Ninety two CTD casts were caried out with the OTS1500 and 29 water samples were obtained for calibration of salinity.

Hydrographic background

Hydrographic conditions near the ice edge of the central Barents Sea in spring/early summer are characterised by a 20 m upper layer of melt water due to melting of the thick first year sea ice. The melting results in a stable well mixed upper layer with low temperature < 1°C and salinity < 34.2%. Generally, this stable layer extends about 20 nautic miles southward from the ice edge, where a frontal transition is manifested through an abrupt temperature increase from 1 to 2.5°C over 2 km, for example. This stable layer results in enhance production in the ice edge zone. Below this layer of melt water the temperature and salinity increase with depth to about 2°C and 34.9 ‰ in salinity. The hydrographic conditions and water masses off the ice edge have been thoroughly surveyed, whereas observations from the marginal ice area are more scarce. Thus, in this investigations we will concentrate on observations in the ice pack and extension of the transect into open water.

Preliminary results

Oceanographic data are represented in graphs of temperature, salinity and density distribution on multiday stations and some transections in the marginal ice-zone in the Barents Sea.

Ice station 1 (duration 2.5 days) was fulfilled from board the R/V 'Lance' which drifted together with the large ice floe amidst ice floes with concentration 8/10-9/10 (close drift ice-very close drift ice). Distributions of hydrophysical characteristics for this station are presented in Figures 2-5. This distribution is typical for the spring time in the marginal ice zone. There is equally stratified density field with a weak pycnocline in the 15-20 meters layer that was defined by a halocline produced by dilution of the surface layer (0-15 m) by melting ice. Its temperature is close to the temperature of freezing for water with this salinity. At lower depths up to 100 meters, there is a layer produced by winter convection. Under this layer down to a depth of 140 meters there is a seasonal thermocline. Further down to the bottom we can see Barents Sea Water (*Baretnshavsvann*). Both, pycnocline and seasonal thermocline are subjected to periodical disturbances, most probably produced by tidal wave with a period of 12 hours.

Ice station 2 (duration 2.5 days). Distribution of oceanographic parameters is similar to Ice station 1 (Fig. 6-9). The station was performed amidst the thick hummocked first-year ice of 7/10 concentration (close drift ice). The ice floe used for anchoring was of less in size than the one chosen for Ice station 1. The decrease in ice concentration was reflected in the appearance of the thin surface layer that was warmer and less saline (to 3 meters). The pycnocline occupied the depth between 15 and 20 meters. The seasonal thermocline was situated at the depths from 100 to 140 meters. There were 12 hour periodical disturbances similar to the ones of Ice station 1.

Ice station 3. The measurements were performed amidst the medium first year ice of 6/10-7/10 concentration (open drift ice, close drift ice). The ice floes were not big -up to 50 m in diameter. Some ice floes were destroyed by melting up to stages of dried ice and rotten ice. Ice station 3 was situated not far from the ice edge. It could be seen penetration of swells. Distribution of oceanographic parameters is similar to the one of Ice station 2 (Fig. 10-13). However, in the seasonal thermocline layer we could trace the disturbances with the amplitude up to 40-50 meters. Probably they are depicting internal wave, produced by eddy system generated at the ice-edge.

Station 4 (duration half-day) was performed in the open sea. Oceanographic parameters distribution is typical for this season. (Fig. 14-17): there is a warm (the temperature is above zero), and diluted by ice melting, upper layer with a thickness of 10 meters, then follows thermo-halocline with a thickness of 10 meters, and further comes down to the bottom the layer that was produced by winter convection.

Oceanographic characteristics distribution is shown on Figures 18-29 for the transections performed along the edge of drifting ice. All changes of characteristics that take place in the upper layer of 30-50 meters thickness are defined by ship position: either it was in the open sea, either close to the ice edge or amidst the drifting ice floes of different concentrations. This is well illustrated by the presence or absence of thermocline in the upper layer: in the highly concentrated ice floes thermocline is almost absent, in the open sea it is well pronounced. The lower border of the layer of winter convective mixing was situated at the depths from 30 m (station 84) up to 130 m (station 18) depending on the bottom depth and dynamic processes in the water column. Thus for example the trough between Storbanken and Hopenbanken was occupied by Barents Sea Water with the temperatures exceeding zero and salinity values of 34.6-35.0 PSU. In the region of station 84 there was a domed structure probably produced by passing of an eddy with cyclonic circulation.

In total, the oceanographic data depict the state of the water column, where biological sampling took place. The common analysis of the data of biological and oceanographical observations will permit us to reveal the links between oceanographic fields, their stratification and dynamics. It will be useful also to measure O_2, PO_4, NO_2, NO_3 and Si in the vicinity of an ice edge to trace correlations with the biological processes. This is confirmed by the chlorofyll *a* distribution along transection 2.

5.2.2 Sea ice investigations

by Reinert Korsnes and Vasilij Kuznetsov

Ice conditions along the 34.5° E ice transect

This transect starts and ends respectively at 78°06' N 34°16' E June 15 and 77°34' N 34°23' E June 22 1995. The ice along this transect were first year ice of thickness about one metre for non-deformed ice. Some of the ice were young ice of thickness about 30 cm. The ice were in a state of melting and throughout infiltrated by sea water. Water appeared in the core holes once we started coring.

We made three main ice stations along this transect which also were covered by a time lapse video from on top of the crows nest of 'Lance'.

Time lapse video coverage

The ice near the ship where for the whole cruise covered by a time lapse video from the crows nest of Lance about 30 m above the sea level. The video images contain date and time (GMT), and using the logged ship time/position file one will produce a time/position related set of digital images from the produced video cassettes (using computer frame grabber). These digital images will be input to simulated images representing vertical projections (like aerial photography). These simulated images will give statistics on ice concentration and ice floe size distributions along the ship trajectory.

Ice coring

The ice coring during the cruise were made by Reinert Korsnes, Vasilij Kuznetsov, Yuri B. Okolodkov, Kunio Shirasawa and Mitsuo Ikeda. Shirasawa had the responsibility of some cores and some cores were the responsibility of Okolodkov. The cores which were the responsibility of Korsnes were all stored in a freezer on board. These were with one exception made by using Cherepanov's ice-corer with outer diametre 12 cm and inner diametre 9 cm (i.e. diametre of the core).

Ice station 1

Ice station 1 was the northern end of this transect, 15 June 1995. All work on the ice were for this station made on a vast ice floe of size more than 5 km^2 consisting of medium and thick first year ice partly with hummocks on top. The snow cover were mostly between 3 and 10 cm in flat areas and up to 100 cm close to hummocks. Sea water were on the ice below the snow cover.

We made 5 ice cores within a neighborhood of 3 metres on this station about 60 metres from the border of the ice floe. The snow cover were in the range 2-10 cm. The length of these cores were 1.10-1.50 m. Core number one were 1.16 m. This core were stored in a freezer on the ship. The original plan was to estimate the content of sediments and salt along this core in order to give some indications of its history/origin. This would serve as supplementary information for the investigation of ice fauna on this ice. However, the ice in the area seemed to be of local origin and with little sediments, so further work on sediment content was not performed.

The ice was in the state of melting and penetrated by sea ice. Stig Sandberg had the possibility to estimate chlorophyll *a* content in the water, and he first made an analysis based on melted samples from ice core 2, which was the responsibility of

Yuri B. Okolodkov. Figure 5.2.2.1 shows the results from this analysis. Korsnes, after discussing with Yuri B. Okolodkov, raised the idea on "diffusion" of algae from outside in melting first-year sea ice. Figure 5.2.2.1 supports this idea. Hence we decided to use the opportunity to change plans and estimate chlorophyll content and salinity for a set of cores including core 1. The salinity content would serve as an indicator of the penetration of sea water from outside. The purpose of this was to better understand the distribution of chlorophyll content in the ice. Figure 5.2.2.2 shows the result of fitting to this data the one dimensional diffusion model

$$\frac{\partial E}{\partial t} = \mu \frac{\partial^2 E}{\partial \chi^2}$$

where E is the concentration of algae, t is time and x is the distance from the top of the ice floe. This figure shows two cases where this model fits the data. One case is with possible penetration only from below. The other case is with possible penetration also from above.

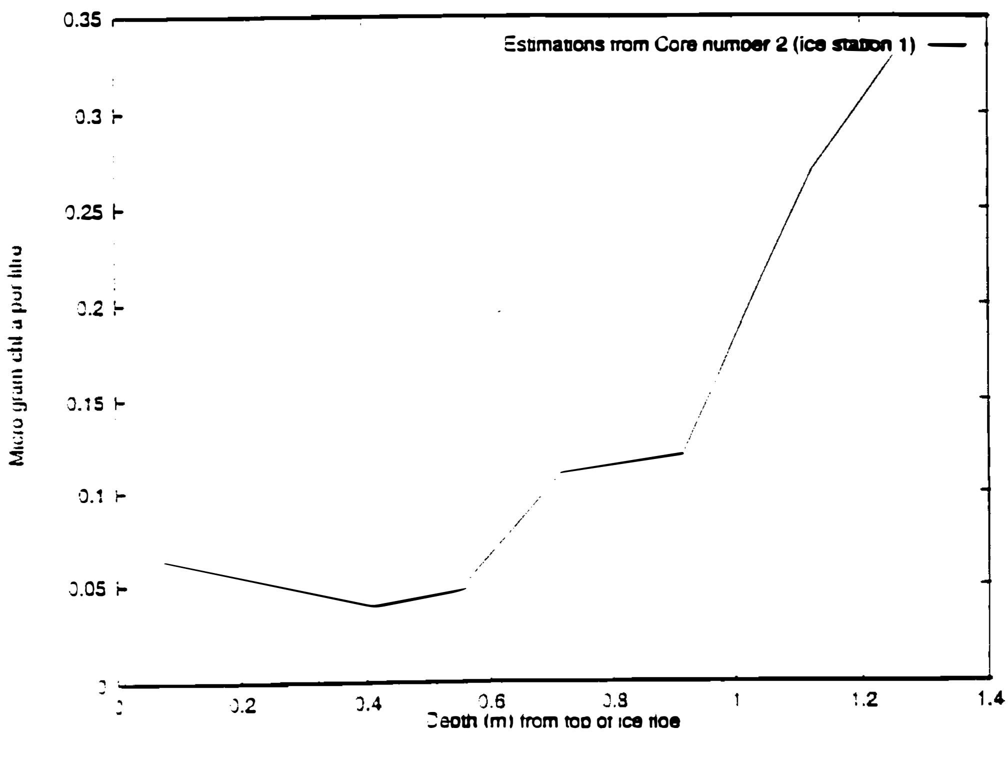


Figure 5.2.2.1 Distribution of chlorophyll a in ice core 2.

Ice station 2A

Ice station 2A took place at 77°39' N 34°18' E on 19 June 1995 at 10:00 gmt from a first year ice floe consisting of medium and thick first year ice. The size was 30x20 m^2.

We made three cores at this station all of length about 1.35 m within a neighborhood of 5 metres. The snow thickness was 3 cm. Core 1 were stored in the freezer on board.

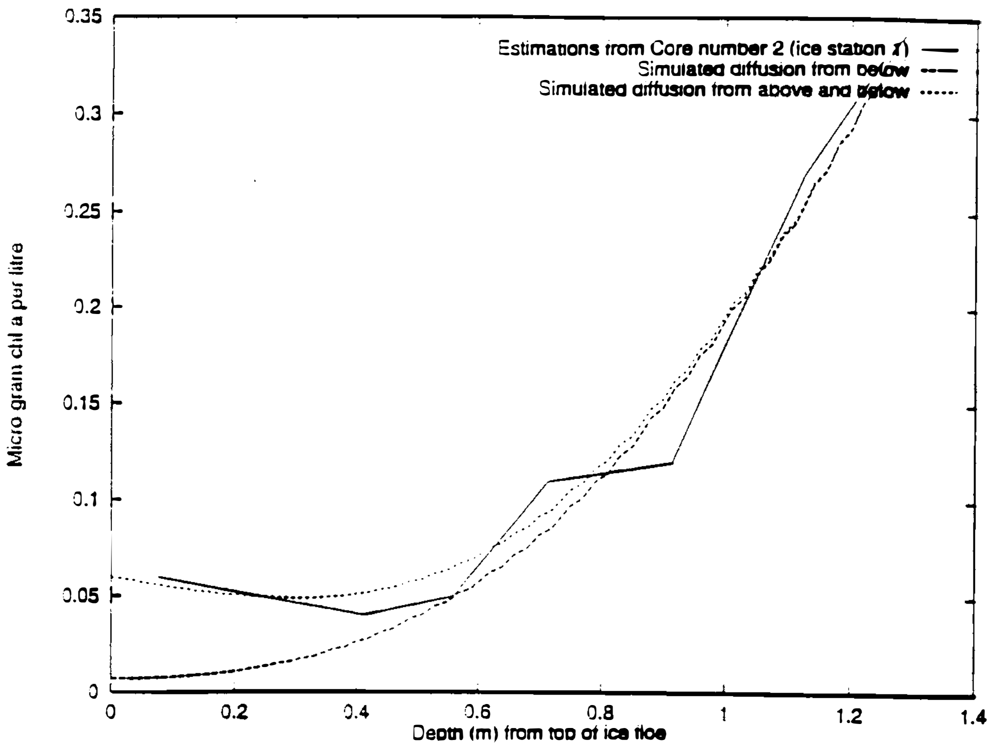


Figure 5.2.2.2: Model fit for the distribution of chlorophyll *a* in ice core 2.

Ice station 2B

Ice station 2B took place at 77°47' N 34°25' E on 21 June 1995 at 08:00 gmt. We made three cores all of length about 2 metres within a neighborhood of 4 metres on a floe of size 40x38 m^2. Core 2 and 3 were stored in the freezer on board. Divers sampled ice fauna on the same ice floe.

Ice station 2C

Ice station 2C took place at 77°48' N 34°29' E on 21 June 1995 at 12:00 gmt. We made three cores of length about 2 m. 0.8 m and 2 m respectively. These were all stored in the freezer on ship.

Ice station 3

Ice station 3 took place at 77°29' N 34°31' E on 22 June 1995 at 12:00 gmt. Here we made three cores all of length about 1.1 m on a floe of size about 20x20 m^2. Divers sampled ice fauna on the same ice floe. These were stored in the freezer on the ship.

5.2.3 The Japanese oceanographic- and sea ice programs of ICE-BAR 1995

by Kunio Shirasawa.

Participants:
Kunio Shirasawa and Mitsuo Ikeda

TABLES AND FIGURES: SEE APPENDIX 2 AND 3

Objective:

To understand characteristics of oceanographic and ecological processes in the marginal ice-zone during the ice melting season. Marginal ice-zones are important areas because of relatively higher marine productity. The presence of seasonal sea ice may produce a unique characteristics in the sea-ice ecosystem in subarctic areas such as the Barents Sea, the Bering Sea and the Sea of Okhotsk. To understand oceanographic and biological processes and the sea-ice ecosystem in the marginal ice zone, an international multidisciplinary program is required. The ICE-BAR 1995 is such a program which aims to understand oceanographic and ecological processes in the marginal ice zone of the Barents Sea. The methodology and results born in the ICE-BAR 1995 should be compared with those obtained in other subarctic areas such as the Bering Sea and the Sea of Okhotsk to further understand the characteristics of oceanographic and ecological processes in the marginal ice zone in subarctic areas.

5.2.3.1 Physical oceanography program

Method

To understand oceanographic processes in the marginal ice-zone, CTD and current profiles in the upper mixed layer were made along the ice edge (longitudinal transects: E-W) and across the marginal ice-zone from consolidated ice, through pack ice and out into open water (latitudinal transect; N-S where Ice-Station 4 is open water).

The current measurements were made in the two ways; 1) the current meter was lowered down from the water surface to 50 m to measure the current and temperature profiles in the upper mixed layer, 2) the current meter was deployed at the depth of 10 m to measure the time series of 3-D current and temperature regimes near the pycnocline.

Instruments

1) XBT (Expendable Bathymetry-Thermograph; MK-30, Tsurumi-Seiki Co., Ltd.)
2) XCTD (Expendable Conductivity-Temperature-Depth; MK-100, Tsurumi-Seiki Co., Ltd.)
3) EMCM (3-D Electromagnetic Current Meter, ACM-16M, Alec Electronics Co., Ltd.)

Sst	h gmt	Date	Code	Position		Depth (m)	Gear	Sample	Meas. depth	Sfc. water	Ice St.
1	19:36 -19:41	10 June	CTD1	7316N	1905.3E	448	EMCM	U,V,W,T	27	6.3	
3	22:57-23:05	10 June	CTD3	7336N	1905E	400	EMCM	U,V,W,T	27	6.0	
4	00:08-	11 June	4	7340N	1905E	319	XBT	T,D	27	5.7	
5	01:47-01:54	11 June	CTD5	7346N	1905E	277	EMCM	U,V,W,T	27	5.6	
6	02:19-	11 June	6	7348N	1905E	253	XBT	T,D	253	5.6	
7	02:34	11 June	7	7350N	1905E	224	XBT	T,D	224	5.6	
8	2:50	11 June	8	7352N	1905E	200	XBT	T,D	200	5.6	
9	3:05	11 June	9	7354N	1905E	179	XBT	T,D	179	5.6	
10	03:26-3:32	11 June	10	7356N	1905E	173	EMCM	U,V,W,T	27	5.1	
11	3:50	11 June	11	7358N	1905E	128	XBT	T,D	128	4.5	
12	4:11	11 June	12	7400N	1905E	125	XBT	T,D	125	3.6	
13	4:25	11 June	13	7402N	1904.8E	112	XBT	T,D	112	3.6	
14	4:40	11 June	14	7404N	1905E	102	XBT	T,D	102	3.6	
15	05:00-5:12	11 June	CTD15	7406N	1904.9E	74	EMCM	U,V,W,T	27	1.6	
15	5:15	11 June	15	7406N	1904.9E	74	XBT	T,D	74	1.6	
16	5:34	11 June	16	7408N	1904.5E	73	XBT	T,D	73	0.6	
17	5:49	11 June	17	7410N	1904.6E	66	XBT	T,D	66	0.6	
18	6:04	11 June	18	7412N	1904.7E	63	XBT	T,D	63	0.5	
19	6:22	11 June	19	7414N	1904.5E	59	XBT	T,D	59	0.5	
20	06:39-6:45	11 June	CTD20	7416N	1904E	56	EMCM	U,V,W,T	27	0.5	
20	6:47	11 June	20	7416N	1904E	56	XBT	T,D	56	0.5	
22A	9:30	12 June	XCTD1	7611.5N	1733.5E	324	XCTD	CTD	324	2.7	0.5 N.M. off ice edge
24A	14:15	12 June	XCTD2	7627.8N	1756.0E	258	XCTD	CTD	258		Very open drift ice
24B	15:23	12 June	XCTD3	7636.9N	1821.5E	182	XCTD	CTD	182		Very open drift ice
25B	22:55	12 June	XCTD4	7623.7N	1900.0E	264	XCTD	CTD	264	0.5	N.M. off ice edge
26A	23:34	12 June	XCTD5	7623.9N	1929.1E	277	XCTD	CTD	277		
27A	114	13 June	XCTD6	7624.3N	2029.6E	209	XCTD	CTD	209		
28A	2:55	13 June	XCTD7	7624.9N	2129.3E	245	XCTD	CTD	245		
29A	4:47	13 June	XCTD8	7622.4N	2230.0E	134	XCTD	CTD	134		
30A	6:33	13 June	XCTD9	7620.6N	2333.3E	87	XCTD	CTD	87		
32A	8:49	13 June	XCTD10	7618.45N	2430.0E	60	XCTD	CTD	60		Very open drift ice
41A	22:19	14 June	XCTD11	7804.8N	3416.9E	201	XCTD	CTD	201		Ice St1
41C	08.00-8:10	15 June	CTD41	7805.6N	3417.2E	214	EMCM	U,V,W,T	27		Ice St1
42B	14:00-14:10	15 June	CTD42	7807.8N	3417.2E	227	EMCM	U,V,W,T	27		Ice St1
42C	17:00-1710	15 June	CTD42	7808.8N	3418.4E	233	EMCM	U,V,W,T	27		Ice St1
42D	20:00-20:10	15 June	CTD42	7809.2N	3416.6E	231	EMCM	U,V,W,T	27		Ice St1
43A	23:00-2310	15 June	CTD43	7810.3N	3412.9E	206	EMCM	U,V,W,T	27		Ice St1
43B	02:00-2:10	16 June	CTD43	7811.3N	3412.5E	217	EMCM	U,V,W,T	27		Ice St1
43C	05:00-5:10	16 June	CTD43	7812.5N	3413.6E	226	EMCM	U,V,W,T	27		Ice St1
43E	08:00-8:10	16 June	CTD43	7812.4N	3411.6E	213	EMCM	U,V,W,T	27		Ice St1
43F	11:00-11:10	16 June	CTD43	7812.9N	34 07.4E	190	EMCM	U,V,W,T	27		Ice St1
44A	14:00-14:10	16 June	CTD44	7814.2N	34 06.8E	183	EMCM	U,V,W,T	27		Ice St1
49B	13:08	18 June	XCTD12	7802.77N	3406.98E	197	XCTD	CTD	197		Ice St1
52C	09:00-9:10	19 June	CTD52	7739.55N	3418.31E	180	EMCM	U,V,W,T	50		Ice St2A

52E	12:00-12:10	19 June	CTD52	7739.2N	3418.5E	193	EMCM	U,V,W,T	50	Ice St2A
52F	15:00-15:10	19 June	CTD52	7739.16N	3416.58E	188	EMCM	U,V,W,T	50	Ice St2A
52G	18:00-18:10	19 June	CTD52	7739.6N	3416.8E	185	EMCM	U,V,W,T	50	Ice St2A
52H	21:00-21:10	19 June	CTD52	7739.8N	3417.9E	177	EMCM	U,V,W,T	50	Ice St2A
53A	00:00-00:10	20 June	CTD53	7739.6N	3419.3E	177	EMCM	U,V,W,T	50	Ice St2A
53B	03:00-3:10	20 June	CTD53	7739.46N	3418.7E	181	EMCM	U,V,W,T	50	Ice St2A
53C	06:00-6:10	20 June	CTD53	7739.92N	3415.07E	169	EMCM	U,V,W,T	50	Ice St2A
53I	15:00-15:10	20 June	CTD53	7740.59N	3418.38E	169	EMCM	U,V,W,T	50	Ice St2B
54A	21:00-21:10	20 June	CTD54	7742.84N	3423.22E	168	EMCM	U,V,W,T	50	Ice St2B
54B	00:00-00:10	21 June	CTD54	7743.63N	3426.93E	169	EMCM	U,V,W,T	50	Ice St2B
54C	03:00-3:10	21 June	CTD54	7744.31N	3416.58E	166	EMCM	U,V.W,T	10	Ice St2B
54D	06:00-6:10	21 June	CTD54	7746.07N	3416.58E	168	EMCM	U,V,W,T	10	Ice St2B
54G	09:00-9:10	21 June	CTD54	7748.1N	3427.1E	167	EMCM	U,V,W,T	10	Ice St2B
54J	12:00-12:10	21 June	CTD54	7749.42N	3433.91E	167	EMCM	U,V,W,T	10	Ice St2B
54J	12:43	21 June	XCTD13	7749.41N	3435.75E	175	XCTD	CTD	175	Ice St2B
57C	12:00-12:10	22 June	CTD57	7730.34N	3438.89E	195	EMCM	U,V,W,T	50	Ice St3
57D	15:00-15:10	22 June	CTD57	7729.80N	3444.28E	191	EMCM	U,V,W,T	50	Ice St3
57G	18:00-18:10	22 June	CTD57	7731.48N	3445.56E	212	EMCM	U,V,W,T	50	Ice St3
57I	21:00-21:10	22 June	CTD57	7732.93N	3452.56E	202	EMCM	U,V,W,T	50	Ice St3
58A	00:00-00:10	23 June	CTD58	7735.19N	3444.94E	187	EMCM	U,V,W,T	50	Ice St3
58B	03:00-3:10	23 June	CTD58	7735.60N	3445.06E	189	EMCM	U,V,W,T	50	Ice St3
58C	06:00-6:10	23 June	CTD58	7736.63N	3446.93E	183	EMCM	U,V,W,T	50	Ice St3
58G	09:00-9:10	23 June	CTD58	7738.72N	3453.00E	175	EMCM	U,V,W,T	50	Ice St3
59B	12:00-12:10	23 June	CTD59	7738.80N	3454.17E	178	EMCM	U,V,W,T	50	Ice St3
59B	12:00	23 June	XCTD14	7738.80N	3454.17E	178	XCTD	CTD	178	Ice St3
59D	15:00-15:10	23 June	CTD59	7739.08N	3456.50E	184	EMCM	U,V.W,T	10	Ice St3
60F	09:00-9:10	24 June	CTD60	7655.53N	3405.66E	123	EMCM	U,V,W,T	50	Ice St4
60I	12:00-12:10	24 June	CTD60	7653.67N	3356.42E	125	EMCM	U,V,W,T	50	Ice St4
61B	15:00-15:10	24 June	CTD61	7652.69N	3341.36E	108	EMCM	U,V,W,T	50	Ice St4
61B	15:15	24 June	XCTD15	7652.73N	3341.65E	106	XCTD	CTD	106	Ice St4
63G	6:32	25 June	XCTD16	7743.70N	3159.11E	152	XCTD	CTD	152	
63I	11:20	25 June	63I	7719.77N	3124.86E	167	XBT	T,D	167	
64A	13:05	25 June	64A	7710.76N	3030.00E	196	XBT	T,D	196	
64B	15:00	25 June	64B	7702.21N	2930.00E	223	XBT	T,D	223	
65A	21:10	25 June	XCTD17	7713.73N	2859.59E	189	XCTD	CTD	189	
66E	8:47	26 June	66E	7749.25N	2830.00E	130	XBT	T,D	130	
66I	13:25	26 June	66I	7641.50N	2730.00E	122	XBT	T,D	122	
	14:48	26 June	29307	7638.91N	2630.00E	80	XBT	T,D	80	
	15:25	26 June	95009	7639.09N	2600.00E	60	XCTD	CTD	60	
	16:08	26 June	29308	7637.20N	2530.00E	32	XBT	T,D	32	Hopen
	22:42	26 June	29309	7623.31N	2500.00E	58	XBT	T,D	58	
	00:52	27 June	95010	7604.83N	2400.00E	67	XCTD	CTD	67	
	03:12	27 June	29310	7546.00N	2300.00E	61	XBT	T,D	61	
	05:20	27 June	95011	7521.67N	2200.00E	40	XCTD	CTD	40	
	07:45	27 June	29311	7456.96N	2100.00E	59	XBT	T,D	59	
	09:52	27 June	95012	7439.47N	2000.00E	66	XCTD	CTD	66	
	13:42	27 June	29312	7425.08N	1920.84E	36	XBT	T,D	36	Bear Island

5.2.3.2. Air-sea interactions of CO_2

PCO_2 Measurements of surface sea water

Method

Air samples equibrated with surface sea water were collected.

Sta	h gmt	Date	Code	Position	Depth (m)	Water temp.	Air temp.	Air flow (ml/min.)	Wind speed	Wind dir
42D	19:16	15 June	A059	7804.8N 3416.9E	231	-1.8	-2.3	0.75		
42D	19:30	15 June	A060	7804.8N 3416.9E	231	-1.8	-2.3	0.75		
46B	07:30	17 June	A061	7816.9N 3408.1E	180	-1.4	-1.1	0.7	7	150
46B	07:56	17 June	A063	7816.9N 3408.1E	180	-1.4	-1.1	0.75	7	150
46B	08:07	17 June	A064	7816.9N 3408.1E	180	-1.4	-1.1	0.75	7	150
52D	11:41	19 June	A065	7739.2N 3418.5E	193	-1.1	-2.9	0.8		
52E	12:17	19 June	A066	7739.2N 3418.5E	193	-1.4	-2.9	0.75		
53G	12:05	20 June	A067	7740.3N 3417.7E	168	-1.1	-1.5	0.75		
53G	12:18	20 June	A071	7740.3N 3417.7E	168	-1.3	-1.5	0.78		
57C	13:30	22 June	A075	7730.0N 3438.9E	197	-1.4	0.4	0.75		
57C	13:40	22 June	A076	7730.0N 3438.9E	197	-1.4	0.4	0.75		
60I	10:58	24 June	A077	7653.6N 3357.2E	120	0.8	2.2	0.75	14	270
60I	11:11	24 June	A078	7653.6N 3357.2E	120	0.8	2.2	0.75	14	270
68A	12:46	27 June	A079	7424.3N 1918.1E	37	2.2	4.8	0.75	8	0
68A	13:02	27 June	A080	7424.3N 1918.1E	37	2.2	4.8	0.75	8	0

Measurements of dissolved inorganic carbon content

Method:

Water samples were collected by a Niskin sampler.

Sst	h gmt	Date	Code	Position	Depth (m)	Sampl. depth	Water temp. (°C)	Air temp. (°C)	Ice St.
23B	11:00	12 June	01	76 11.6N 17 33.9E	324	0	2.7		
23B	11:10	12 June	06	76 11.6N 17 33.9E	324	50			
23B	11:15	12 June	02	76 11.6N 17 33.9E	324	100			
23B	11:55	12 June	03	76 11.6N 17 33.9E	324	200	-1.1		
23B	12:16	12 June	04	76 11.6N 17 33.9E	324	300	-1.4		
31A	07:29	13 June	05	76 19.7N 23 59.6E	67	20	-0.4	2.5	
41A	22:10	14 June	07	78 04.8N 34 16.9E	201	150	0.3		
41A	22:10	14 June	08	78 04.8N 34 16.9E	201	5	-1.1		
42B	14:40	15 June	09	78 07.8N 34 17.2E	227	200	0.9		
42B	14:47	15 June	10	78 07.8N 34 17.2E	227	5	-1.2		
42B	14:15	15 June	11	78 07.8N 34 17.2E	227	2	-1.7		
42D	19:20	15 June	12	78 09.2N 34 16.6E	231	2	-1.8		
43F	11:38	16 June	13	78 12.9N 34 07.4E	190	10	-1.3		
46B	07:37	17 June	14	78 16.9N 34 08.1E	178	2	-1.4		
46B	07:58	17 June	15	78 16.9N 34 08.1E	178	2	-1.4		

46B	08:13	17 June	16	78 16.9N	34 08.1E	178	2	-1.4		
49D	13:57	18 June	17	78 02.8N	34 07.0E	197	10	-0.3		Ice St1
49D	14:00	18 June	18	78 02.8N	34 07.0E	197	50	-1.1	-1.1	Ice St1
49D	14:05	18 June	19	78 02.8N	34 07.0E	197	100	-1.2		Ice St1
49D	14:10	18 June	20	78 02.8N	34 07.0E	197	200	-0.3		Ice St1
49D	14:15	18 June	21	78 02.8N	34 07.0E	197	0	-1.0		Ice St1
52D	11:40	19 June	22	77 39.2N	34 18.6E	192	2	-1.1	-2.9	Ice St2A
52E	12:15	19 June	23	77 39.2N	34 18.6E	192	2	-1.4	-2.9	Ice St2A
52E	12:32	19 June	24	77 39.2N	34 18.6E	192	10	-0.9		Ice St2A
52E	12:37	19 June	25	77 39.2N	34 18.6E	192	100	-1.4		Ice St2A
52E	12:58	19 June	76	77 39.2N	34 18.6E	192	190	-0.1	-1.9	Ice St2A
52E	13:34	19 June	77	77 39.2N	34 18.6E	192	150	0.0		Ice St2A
52E	12:30	19 June	78	77 39.2N	34 18.6E	192	0			Ice St2A
52E	12:30	19 June	79	77 39.2N	34 18.6E	192	10			Ice St2A
52E	12:30	19 June	80	77 39.2N	34 18.6E	192	20			Ice St2A
52E	12:15	19 June	81	77 39.2N	34 18.6E	192	50			Ice St2A
52H	21:00	19 June	82	77 39.8N	34 18.5E	176	10			Ice St2A
53G	12:00	20 June	83	77 40.4N	34 18.0E	172	2	-1.1	-1.5	Ice St2A
53G	12:21	20 June	84	77 40.4N	34 18.0E	172	2	-1.3	-1.5	Ice St2B
53I	15:21	20 June	85	77 40.7N	34 18.4E	173	50	-0.7	-0.7	Ice St2B
53I	15:28	20 June	86	77 40.7N	34 18.4E	173	100	-0.9		Ice St2B
54H	14:25	21 June	87	77 49.4N	34 34.9E	163	75	-1.4		
54H	14:32	21 June	88	77 49.4N	34 34.9E	163	150	0.3		
54H	14:35	21 June	89	77 49.4N	34 34.9E	163	0	-1.2		
57C	12:20	22 June	90	77 30.3N	34 39.3E	198	150	-0.1		Ice St3
57C	12:26	22 June	91	77 30.3N	34 39.3E	198	10	-1.4		Ice St3
57C	12:30	22 June	92	77 30.3N	34 39.3E	198	100	-0.9		Ice St3
57C	12:35	22 June	93	77 30.3N	34 39.3E	198	50	-1.6		Ice St3
57C	13:30	22 June	94	77 30.3N	34 39.3E	198	2	-1.4		Ice St3
57C	13:43	22 June	95	77 30.3N	34 39.3E	198	2	-1.4		Ice St3
59B	12:20	23 June	96	77 39.0N	34 55.1E	183	150	0.8		
59B	12:23	23 June	97	77 39.0N	34 55.1E	183	10	-0.7		
59B	12:27	23 June	98	77 39.0N	34 55.1E	183	100	0.2		
59D	15:20	23 June	99	77 39.2N	34 57.0E	181	10	-1.2	2.6	
60F	09:18	24 June	100	76 55.6N	34 05.7E	126	100	-1.2		Ice St4
60F	09:25	24 June	101	76 55.6N	34 05.7E	126	10	0.5		Ice St4
60I	11:00	24 June	102	76 53.6N	33 57.2E	125	2	0.8	2.2	Ice St4
60I	11:15	24 June	103	76 53.6N	33 57.2E	126	2	0.8	2.2	Ice St4
61B	15:18	24 June	112	76 52.7N	33 41.7E	106	35	0.8		
65C	10:05	25 June	113	7712.4N	28 58.2E	193	10	-0.3	-0.5	
65C	10:05	25 June	114	7712.4N	28 58.2E	193	150	-1.3	-0.5	
65C	10:05	25 June	115	7712.4N	28 58.2E	193	50	-0.2	-0.5	
68A	12:45	27 June	116	7424.3N	19 18.1E	37	2	2.2	4.8	Bear I.
68A	13:05	27 June	117	7424.3N	19 18.1E	37	2	2.2	4.8	Bear I.

5.2.3.3 Atmospheric boundary layer measurements over sea ice

Method

Turbulent fluxes of momentum and heat over sea ice were measured for different ice conditions in the marginal ice zone from consolidated ice to pack ice. A

3-D ultrasonic anemometer/thermometer (Kaijo Denki Co., Ltd. Model WAT395) was installed at the side of the R/V 'Lance' at the height of 7.3 m from the water level. The 3-D winds (X, Y, W) and temperature (T) were recorded at 20 Hz sampling interval over 15 min duration. The eddy correlation method will be used to calculate momentum and heat fluxes.

Sta	h gmt	Date	Code	Position	Depth	Samples	Range X Y W (m/s)	Range T (°C)	Ice St.
43F	13:30-13:45	16 June	Ba01	78 12.9/34 07.4	190	X,Y,W,T	2.5 5 2	-4	1
44B	14:30-14:45	16 June	Ba01	78 14.2/34 06.8	183	X,Y,W,T	5 5 2	-4	1
44C	15:30-15:45	16 June	Ba01	78 14.7/34 07.7	188	X,Y,W,T	5 5 2	-4	1
44C	16:30-16:45	16 June	Ba01	78 14.7/34 07.7	188	X,Y,W,T	5 5 2	-4	1
44D	17:30-17:45	16 June	Ba01	78 15.0/34 08.7	180	X,Y,W,T	5 5 2	-4	1
45A	18:30-18:45	16 June	Ba01	78 15.1/34 09.2	181	X,Y,W,T	5 5 2	-4	1
45A	20:30-20:45	16 June	Ba02	78 15.1/34 09.2	181	X,Y,W,T	5 5 2	-4	1
46A	22:30-22:45	16 June	Ba02	78 15.5/34 06.4	180	X,Y,W,T	5 5 2	-4	1
46A	00:30-00:45	17 June	Ba02	78 15.5/34 06.4	180	X,Y,W,T	5 5 2	-4	1
46A	02:30-02:45	17 June	Ba02	78 15.5/34 06.4	180	X,Y,W,T	5 5 2	-4	1
46A	04:30-04:45	17 June	Ba02	78 15.5/34 06.4	180	X,Y,W,T	5 5 2	-4	1
46A	06:30-06:45	17 June	Ba02	78 15.5/34 06.4	180	X,Y,W,T	5 5 2	-4	1
46A	08:30-08:45	17 June	Ba02	78 15.5/34 06.4	180	X,Y,W,T	5 5 2	-4	1
53H	13:30-13:45	20 June	Ba05	77 40.0/34 18.4	188	X,Y,W,T	5 5 2	-5	2
53H	14:00-14:15	20 June	Ba05	77 40.0/34 18.4	188	X,Y,W,T	5 5 2	-5	2
53H	14:30-14:45	20 June	Ba05	77 40.0/34 18.4	188	X,Y,W,T	5 5 2	-5	2
53I	15:00-15:15	20 June	Ba05	77 40.5/34 18.3	166	X,Y,W,T	5 5 2	-5	2
53I	15:30-15:45	20 June	Ba05	77 40.5/34 18.3	166	X,Y,W,T	5 5 2	-5	2
53J	16:00-16:15	20 June	Ba05	77 41.2/34 18.3	169	X,Y,W,T	5 5 2	-5	2
53K	17:30-17:45	20 June	Ba06	77 41.2/34 18.3	169	X,Y,W,T	10 10 5	-4	2
53K	19:30-19:45	20 June	Ba06	77 41.2/34 18.3	169	X,Y,W,T	10 10 5	-4	2
54A	21:30-21:45	20 June	Ba06	77 42.7/34 22.9	167	X,Y,W,T	10 10 5	-4	2
54A	23:30-23:45	20 June	Ba06	77 42.7/34 22.9	167	X,Y,W,T	10 10 5	-4	2
54B	01:30-01:45	21 June	Ba06	77 43.6/34 27.0	170	X,Y,W,T	10 10 5	-4	2
54C	03:30-03:45	21 June	Ba06	77 44.3/34 25.8	167	X,Y,W,T	10 10 5	-4	2
54C	04:30-04:45	21 June	Ba07	77 44.3/34 25.8	167	X,Y,W,T	10 10 5	-4	2
54D	06:30-06:45	21 June	Ba07	77 45.9/34 23.3	167	X,Y,W,T	10 10 5	-2	2
54E	08:30-08:45	21 June	Ba07	77 47.4/34 25.0	167	X,Y,W,T	10 10 5	0	2
54H	10:30-10:45	21 June	Ba07	77 48.4/34 28.1	167	X,Y,W,T	10 10 5	2	2
54J	12:30-12:45	21 June	Ba07	77 49.4/34 57.7	175	X,Y,W,T	10 10 5	2	2
55A	14:30-14:45	21 June	Ba07	77 49.3/34 38.7	175	X,Y,W,T	10 10 5	2	2

5.2.3.4. Sea-ice core sampling

Method

A CRREL ice corer was used to take sea-ice cores from different ice floes. Two ice cores were obtained at each Ice Station. 1) One ice core was cut at every 10 cm from the bottom of the core and melted out before measuring the salinity. The profile of salinity through the whole ice core was obtained. Further analysis of molton ice core samples will be made in Japan to obtain profiles of nutrient and biomass contents in the ice. 2) Another ice core was sent to Japan under freezing condition. Analysis of ice crystallography (sea-ice structure) and brine ratio in the ice core will be made.

St	h gmt	Date	Core code	Position	Depth	Snow layer (cm)	Core thickness (m)	Remarks	Ice St.
41A	12:00	15 June	1-4	78 04.8N 34 16.9E	201		1.48	Ice structure, brine ratio	1
41A	12:00	15 June	1-5	78 04.8N 34 16.9E	201	10-11	1.32	Nutrient, biomass	1
52F	18:18	19 June	1	77 39.6N 34 16.9E		2.5-4.0	1.48	Ice structure, brine ratio	2
52F	18:18	19 June	2	77 39.6N 34 16.9E		2.5-4.0	1.34	Nutrient, biomass	2
59C	12:54	23 June	1	77 39.2N 34 56.4E	178	2.5-3.5	0.72	Ice structure, brine ratio	3
59C	12:54	23 June	2	77 39.2N 34 56.4E	178	2.5-3.5	0.79	Nutrient, biomass	3

Suggestion to the program

*ICE STATION*s are very useful to both physical and biological approaches of sea ice studies. It is necessary to work together with sea ice physicists and biologists to understand physical and biological processes in the sea ice and its underlying water column. Especially the ice-water interface is a very delicate and important part. The sampling program at *ICE STATION*s should be repeated at the next cruise. In addition, sampling techniques of ice cores should be improved in order to safely keep the frazile part at the bottom of the ice core.

Improvement of ship facilities and equipment

In order to carry out oceanographic program properly, new winches, CTD (e.g., SeaBird) and ADCP (Acoustic Doppler Current Profiler) will be ideal to be equipped to R/V 'Lance'.

A data recording system to the computer would be improved to input such information as position, depth, general meteorological data (wind speed and direction, air/water temperatures, humidity and barometric pressure), pitching and rolling of the ship to the computer on line. This information is necessary for oceanographic, atmospheric boundary layer and air-sea ice interactions programs.

Real time/near real time information on ice conditions, distribution, and ice floe size via satellite would be very useful especially to decide *ICE STATION*s.

For sea ice studies/on *ICE STATIONS*:

-Gear to make ice holes are necessary especially for floes more than 2 m thick.
-Wind shelters, such as a tent/parcall would be helpful to work on the ice, especially in the case of staying on the ice for several hours.
-Electric power supply or generators would be useful.
-Rubber boat, skidoo (snow mobile), sleigh and helicopter will be required for transporting men and materials to the *ICE STATION*s.
-Gear for ice core sampling should be improved to be able to securely sample the entire ice core from an ice floe.

5.3. Ecotoxicology

by Lars Kleivane, Katrine Borgaa and Georg Bangjord

Objectives

1) To investigate the occurrence of substantial bioaccumulation and biomagnification of persistent organic pollutants in Arctic marine food webs.

2) Characterize of seal blubber and mobilisation of OC's from blubber depot during moult.

Background

Global dispersal of organochlorines (OC's) such as the industrial chemical polychlorinated biphenyls (PCB) and certain organochlorine pesticides (DDT, HCH, HCB, chlordane, etc.) have been described in a number of studies in remote areas such as the Arctic. The lipophilic nature and persistence of these pollutants contribute to their high bioaccumulave potential and their biomagnification in nature. Especially top predators of marine food webs (odontocetes, phocides, polar bear (*Ursus maritimus*) and Arctic foxes (*Alopex lagopus)*) are exposed to high organochlorine contamination. The surprisingly high levels of PCB's found in Arctic fauna, especially in the polar bear and recently also in the Glaucous gull (*Larus hyperboreus*), is interesting from a ecotoxicological point of view.

Sampling program

During the ICE-BAR 95 survey to the Bjørnøy area, along the ice edge and along an ice transect from fast ice to open waters at 3430 E, the main objectives was to assemble animals from different trophic levels; (ice algae, different zooplankton (copepods, euphasids, amphipods), crabs (*Hyas* sp), polar cod (*Boreogadus saida*), seabirds Glaucous gull (*Larus hyperboreus*), Kittiwake (*Rissa tridactyla*), Brünnich's guillemot (*Uria lomvi*), Black guillemot (*Cepphus grylle*), Ringed seal (*Phoca hispida*) and Harp seal (*Phoca groenlandica*). Projects involved are "Bioaccumulation of POPs in Arctic Marine Food Chains" (Burkow and Gabrielsen), Arctic Monitoring Assessment Program (Severinsen), Dr. scient thesis (xx), Cand. scient thesis (Borgaa), Arctic Veterinary Institute (Tryland), Veterinary Institute (Kleivane). Seal stomachs will be analysed at Fiskeriforskning (Nilsen). See sample description in table 5.3.1.

Table 5.3.1

Species	**Bear Island**	**Ice edge**
Ringed seal (*Phoca hispida*)	0**	12
Harp seal (*Phoca groenlandica*)		10*
Glaucous gull (*Larus hyperboreus*)	15	15*
Kittiwake (*Rissa tridactyla*)	10	10
Brünnich's guillemots (*Uria lomvi*)		10
Black guillemots (*Cepphus grylle*)		10
Crabs (*Hyas* sp.)	40	
Polar cod (*Boreogadus saida*)	0***	43
Atlantic cod (*Gadus morhua*)	36	
Zooplankton A	7	10
Zooplankton B		
Zooplankton C	1	4
Zooplankton D	6	14
Ice fauna		4
Ice alga		6

* were collected in the Hopen area

** Ringed seals were supposed to have been collected from the Storfjord area, but difficult ice conditions made this impossible.

*** not obtainable

The zooplankton material was collected with Tucker trawl (TT), pelagic trawl and WP2 (plankton net); the TT and the pelagic trawl being the most successful. The samples were frozen and stored in glass jars

Zooplankton A is material from the 1.0 mm sieve, mainly copepods,euphausiid larvae and phytoplankton.

Zooplankton B was not collected because the next size 5.6 mm sieve was too coarse to collect the B fraction.

Zooplankton C is *Themisto* from all the sieves, depending on size.

Zooplankton D is *Euphasiids* spp. from all the sieves, depending on size (coarsest sieve was 8 mm).

The ice fauna, *Gammarus wilkitzkii* and *Onisimus* spp. were collected by the divers.

The ice algae, mainly *Melosira arctica* with epiphytes, was collected by the divers

5.4 Journalistic work

by Hinrich Bäsemann

Filming in the Arctic

Scientific work and results need to be translated to the public so they can easily be understood by everyone. That could be done either by words or by pictures or both. On this cruise mainly the work not the results can be documented. Many problems can only be solved in the lab. So there will be a follow up of my work later on land. This ICE-BAR 1995 is of great interest for the public because it shows the ecology in of the Barents Sea, an area were climate, fish and oil resources are important. My work will be presented to Norwegian, German and Swiss media: news papers, radio and TV. One feature on 'Lance' in the ice has already been published by the German News Agency DPA (Deutsche PresseAgentur).

I intended to film the cruise and to take fotos as well as talking to the scientists and make interviews. They explained their scientific program, why they were here and why they believe their work is important. There were many technical problems on the ship in handling TV and foto equipment: weather with wind and low temperature, vibration and noise of the ship. But most of the time I had good conditions on the ship and on the ice.

During the cruise I documented most of the scientific work, although this means not that it is a complete diary; it gives just an impression of what is done. Much of the scientific work is repeated at different stations, mostly I just covered a situation once

Interviews:
Cruise leader Stig Falk-Petersen
Captain Jan Jansen
Lars Kleivane
Haakon Hop
Kunio Shirasawa
Georg Bangjord
Filmed and photographed situations (not complete):
scientific meetings
oceanography
bottom sampling
diving activities
plankton and fish trawls
labwork
seal and bird hunters
'Lance' in the ice
birds around the ship
polar bears
ice conditions

Press features

Feature for DPA (German Press Agency), 22.6.95

Sommeranfang im Eis Auf Forschungsfahrt in der Arktis von dpaMitabeiter Hinrich Bäsemann Hamburg (dpa) Sommeranfang auf 77 Grad Nord und 34 Grad Ost. Von der Sonne keine Spur. Dichter Nebel liegt über dem Eis. Mühselig bahnt sich das norwegische Forschungsschiff "Lance" seinen Weg durch die fast meterdicken Schollen. Krachend schiebt der kräftige Bug das Eis zur Seite. Besatzung und Wissenschaftler werden immer wieder durchgeschüttelt, wenn das Schiff auf einen besonders dicken Packeisrücken läuft. Seit dem 9. Juni ist die "Lance" für das Norwegische Polarinstitut in der Barents See im Dienste der Umweltforschung unterwegs. Eine internationale Forschergruppe aus Norwegen, Russland, Japan und Deutschland (Alfred Wegener Institut) will den

Weg von Schwermetallen und chlororganischen Verbindungen durch die Nahrunsgkette verfolgen. Seit einigen Jahren schon ist bekannt, dass sich im Speck der Eisbären ausserordentlich hohe Gahalte der verschiedensten Umweltgifte befinden. Pflanzen und Insektengifte haben in den grossen Raubtieren der Arktis so hohe Werte erreicht, dass Wissenschaftler Störungen im Verhalten und bei der Fortpflanzung nicht mehr ausschliessen wollen. Und in der Muttermilch von Eskimofrauen die ebenfalls am Ende der Nahrungskette stehen wurden so hohe Gehalte von Pestiziden nachgewiesen, dass sie eigentlich für den menschlichen Genuss verboten werden müsste. Woher kommen die Schadstoffe? "Niemand weiss das so genau", bedauert Stig FalkPetersen vom Norwegischen Polarinstitut in Tromsø. Er ist Planktonspezialist und gleichzeitig Fahrtleiter auf der dreiwöchigen Expedition. Ausser ihm befinden sich noch Ozeanographen, Chemiker und Taucher auf dem geräumigen Forschungsschiff. Die Schadstoffe werden wahrscheinlich auf zwei Wegen in die Barents See eingetragen. "Zum einen kommen sie durch die Luft aus amerikanischen und europäischen Quellen", erläutert FalkPetersen. "Der andere Weg sind die grossen sibirischen Flüsse." Die "Lance" hat ihre Probenserie bei der Bäreninsel und südlich von Spitzbergen begonnen. Danach ging die Fahrt weiter zur Insel Hopen und schliesslich ins Packeis. Zwischen Spitzbergen und Franz Josef Land, zwischen dem 34. und 35. östlichen Längengrad drang sie bis fast 78 Grad und 25 Minuten nördlicher Breite vor. Entlang dieser Linie wurden die verschiedensten Lebewesen beginnend beim winzigen Plankton über handlange Polardorsche bis den Robben und Vögeln untersucht. Grellrot gekleidete Taucher liessen sich von Wassertemperaturen von minus 1.8 Grad nicht schrecken und schwammen fast täglich unter die Eisschollen. Ihre Aufgabe war es, die hier zur Zeit in grossen Mengen wachsenden Algen zu beproben. Ausserdem fingen sie winzige Eisflohkrebse, die wiederum den Polardorschen als Nahrung dienen. Diese Organismen bilden die Basis der nur kurzen und wenig komplizierten Nahrungskette in der Arktis. Deswegen können die Wissenschaftler in ihr relativ einfach den Weg von Schwermetallen und chlororganischen Verbindungen verfolgen. Die Untersuchung der Proben werden in den kommenden Wochen in zahlreichen europäischen und japanischen Labors erfolgen. Die Arbeit der Forscher im Eis ist nicht ungefährlich. Wenn die "Lance" auf jeder Station zwei bis drei Tage an der selben Stelle liegt, dann lockt der Küchenduft immer wieder Eisbären an. Auch die Robbenjäger für die Forschung werden ca. 15 Ringelrobben erlegt tragen das Ihrige dazu bei, dass die weissen Pelztiere mit der präzisen Spürnase den Weg zum Schiff finden. Wegen der Raubtiere geht keine Forschergruppe unbewaffnet aufs Eis. Bislang ist alles gut gegangen. Und die Eisbären sind eine willkommene Unterbrechung des Forscheralltages. Immer wieder werden welche angetroffen, die gerade eine Robbe erbeutet haben. Dann können sie unglaubliche Mengen an Fleisch in sich hineinschlingen. Eine 100 000Kalorienmahlzeit ist die Regel. Bis zur nächsten Fressorgie kann es aber auch Wochen dauern. In der Zwischenzeit wird der angesetzte Speck verbraucht und dabei alle darin enthaltenen Schadstoffe freigesetzt. Da der Bär sie somit schubweise erhält, ist er besonders gefährdet. In diesen Tagen wendet sich der Bug der "Lance" allmählich gen Süden in wärmere Gefilde. Gefriertruhen, Probenbehälter und Computerdisketten sind gefüllt mit einer Unmenge von Daten. Aber auch sie werden die Kenntnisse über die Barents See kaum wesentlich erweitern, denn dieses 1,4 Millionen Quadratkilometer grosse arktische Meer nördlich Skandinaviens gleicht auch heute noch einem der berühmten weissen Fleck auch der ForschungsLandkarte.

Feature for DPA (German Press Agency), 29.6.95

Science for children

Das abenteuerliche Leben des Eisflohkrebses Wilkitzkii

Wilkitzkii lebt im Eis der Arktis, ganz weit im Norden, fast am Nordpol.

Wilkitzkii ist ein Eisflohkrebs und heisst tatsächlich so mit Nachnamen; sein Vorname lautet Gammarus. Das ist ein wissenschaftlicher Name. Wilktzkii wird drei bis vier Zentimeter lang und über vier Jahre alt. Er besitzt eine langgestreckte Form und viele kleine Beinchen, mit denen er durch sein Reich schwimmt. An seinem Köpfchen befinden sich zwei kugelige Facettenaugen und vier Antennen, die ihm zur Orientierung dienen.

Kannst Du Dir vorstellen, dass es im Eis gemütlich sein kann? Für Wilkitzkii ganz bestimmt. Hier ist er sicher vor seinen Feinden, die ihn zum Fressen gern haben. Deswegen sieht er Robben und Vögel gar nicht gern in seiner Nähe. Und darum hat sich Wilkitzkii eine Höhle zum Verstecken gesucht. Die gleiche Idee hatten auch andere Krebschen. Bei bis 2000 einzelnen Tieren auf einem Quadratmeter kann es da ganz schön eng werden.

Eine Höhle im Eis zu finden, das ist gar nicht so schwer, denn da wimmelt es nur so von Löchern, Rissen und Spalten. Sicherlich weisst Du noch, wie das Eis ausgesehen hat, auf dem Du im

Winter Schlittschuh gelaufen bist. Wenn kein Schnee drauf lag, dann war dies Eis glasklar und bis auf ein paar Luftblasen völlig dicht. Da gab es keine Höhlen oder andere Verstecke. Das Eis, in dem Wilktzkii lebt, sieht aber nun ganz anders aus.

Es hat sich im langen und bitterkalten Winter aus dem Salzwasser des Ozeans gebildet. Wenn Salzwasser gefriert, dann muss es irgendwie das Salz loswerden. Denn, wie Du weisst, wenn man im Winter Salz auf die Gehwege streut, dann schmlizt das Eis. Das Meersalz im Eis sammelt sich in einer ungeheuer starken Salzbrühe, man nennt das auch Salzlake. Diese Lake hinterlässt, wenn sie aus dem Eis rinnt, unzählige Hohlräume im Eis, in allen Grössen, von der Murmel bis zum Fussball, auch kleine Kanälchen und Tunnel gehören dazu.

Ausser Wilkitzkii leben noch viele andere Tiere und Pflanzen im Eis. Da gibt es hübsche Braunalgen, die wie lange Bärte von der Unterseite der Eisschollen ins Meer hängen. Wenn ein Schiff durch das Eismeer fährt und dabei die Schollen umdreht, dann sieht das aus wie eine braune Wiese im Herbst. Die meisten Lebewesen sind allerdings so winzig, dass Du sie nur unter dem Mikroskop sehen kannst. Dazu gehören weitere einzellige Algen und noch winzigere Krebse als Wilkitzkii. Eigentlich lebt Wilkitzkii hier wie im Paradies. Überall schwimmt Essbares herum, er braucht es nur mit seinen kleinen Klauen zu greifen und zum Mund führen. Aber Wilkitzkii muss auch aufpassen, dass er nicht selbst gefressen wird. Im Eis leben nämlich auch kleine Fischchen, die man Polardorsche nennt. Bei diesen Fischchen stehen Wilkitzkii und besonders seine Freunde, die anderen Eisflohkrebse, ganz oben auf der Speisekarte.

Auch gibt es viele Vögel, die im Eis nach Nahrung suchen. Grosse Schwärme von verschiedenen Möwen und Lummen tauchen immer wieder unvermutet vor Wilktzkiis Unterschlupf auf. Gelegentlich erscheint sogar ein grosser Schatten, dann muss Wilktzkii besonders schnell sein. Denn diesmal ist eine wendige Robbe aufgetaucht, die einen Leckerbissen wie Wilkitzkii nicht verschmähen würde.

Die grösste Gefahr droht Wilkitzkii im Frühsommer, dann nämlich, wenn das Eis am Rand des arktischen Packeises schmilzt. Wo soll er sich dann verstecken? Aber er weiss sich zu helfen, er lässt sich einfach auf den Meeresboden sinken. Da ist es dunkel und er kann sich leicht wieder verstecken. Aber auf dem Weg zum Boden lauern wieder viele Feinde: grosse Fische und tauchende Vögel. Hat Wilkitzkii aber einmal eine Zuflucht am Meeresgrunde gefunden, dann kann er einigermassen sicher sein. Im nächsten Winter steigt er wieder an die Oberfläche und sucht sich eine neue Höhle im Eis.

Feature for NTB

Forskning i drivisen i Barentshavet.

Stig Falk-Petersen (toktleder) og Haakon Hop (vit. program)

Norsk Polarinstitutt, Tromsø, 30 juni, 1995

Forskningsskipet 'Lance' har nettopp returnert fra et vellykket tokt til drivisen i området mellom Svalbard og Frans Josef Land. Toktet markerer starten på et flerårig, multidisiplinært, forskningsprogram (ICE-BAR) som skal studere de økologiske prosessene i iskantsonen i det nordlige Barentshav. Foruten biologer, er isfysikere, oseanografer og økotoksikologer engasjert. Programmet omfatter studier av isdynamikk, havstrømmer, is tilknyttet næringsnett, og akkumulasjon av miljøgifter via dette næringsnettet til topp predatorer som sel, isbjørn og polarmåker.

Programmet ledes av Norsk Polarinstitutt (NP), Tromsø, og har deltakere fra Universitetet i Hokkaido, Japan, Arktisk og Antarktisk Institutt i St. Petersburg, Russland, Alfred Wegener Institutt for Polar og Havforskning, Tyskland, og flere norske Universiteter og Institutter. Toktet er det første som NP gjennomfører med eget forskningsskip ettersom instituttet overtok rederiansvaret for 'Lance' tidligere i år.

Isbjørn

Under toktet ble det observert mer enn 40 isbjørn. På strekningen fra Hopen til 35°Ø så vi spesielt mange isbjørn som var opptatt med å fortære grønlandssel. Senere på toktet hadde vi på et tidspunkt fem isbjørn rundt båten som ivrige observatører til forskningen, men som også representerte en viss fare. Spesielt følte dykkerne seg ikke så trygge de ligner jo litt på grønlandssel selv om de hadde godt bevæpnede linemenn oppe på isen.

Fra drivisen til åpent hav

Fire hovedstasjoner fra 78°20'N, langt inne i drivisen, til åpent farvann på 77°N ble studert inngående. På den første stasjonen inne i drivisen fortøyde vi til et mer enn 5 km^2 stort isflak, som fortonet seg som fastis. Her var det da også en del ringsel eller snadd, og det ble dessuten observert 13 arter av sjøfugl. Mange dyre og plantearter befinner seg imidlertid i og under isen eller i vannsøylen, og det var her mesteparten av forskningsinnsatsen ble konsentrert.

Dyrelivet i og under isen

Dyre og plantelivet under isen ble undersøkt av dykkere. Havis er for det meste meget ujevn på undersiden, i motsetning til is på ferskvann som er flat som en pannekake også på undersiden. Det finnes ofte store isgrotter, blokker, hull og saltkanaler. Isen er dekket av et brungult lag av isalger, og i beskyttede lokaliteter kan en finne 3-4 meter lange tråder av isalgen *Mellosira arctica* som ser ut som tykt, flagrende hår i vannstrømmen. Dessuten bor det fire arter amfipoder (rekelignende krepsdyr) i opp-ned samfunnet under isen. Noen av disse beiter på isalgene, mens den farlige predatoren med det vanskelige navnet *Gammarus wilkitzkii* sitter inne i saltkanalene og venter på et bytte. Dessuten svømmer det polartosk inne i hulrom og kanaler i isen. Disse krepsdyrene og polartorsken utgjør den viktige føden til sel og sjøfuglene i området. I det hele tatt er iskantsonen et produktivt område som kan produsere mat nok til store bestander av sjøfugl, sel og isbjørn.

Miljøgifter

Det ble tatt prøver av nesten hele det marine næringsnettet: ringsel og grønlandssel, sjøfugl, polartorsk, krepsdyr og alger under isen og i vannsøylen, samt bunnfauna. Disse prøvene vil bli analysert for nivåer av miljøgifter (PCB'er og andre organiske klorforbindelser). Disse forbindelsene er blir lagret i lipider (fett og spekk) som er meget viktige i arktiske næringskjeder som opplagsnæring og isolasjon mot kulde. Lipider lages av algene, of transporteres opp gjennom næringskjedene forholdsvis raskt (ca. 6 måneder fra plankton til fisk), men det gjør at også miljøgiftene raskt kan bli oppkonsentrert i de øvre delene av de marine næringskjedene. Spesielt er det blitt funnet høye nivåer av miljøgifter i spekk hos isbjørn i området rundt Bjørnøya. Det ble derfor også samlet inn prøver fra næringsnettet i dette området under toktet.

Resultater

Prøvene vil bli analysert ved laboratorier i Japan, Tyskland, Russland og Norge og resultatene vil være klare i løpet av våren 1996. Det planlegges et nytt økologisk forskningstokt med 'Lance' i 1996, og denne gang kan vi forhåpentlig legge ruten lenger øst mot Frans Josef Land.

5.5 Evaluation of the ICE-BAR 1995 cruise and multidiciplinary research programme

by Haakon Hop and Stig Falk-Petersen

The planning of the cruise was effective, but started out too late. The main reason for this was that Haakon and Stig were recently hired, and this was also the first cruise with the R/V 'Lance' after it had been taken over by the Norwegian Polar Institute (NP). Arctic marine biological research on lower and intermediate trophic levels was also a new research area for the Institute, and this was the first time a true multidiciplinary international marine ecological programme was attempted by NP. Considering these starting conditions this first cruise was indeed successful.

In the planning phase much time had to be spent organising logistics. The Material Management Division at NP (Jan Erling Haugland, Kristen Fossan and John E. Guldahl) was helpful, but it became readily apparent that the Division lacked experience when it came to arranging sampling gear and equipment for this type of marine ecological research cruises. It has been expressed by the Material Management Division that an improvement for the logistics would be that the cruise planning starts earlier, and that equipment requests are in on time.

The multidiciplinary scientific programme was discussed with all participants during the first few days of the cruise, and a well formulated and thorough sampling program was designed. Some of the participants also presented their research backgrounds during the first few days of the cruise, which was very informative. We started out by having meetings every evening, but this became difficult when the work load increased at the sampling stations inside the ice-zone. However, the communication between cruise members, and with the ship's crew, is very important to avoid conflicts, and in future cruises it is recommended to have daily meetings at a set time regardless the work schedule. The plans of the next day should be posted so that all participants know what is going on, and changes in plans should also be posted so that everybody is informed about these. There were some problems about change of plans on this cruise that was not communicated to all participants.

The leaders of the different groups need to thoroughly inform their technicians and students on what is expected and about the proper sampling design. There needs to be a leader for each functional sampling group, who can make decisions about what to do, also if plans have to be changed. This is particularly important when the scientific leader for the group is not present on board. This year, some of the problems regarding the sampling programme for the ecotox group could have been avoided if the participants had had cleared out this with their leader in advance. In a multidiciplinary cruise there will always be compromises, and it is important that each interest group is somewhat flexible. Some of the conflicts on this cruise were mainly because of the different needs regarding sampling. Typically, the ecotox group needed more time at each station to sample seals and sea birds, whereas the oceanographers were eager to move on after one day at a sampling station.

The individual tasks in a multidiciplinary sampling programme should be thoroughly discussed, and everybody should know their place and time before moving onto the ice. To perform true multidiciplinary work it is also important to agree on a sampling strategy that puts everybody to work at the same ice-floes. It was a problem on this cruise that the different groups wandered off on the ice doing their own thing, even though quite a bit of efforts were spent trying to co-ordinate the sampling. In future cruises better co-ordination is needed in the planning phase, before moving out onto the ice.

Captain Jan Jansen, and the ship's crew were very helpful and accommodating. It is important for the running of the ship that the scientific sampling programme is well planned, and that the captain is informed about the schedule. It was very helpful that the captain attended some of the early meetings, and his advice was helpful when cruising in the ice. It is important that the ship track is planned, but it is also important to be somewhat flexible because of the ice conditions. We spent too much time trying to get into the Storfjord area to sample ringed seals, and it was a right decision to finally abandon that project and continue to the ice-zone. Sampling with trawls on 'Lance' would have been impossible without the knowledge and assistance of certain crew members, and we also wish to thank the crew for help with other logistics during the cruise.

Safety drills were performed on both the use of survival suits and guns at the start of the cruise. Each group on the ice was required to have a person along who was in charge of guns and safety and this worked well; there were no dangerous incidents. However, it is equally important not to attract polar bears to the vicinity of the ship, and this is particularly important when seals or sea birds are sampled. This year we had to change sampling locations at Ice-station 2 because of this problem. There may be many concerns to accommodate, but good pictures of polar bears should not be one of them! Polar bear safety also needs to be rehearsed with the ship's crew. Basically nothing should be thrown overboard while at sampling stations, and nothing should be thrown onto the ice to attract polar bears while at stations.

Designation of sampling stations is important. One person should be made in charge of posting the sampling station numbers so that everybody can use the same station reference number for samples collected. There were no problems regarding the four main ice-station numbers, but the problems became apparent on a lower spatial and temporal scales (e.g. ice-floe number, hydrographic station number, coordinates and sampling time). A data base for entering data into the same format should be established before the cruise, and everybody should contribute with data to this base, or at least add summery data referring to a more detailed data set (e.g. hydrographic data set). This was attempted on this cruise, but it was done as the cruise developed and much time was spent getting the data into the same format in the cruise report. There are still some deficiencies in how the data are presented since they were entered at different formats (e.g. gmt vs. Norwegian time, sampling station numbering and sample coding). Time will be saved if examples of format and data management can be given out to all participants at the start of the cruise, and everybody set their clocks to the same time.

Proper data management in a multidiciplinary cruise is important. The reason for this extensive cruise report is that this is currently the only way to present the data at the Norwegian Polar Institute. There is no system for common data management, and no individual scientist is in charge of setting up and manage a data base with such diverse data, which would be a time-consuming task, but at least the different groups should have data bases for their own data until a common data base is established. For instance, at present there is no data base for marine ecological data, and this is clearly needed. Until the Institute realises the seriousness of this problem and hires some data managers, the data will still reside in individual PCs and scientist's drawers, a very undesirable situation indeed. There should also be some efforts put into contributing data to national data bases, but again data managers are needed to perform this task.

The research vessel 'Lance' worked well as a research platform in the marginal ice-zone. However, the ship needs to be upgraded considerably to satisfy oceanographic and marine biological research programmes. After the cruise some upgrading has been done on the oceanographic side with new ADCP and GYRO compass. Sampling gear for the marine biological programme also need to be upgraded. After the cruise, a new multi-net for sampling of copepods and a tucker trawl for sampling larger zooplankters have been bought, but more gear is needed for adequate sampling of the marine biota (trawls, echo-sounder etc.). Also, the labs need to be upgraded, and a separate input has been given this process. A continued use of 'Lance' for oceanographic and marine biological sampling would require an investment of NOK 5-6 million over the next 2-3 years. This needs to be followed up with a proper material management system for maintenance of this equipment, including cost coverage of labour and parts.

Application to go into the Russian economic zone failed this year; a permit was denied without reason by the Russian government. A new application has been sent for the next cruise, but it is evident that these problems need to be properly addressed at the highest governmental levels in both countries. Collaborative international marine research, involving Russia, may need to be re-evaluated if such permits continue to be denied by the Russian government. We hope this can be resolved for future cruises of this type, and this would certainly strengthen any scientific collaboration between the two countries.

Overall, all participants contributed well to make this cruise a success, and we are convinced that most of the problems mentioned above can be solved given better planning and more frequent communication between the different research groups within a multidiciplinary programme.

Appendix 1

Hydrophysical data (Kuznetsov and Orvik)

Hydrophysical characteristics from Ice Station 1-3, Open Water Station 4 and transects

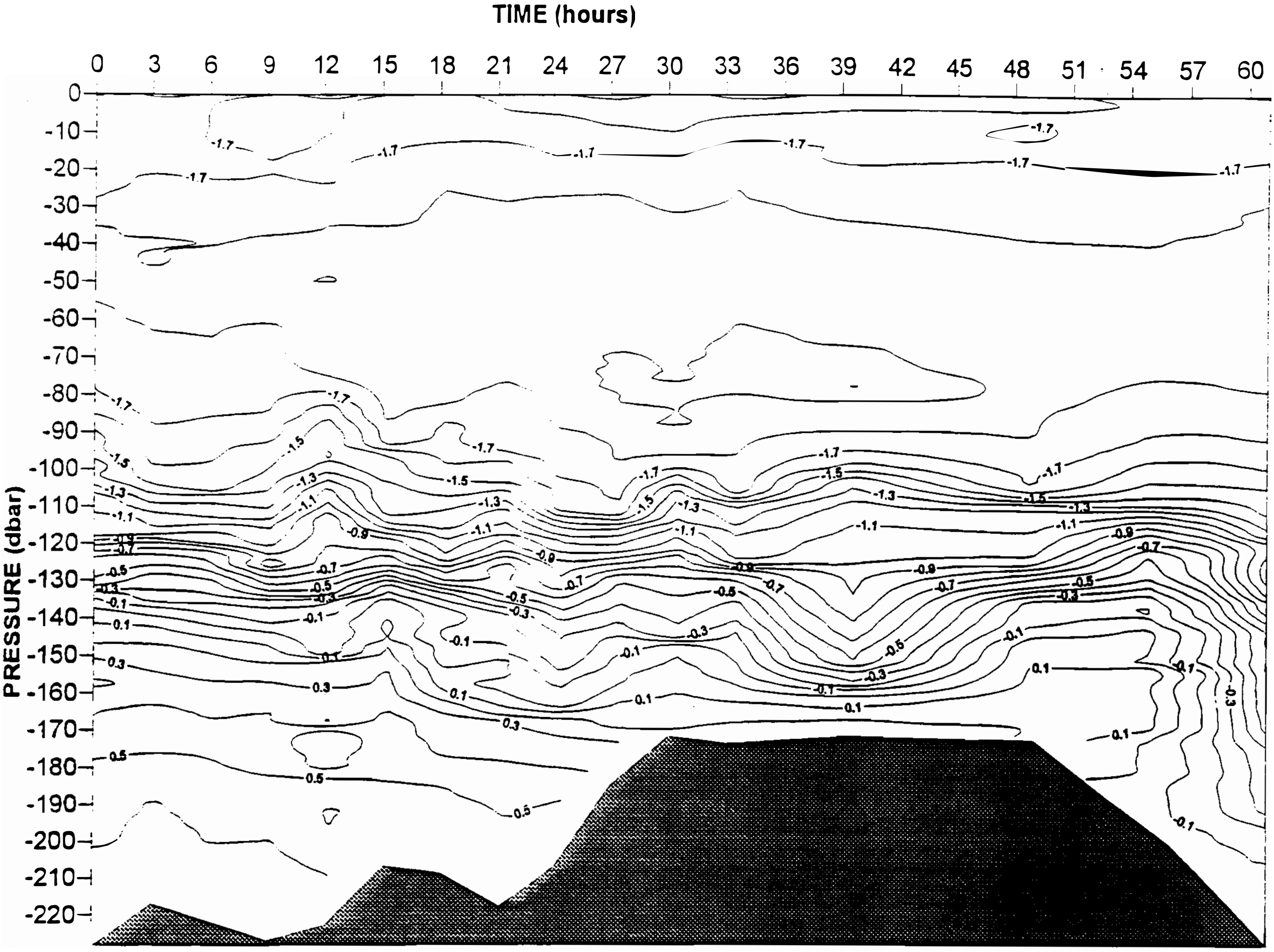


Fig. 2 Distribution of temperature of water on the ice station N1,
R/V "Lance", "ICE-BAR'95", june 1995

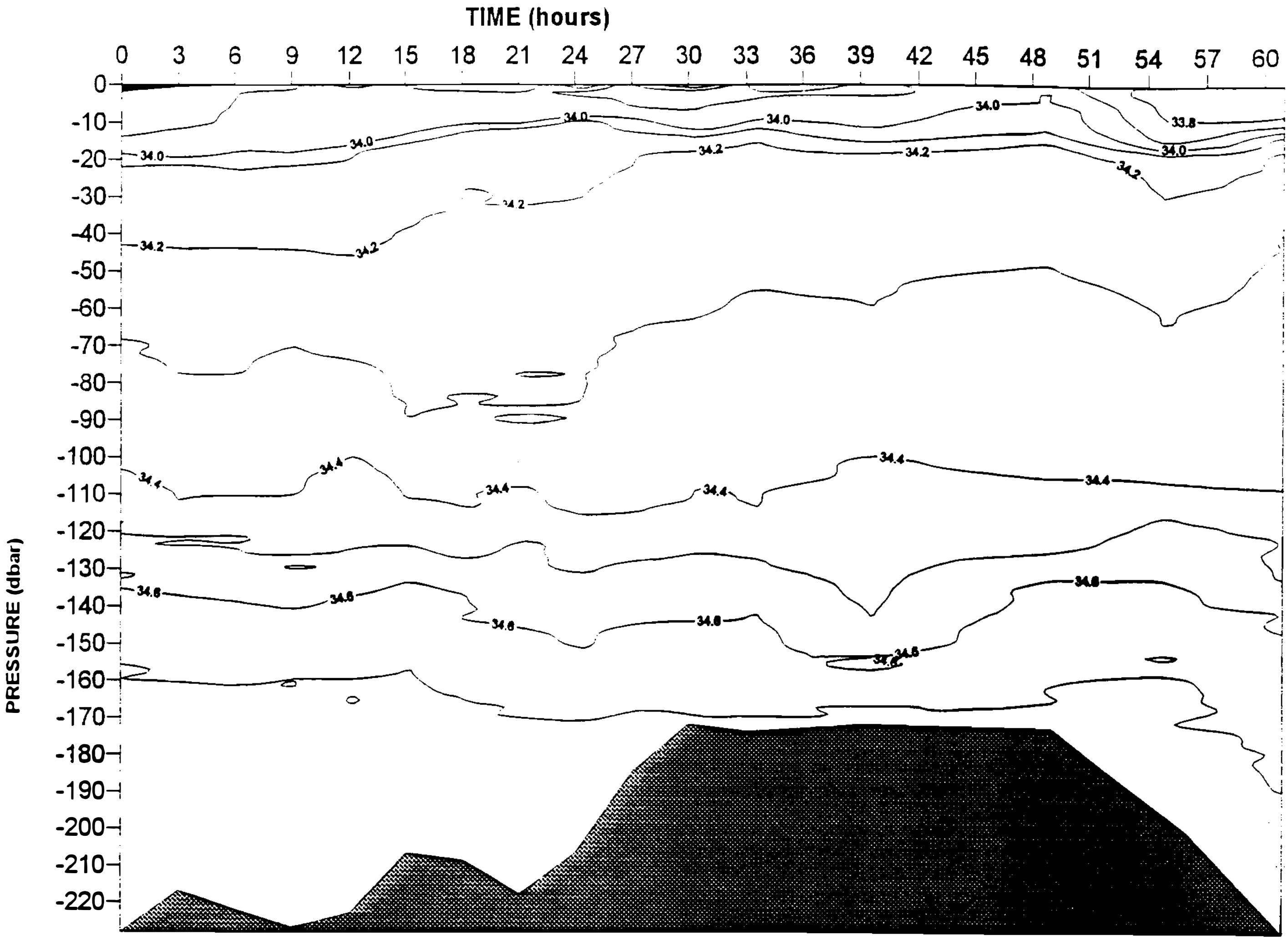


Fig. 3 Distribution of salinity of water on the ice station N1, R/V "Lance", "ICE-BAR'95", june 1995

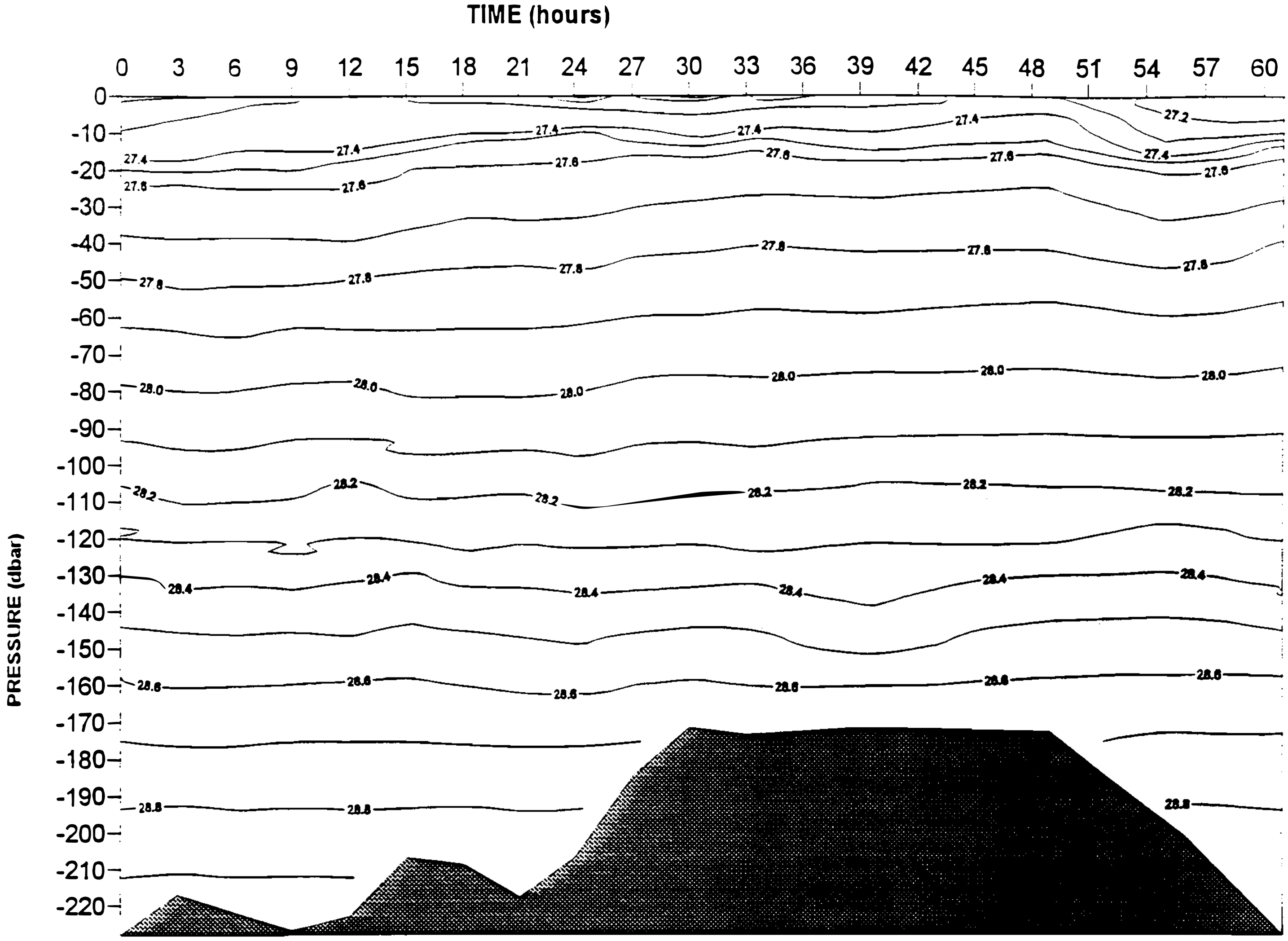


Fig. 4 Distribution of density of water on the ice station N1,
R/V "Lance", "ICE-BAR'95", june 1995

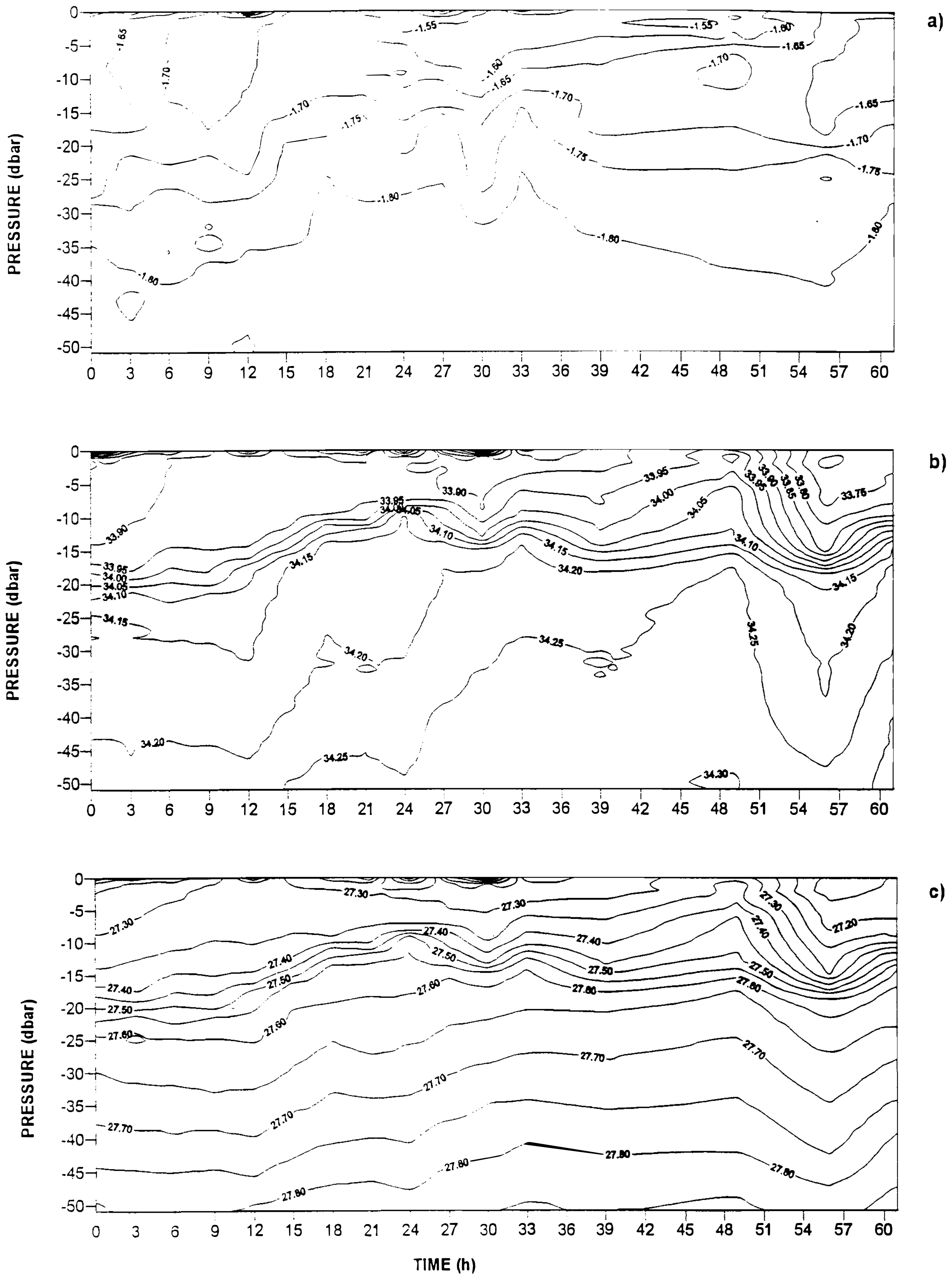


Fig.5 Distribution of temperature (a), salinity (b) end density (c) in upper layer of water on the ice stantion 1, R/V "Lance", "ICE-BAR'95", june 1995

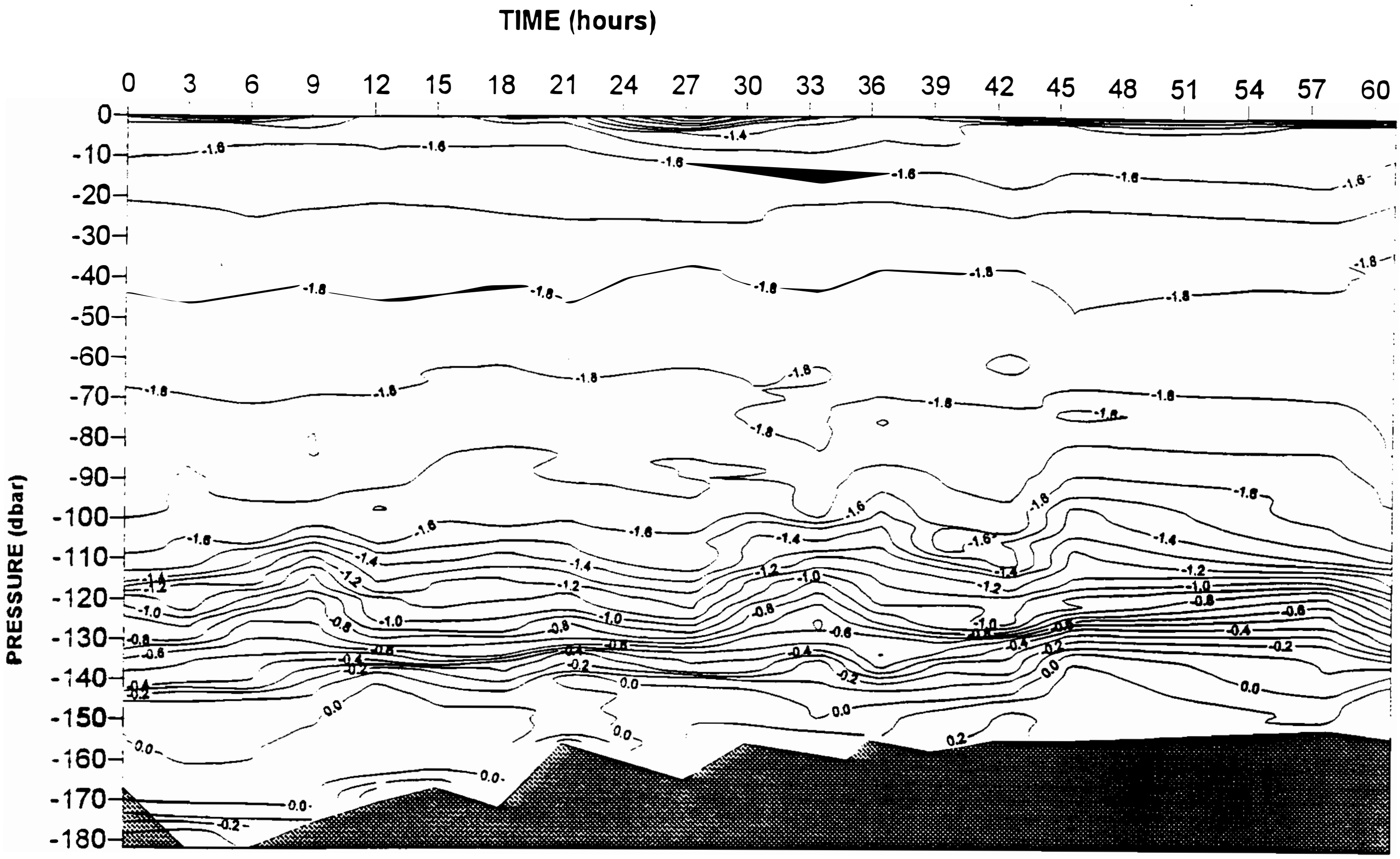


Fig. 6 Distribution of temperature of water on the ice station N2,
R/V "Lance". "ICE-BAR'95", june 1995

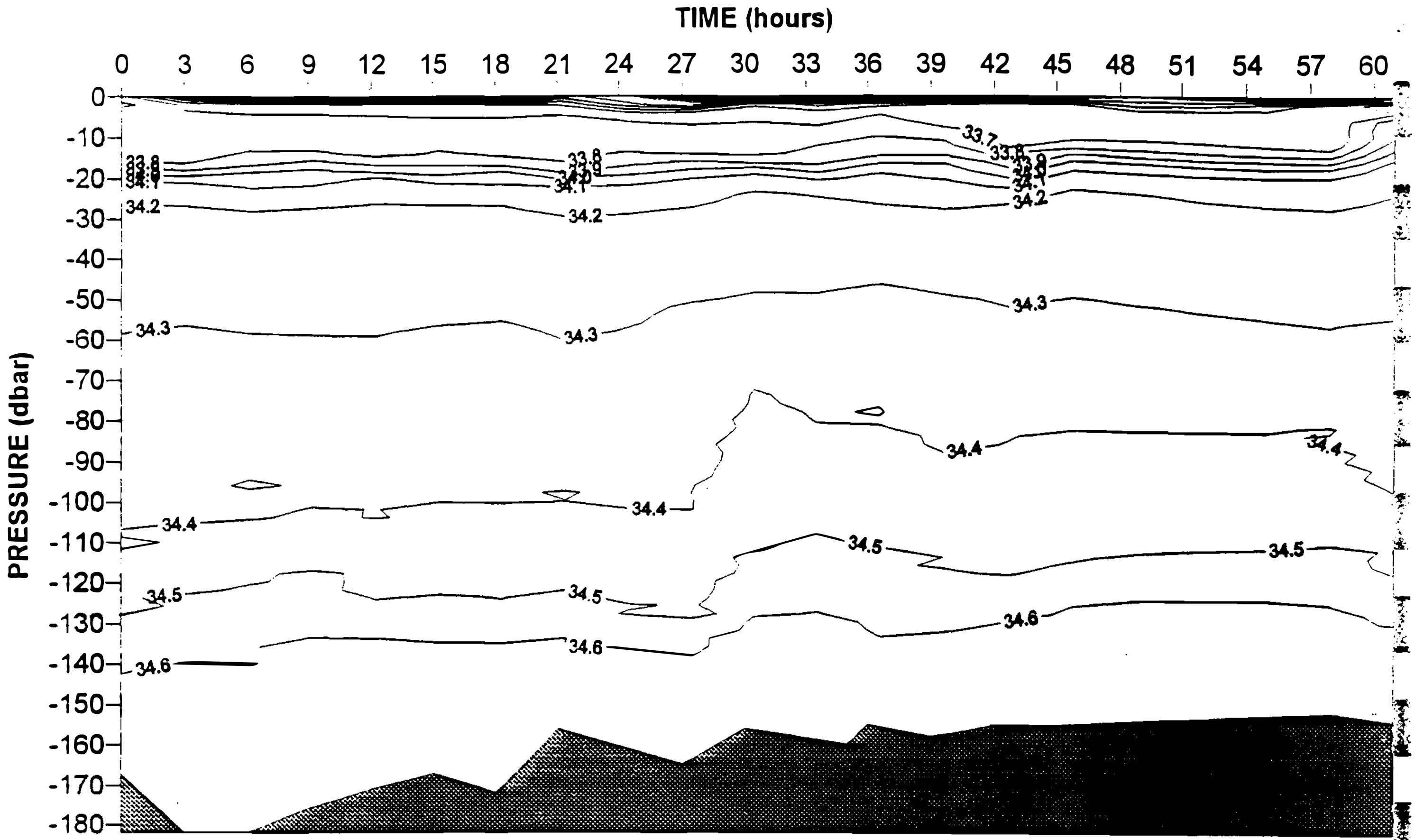


Fig. 7 Distribution of salinity of water on the ice station N2, R/V "Lance", "ICE-BAR'95", june 1995

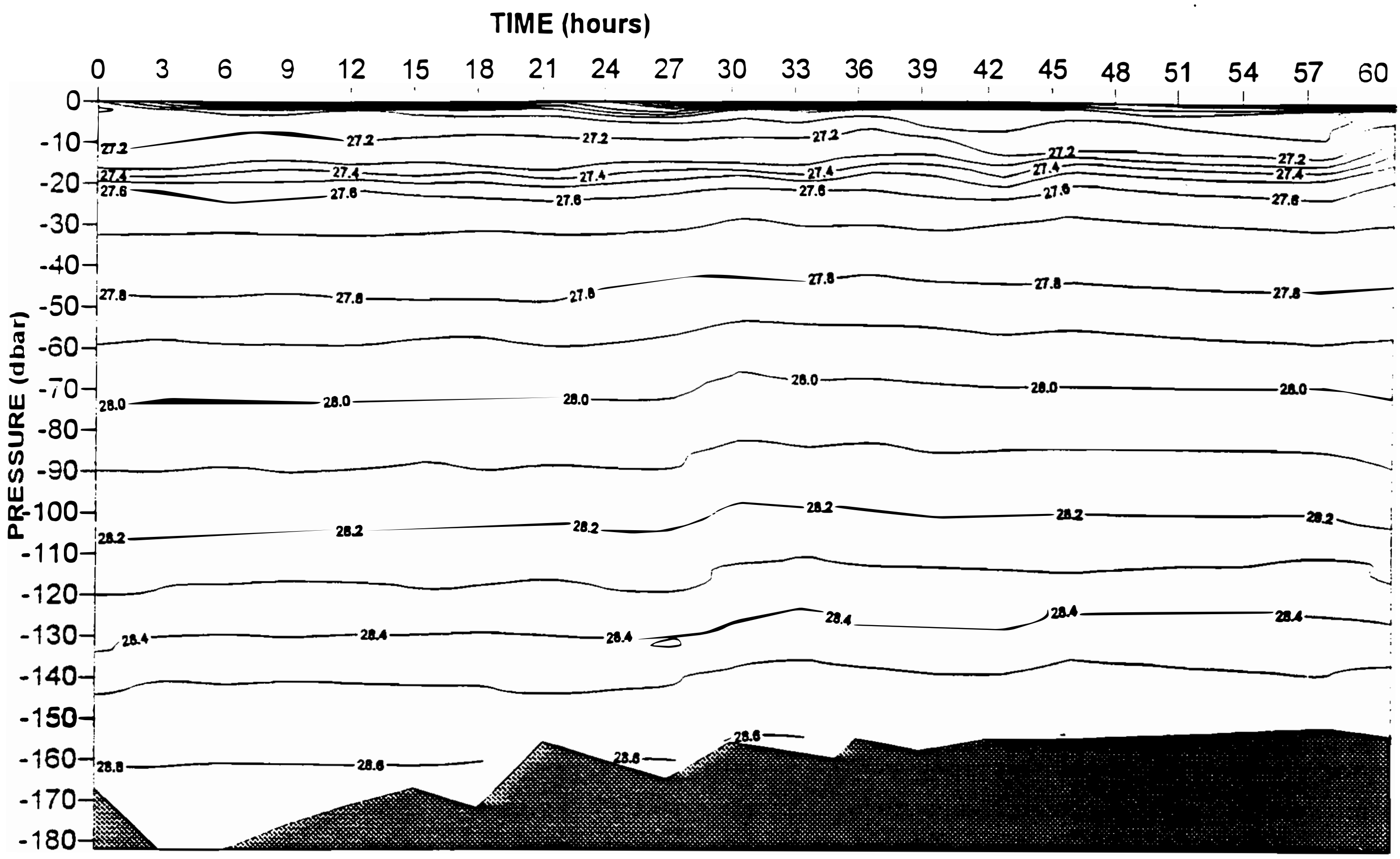


Fig. 8. Distribution of density of water on the ice station N2, R/V "Lance", "ICE-BAR'95". june 1995

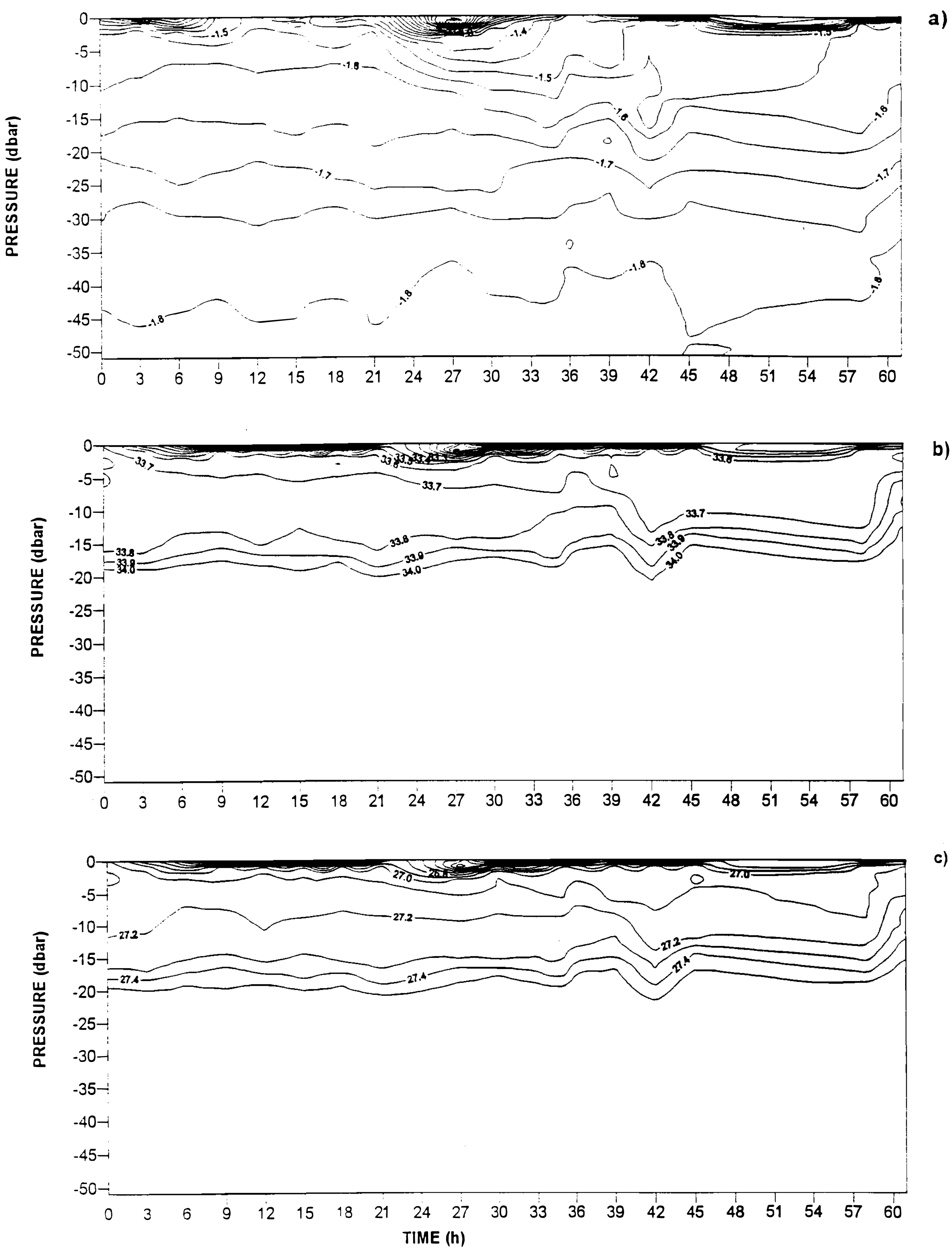


Fig. 9 Distribution of temperature (a) end salinity (b)end density (c) in upper layer of water on the ice stantion 2, R/V "Lance", "ICE-BAR'95", june 1995

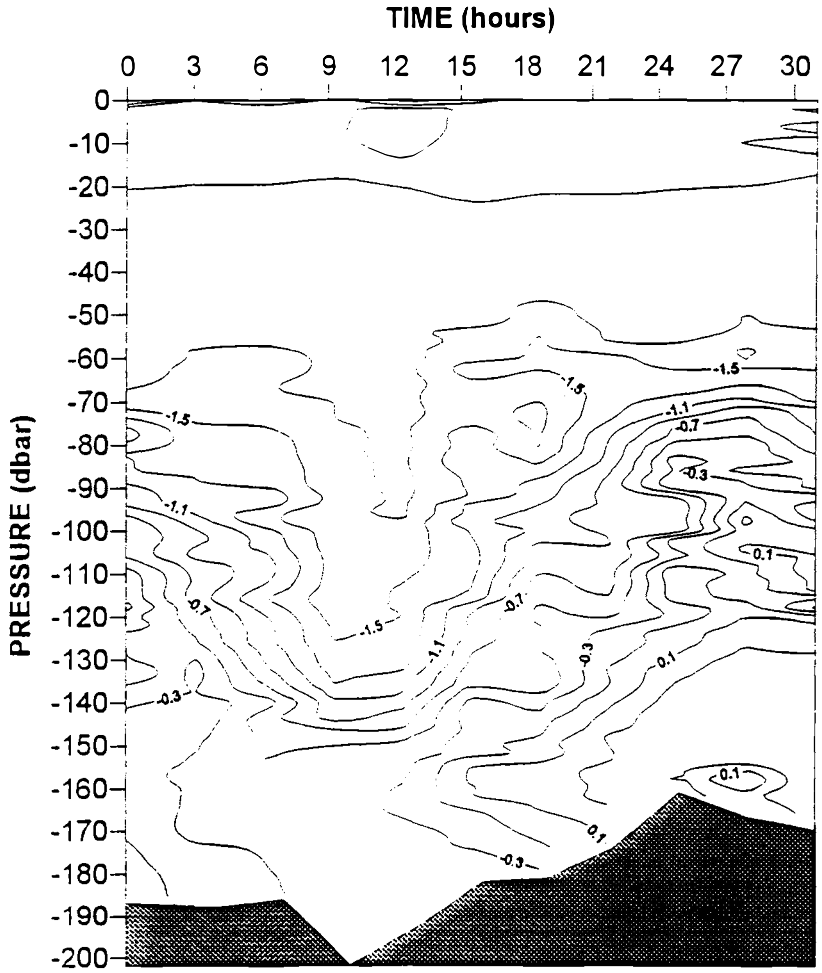


Fig.10 Distribution of temperature of water on the ice stantion N3, R/V "Lance", "ICE-BAR'95", june 1995

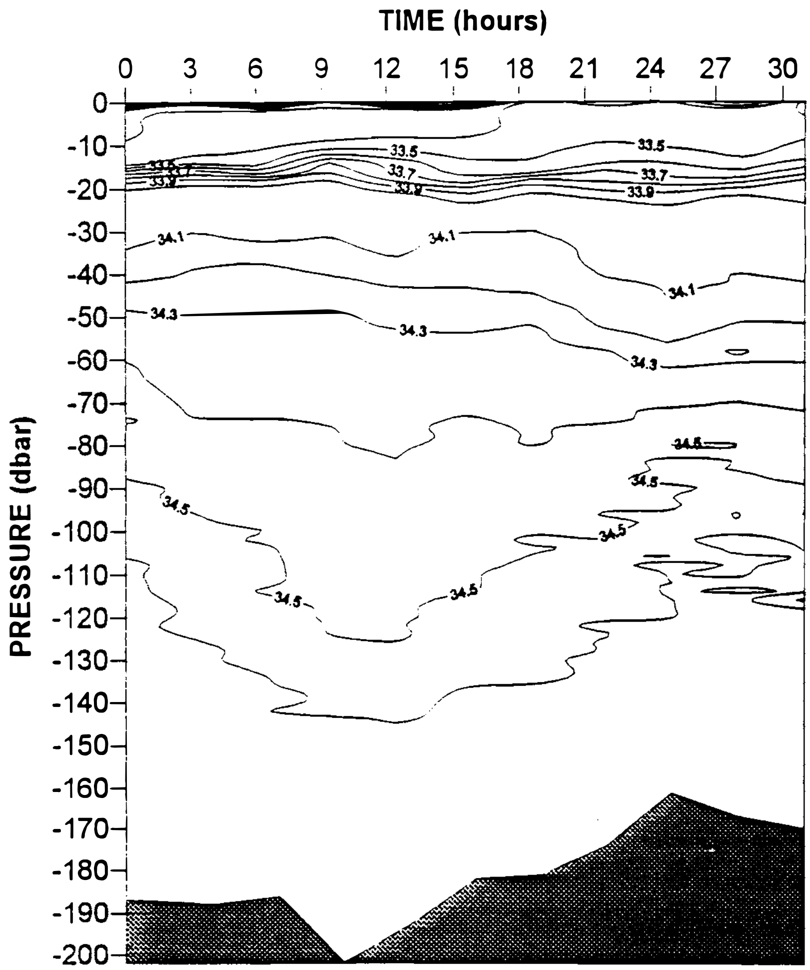


Fig.11 Distribution of salinity of water on the ice station N3, R/V "Lance". "ICE-BAR'95", june 1995

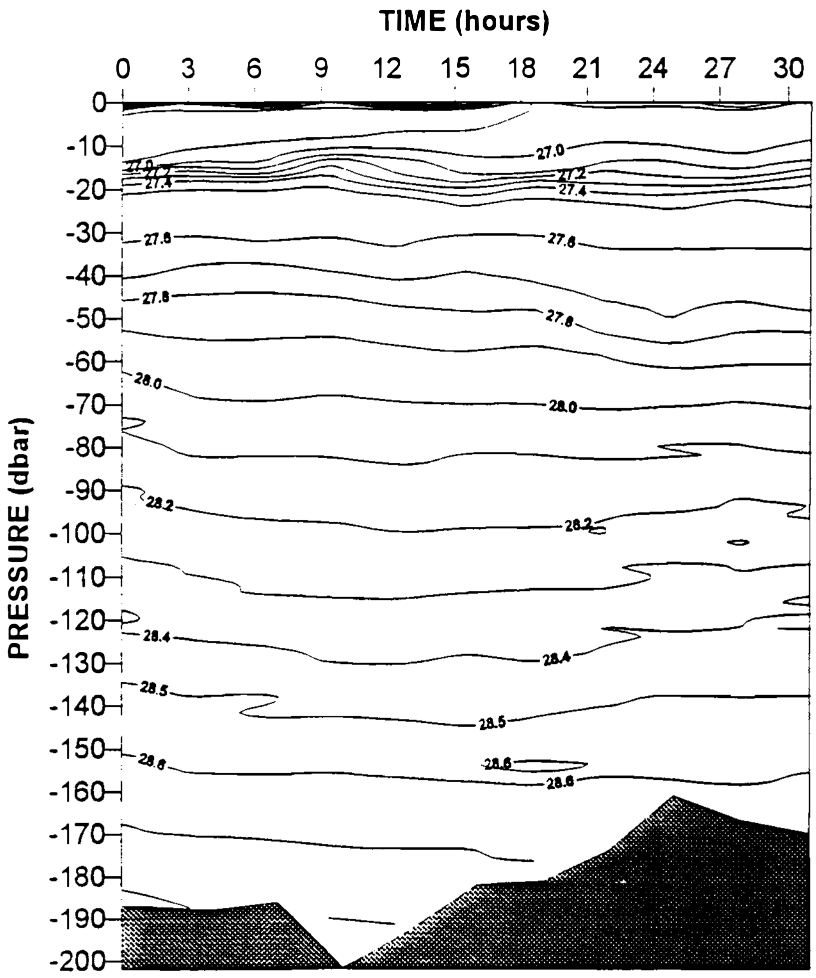


Fig.12 Distibution of density of water on the ice stantion N3, R/V "Lance". "ICE-BAR'95". june 1995

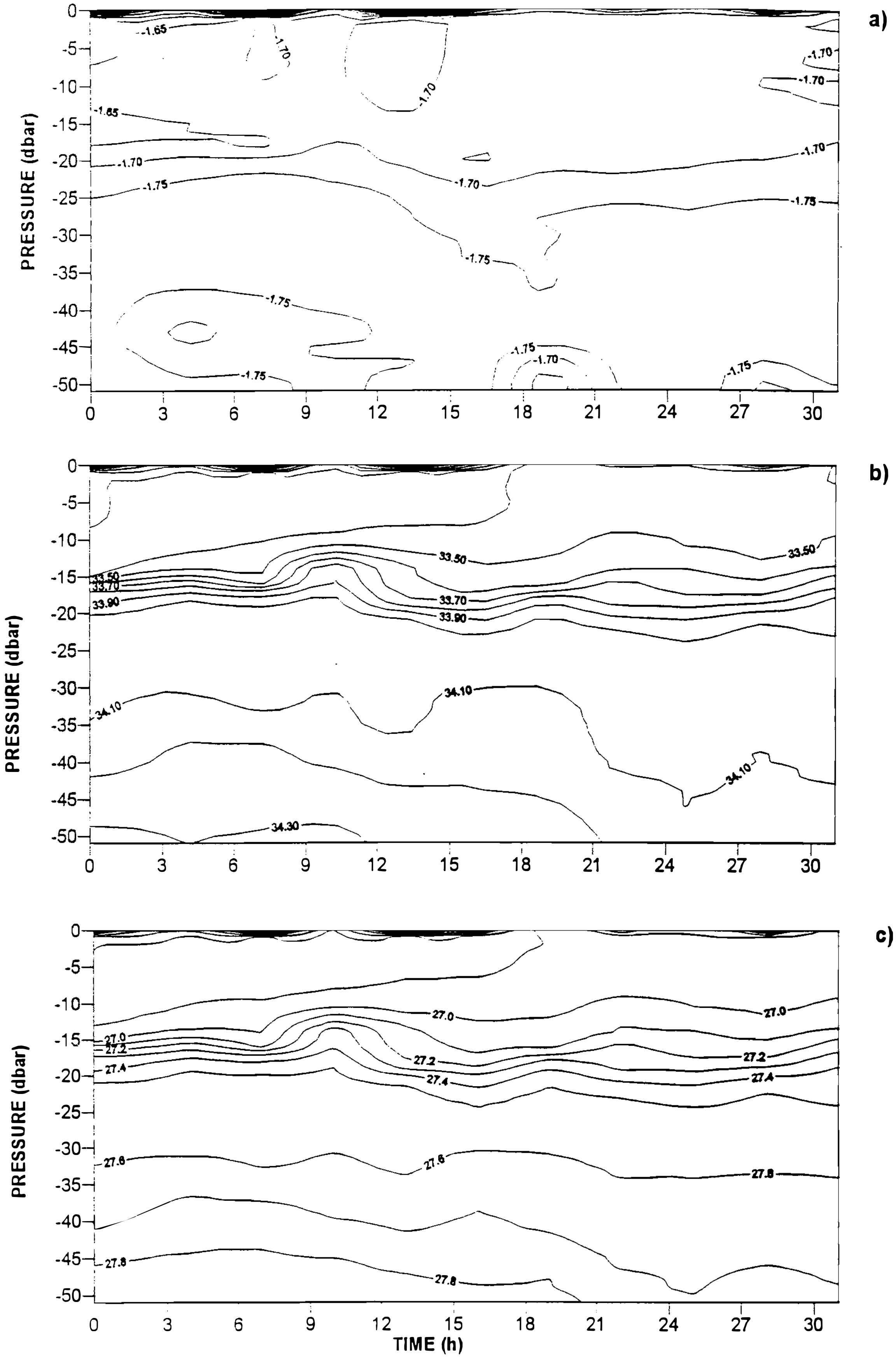


Fig.13 Distribution of temperature (a) end salinity (b) end density (c) in upper layer of water on the ice stantion 3, R/V "Lance", "ICE-BAR'95", june 1995

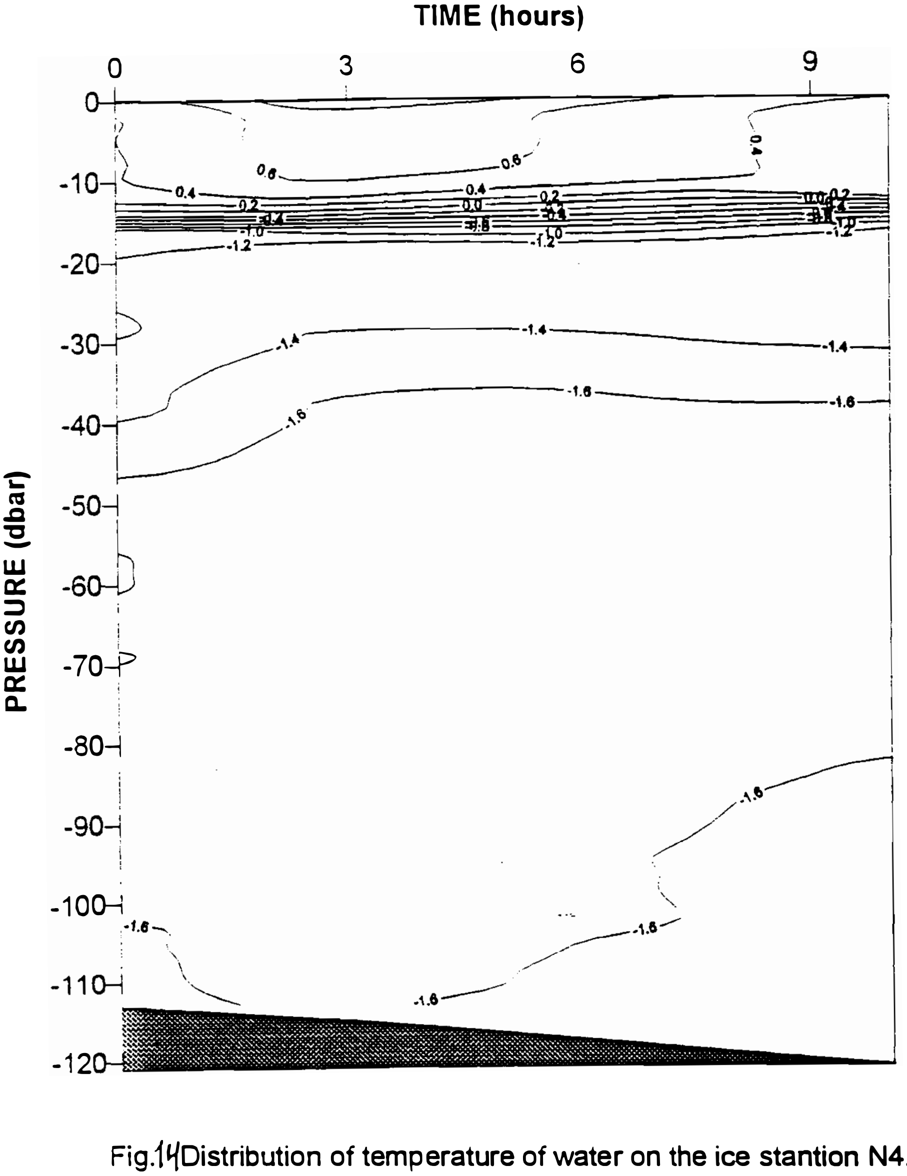


Fig.14Distribution of temperature of water on the ice stantion N4, R/V "Lance". "ICE-BAR'95". june 1995

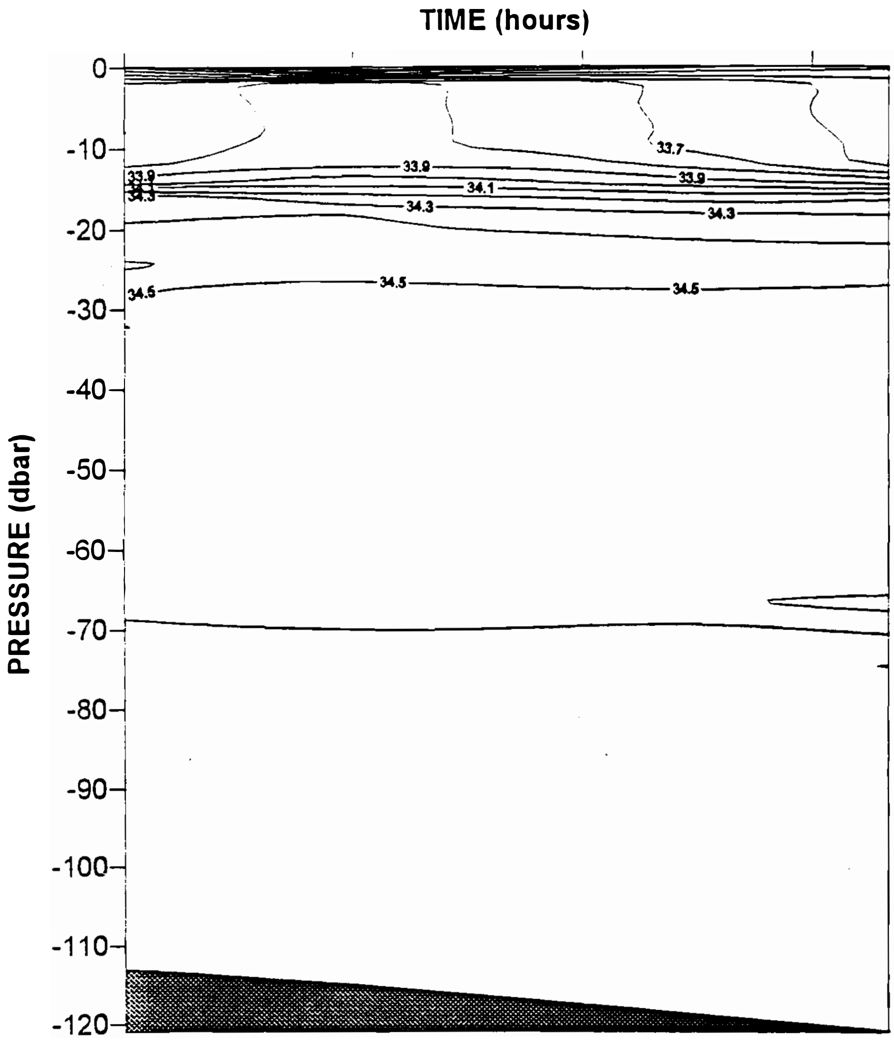


Fig.15 Distribution of salinity of water on the ice stantion N4, R/V "Lance", "ICE-BAR'95", june 1995

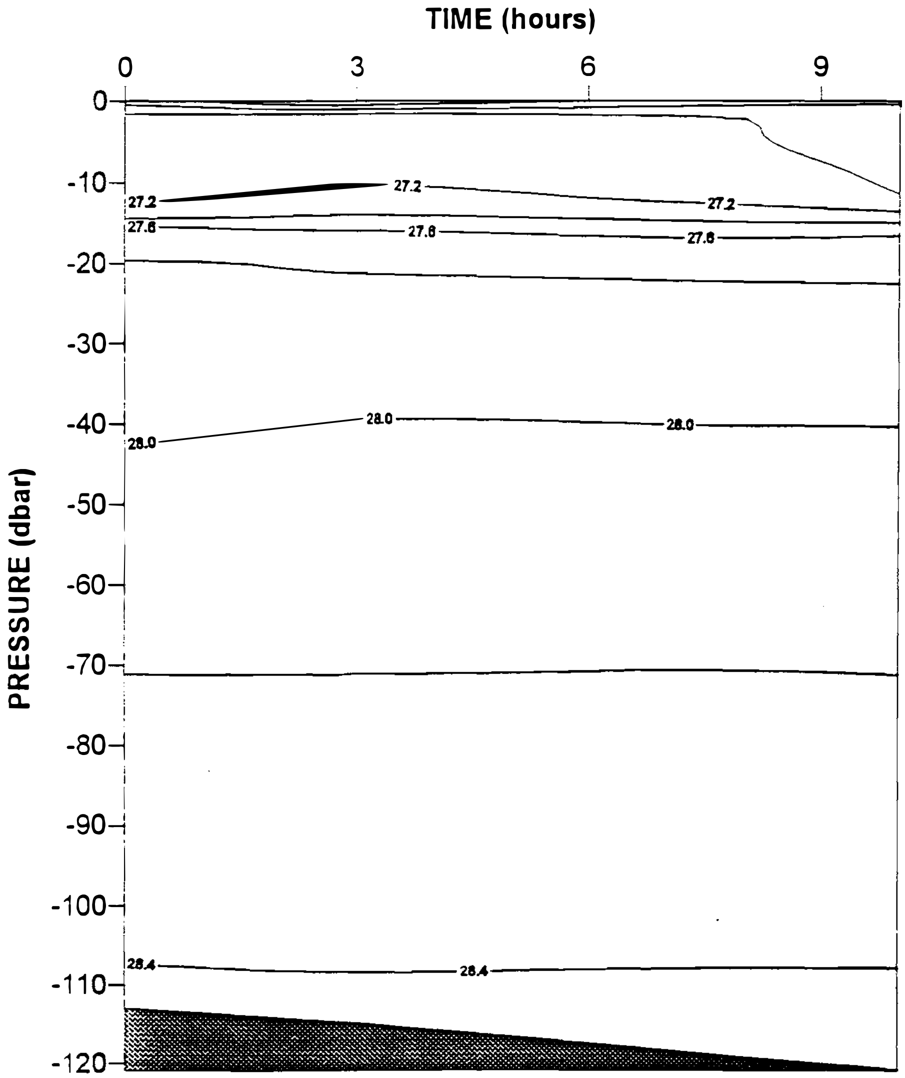


Fig.16 Distribution of density of water on the ice station N4, R/V "Lance", "ICE-BAR'95", june 1995

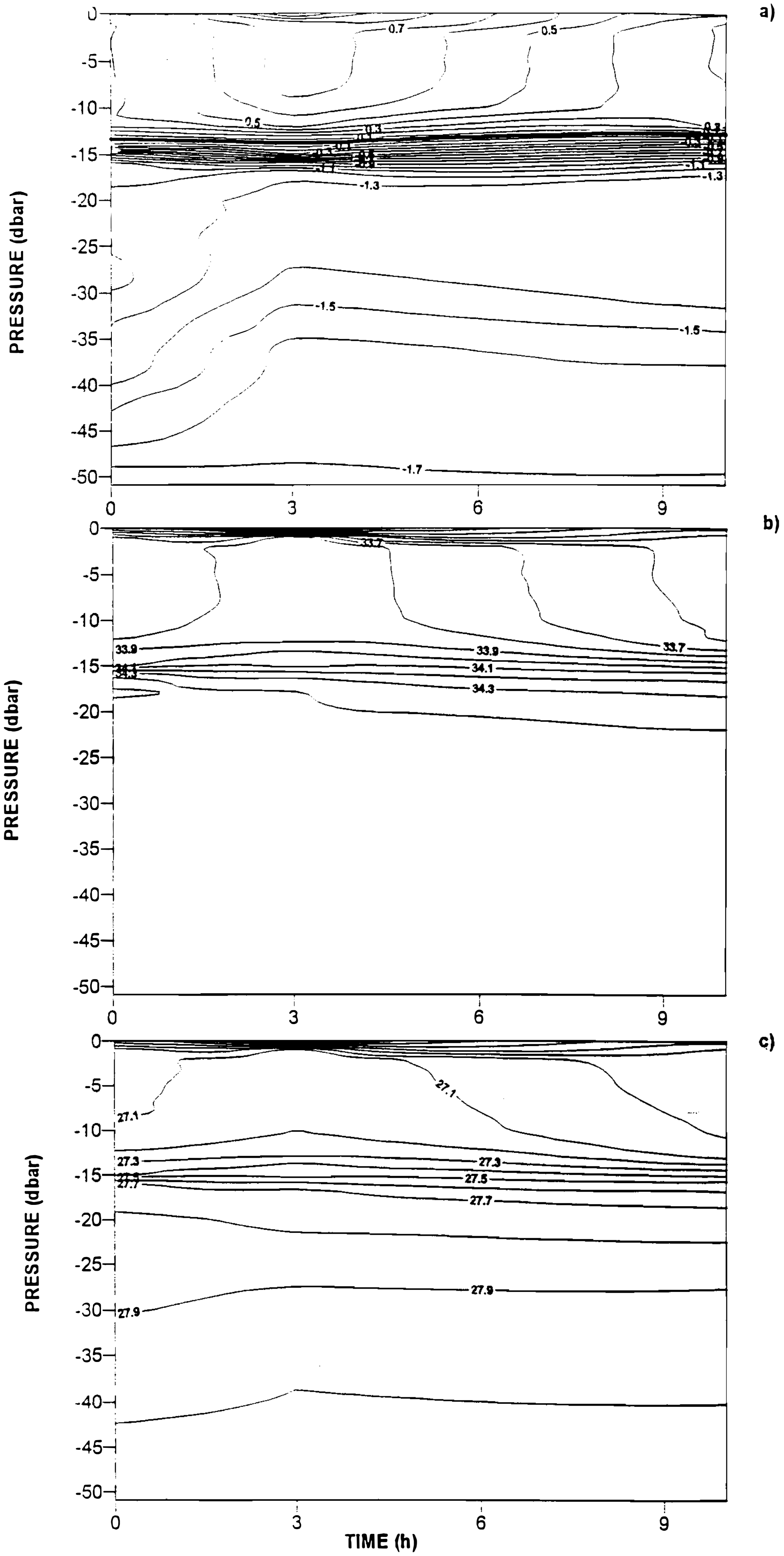


Fig.17 Distribution of temperature (a), salinity (b) end density (c) in upper layer of water on the ice station 4, R/V "Lance", "ICE-BAR'95", june 1995

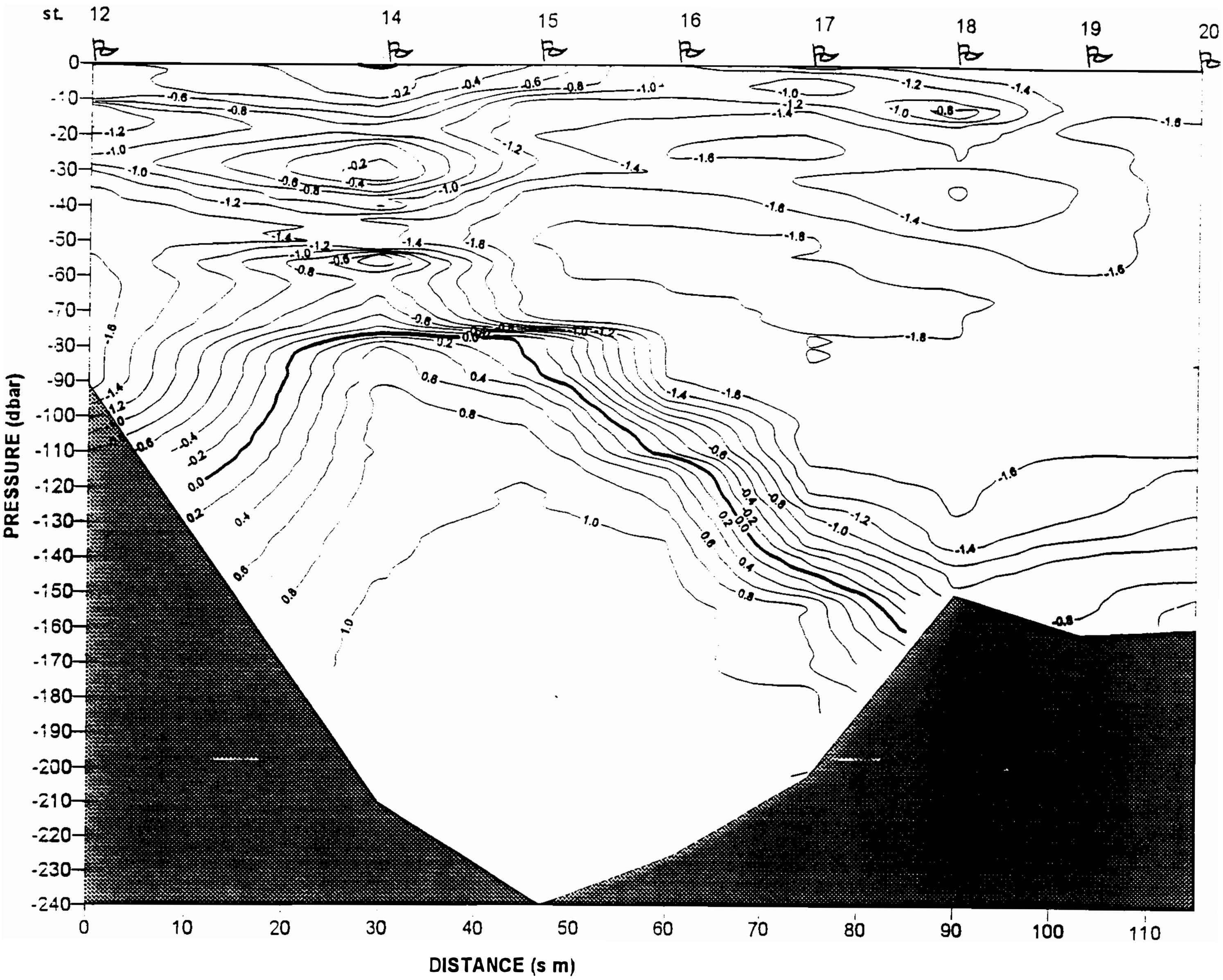


Fig.19 Distribution of temperature in the cross section 1,
R/V "Lance", "ICE-BAR'95", june 1995

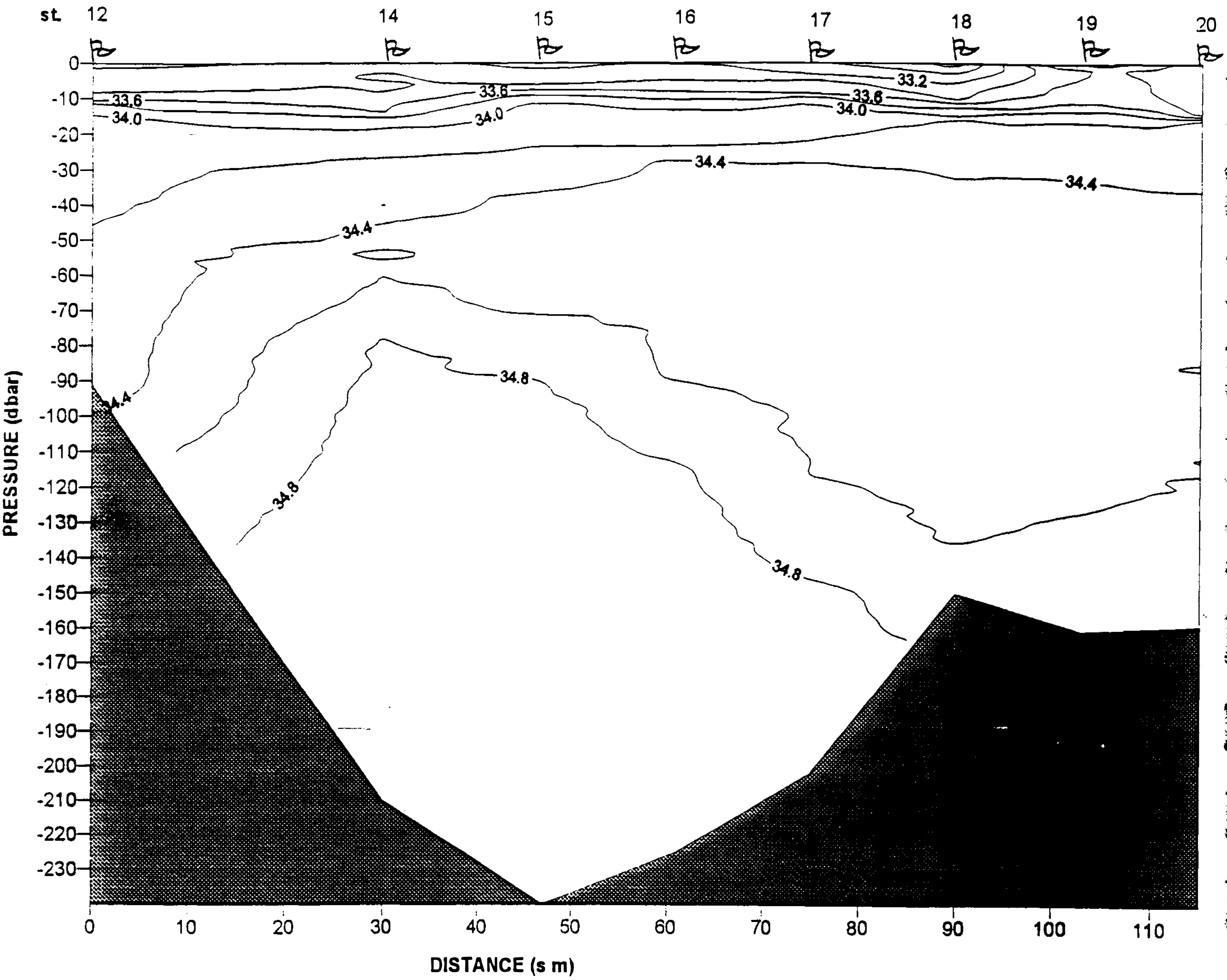


Fig.19 Distribution of salinity in the cross section 1,
R/V "Lance", "ICE-BAR'95", june 1995

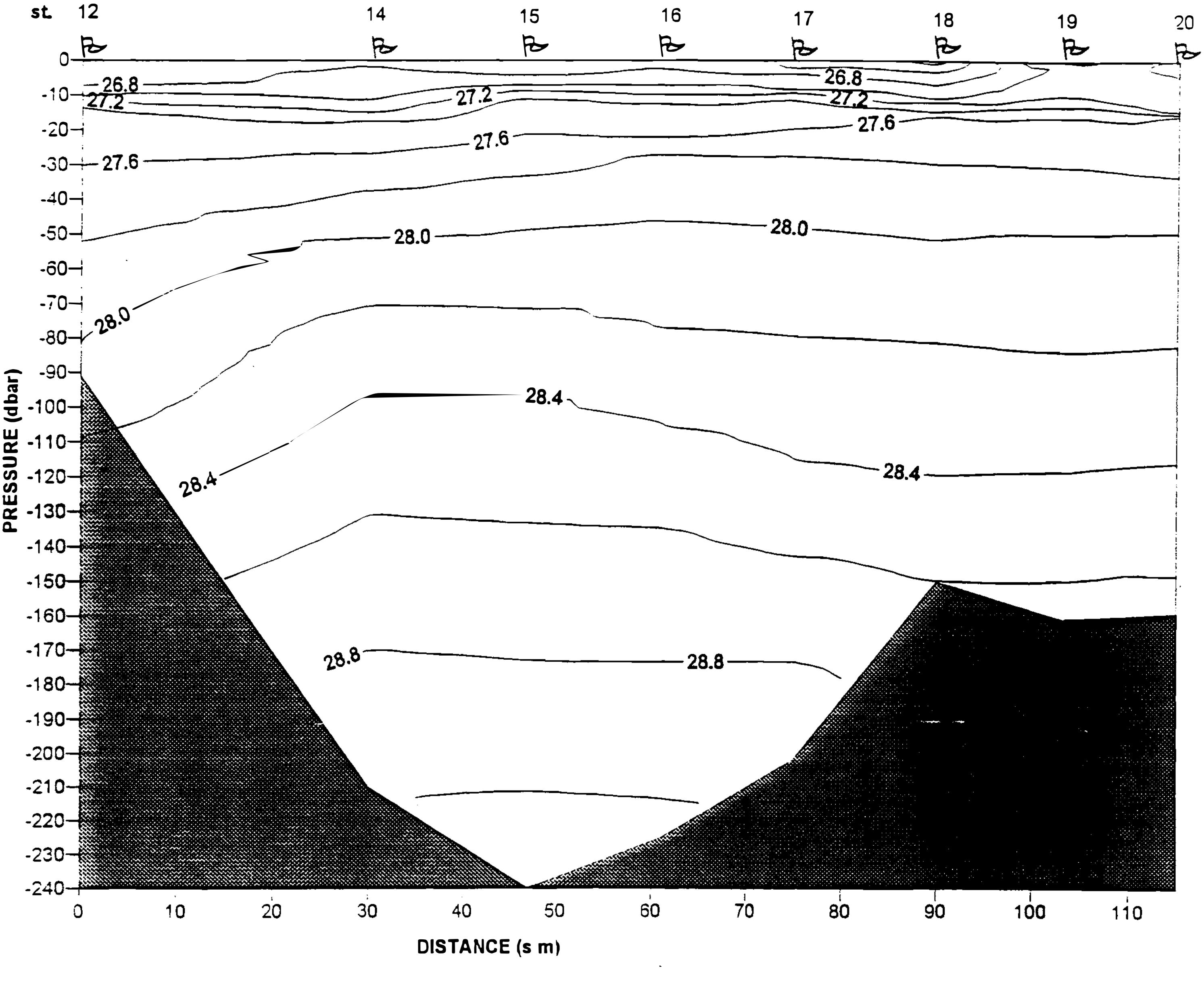


Fig2o Distribution of density in the cross section 1, R/V "Lance", "ICE-BAR'95". june 1995

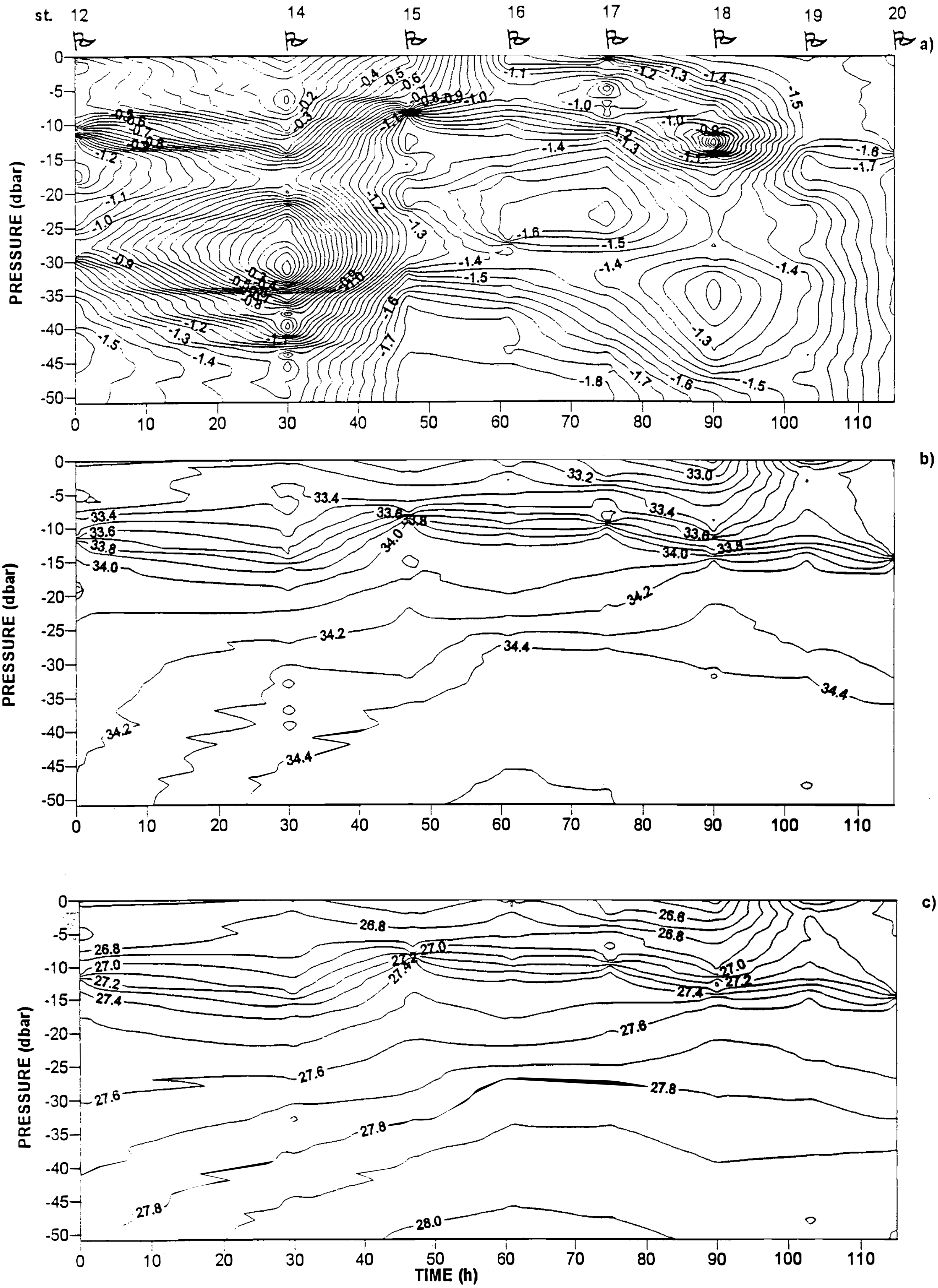


Fig.21 Distribution of temperature (a), salinity (b) end density (c) in upper layer of water in the cross section 1, R/V "Lance", "ICE-BAR'95", june 1995

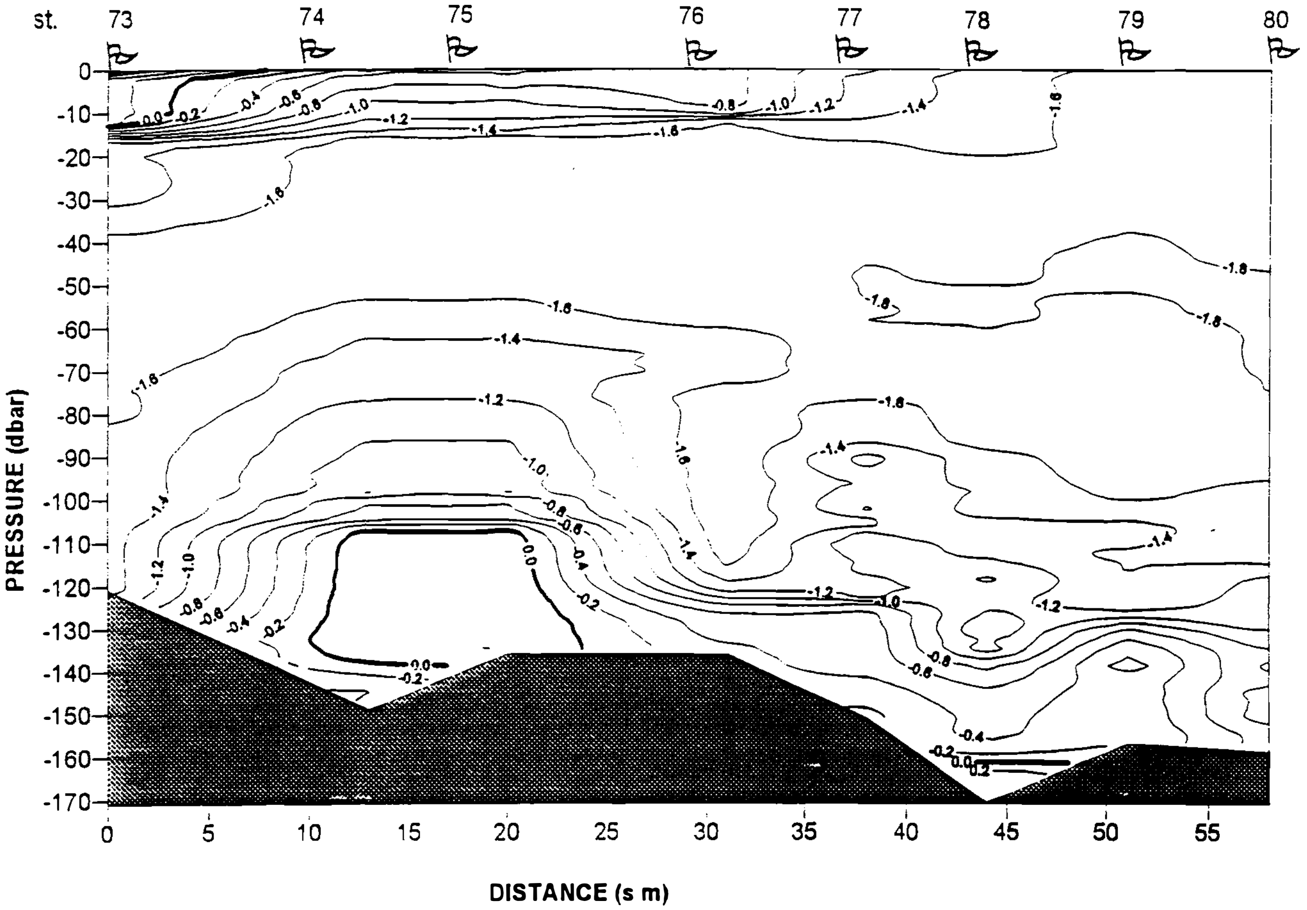


Fig.22 Distribution of temperature in the cross section 2,
R/V "Lance", "ICE-BAR'95", june 1995

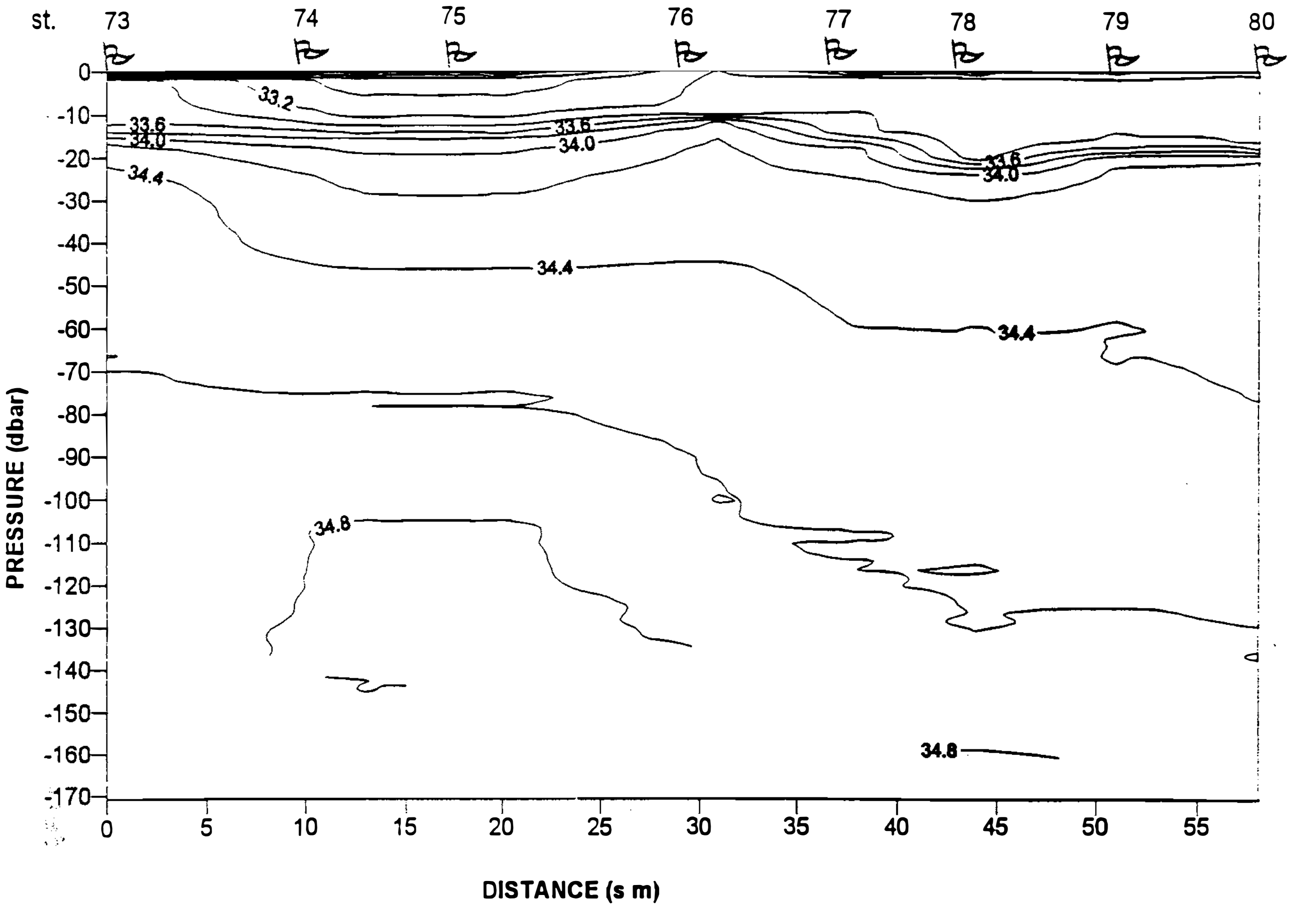


Fig.23 Distribution of salinity in the cross section 2,
R/V "Lance", "ICE-BAR'95", june 1995

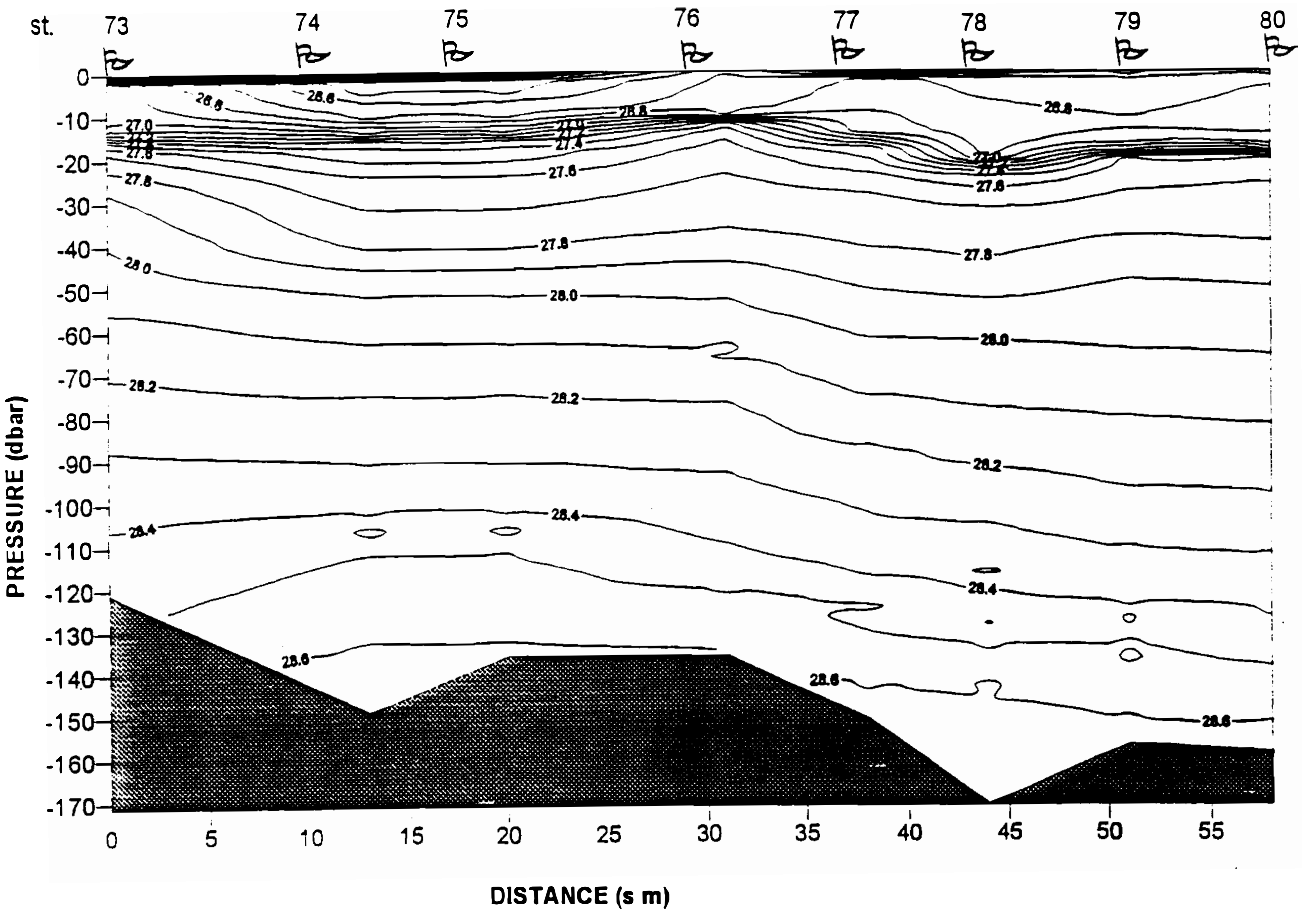


Fig.24 Distribution of density in the cross section 2,
R/V "Lance", "ICE-BAR'95", june 1995

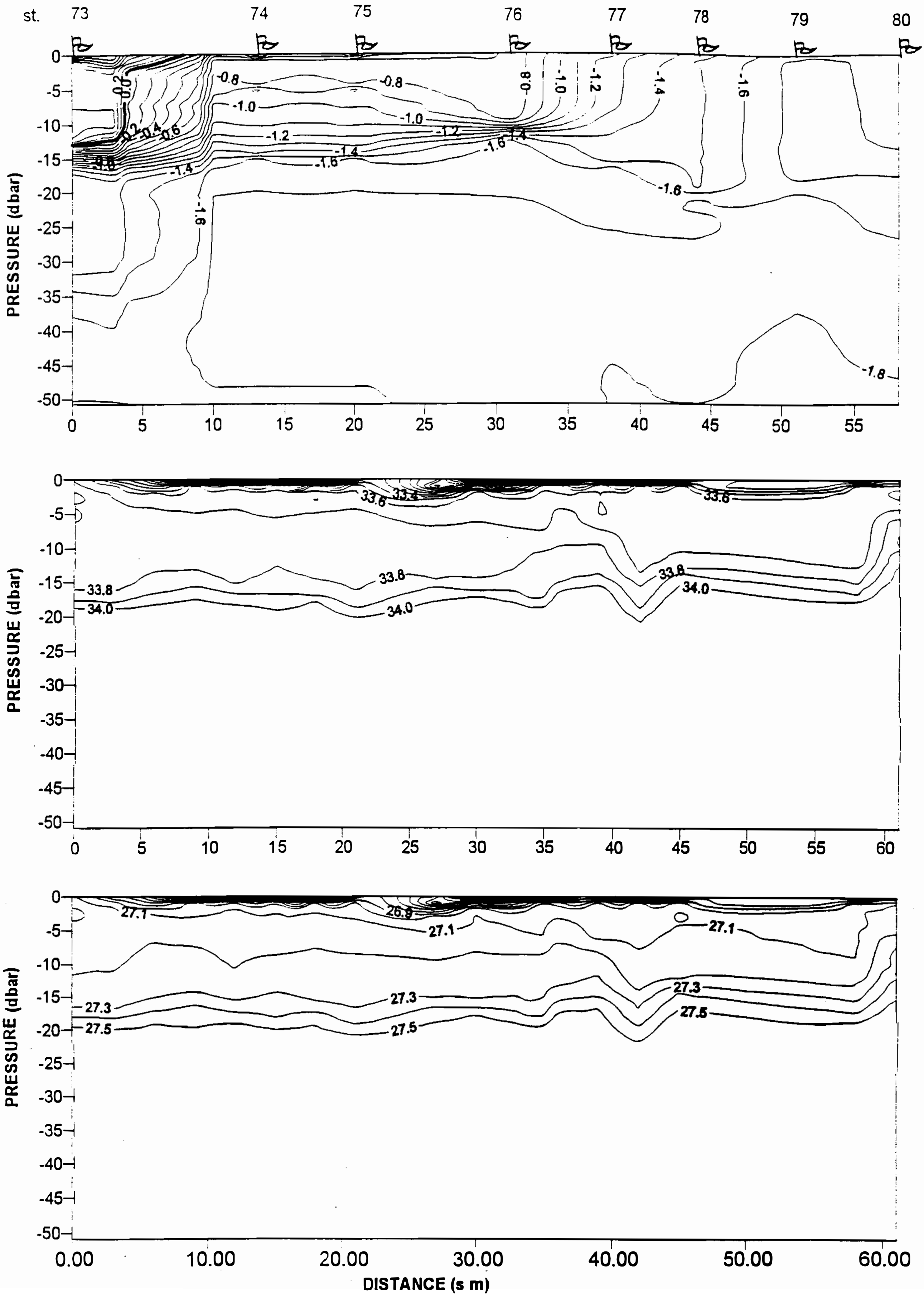


Fig.25 Distribution of temperature (a), salinity (b) end density (c) in upper layer of water in the cross section 2, R/V "Lance", "ICE-BAR'95", june 1995

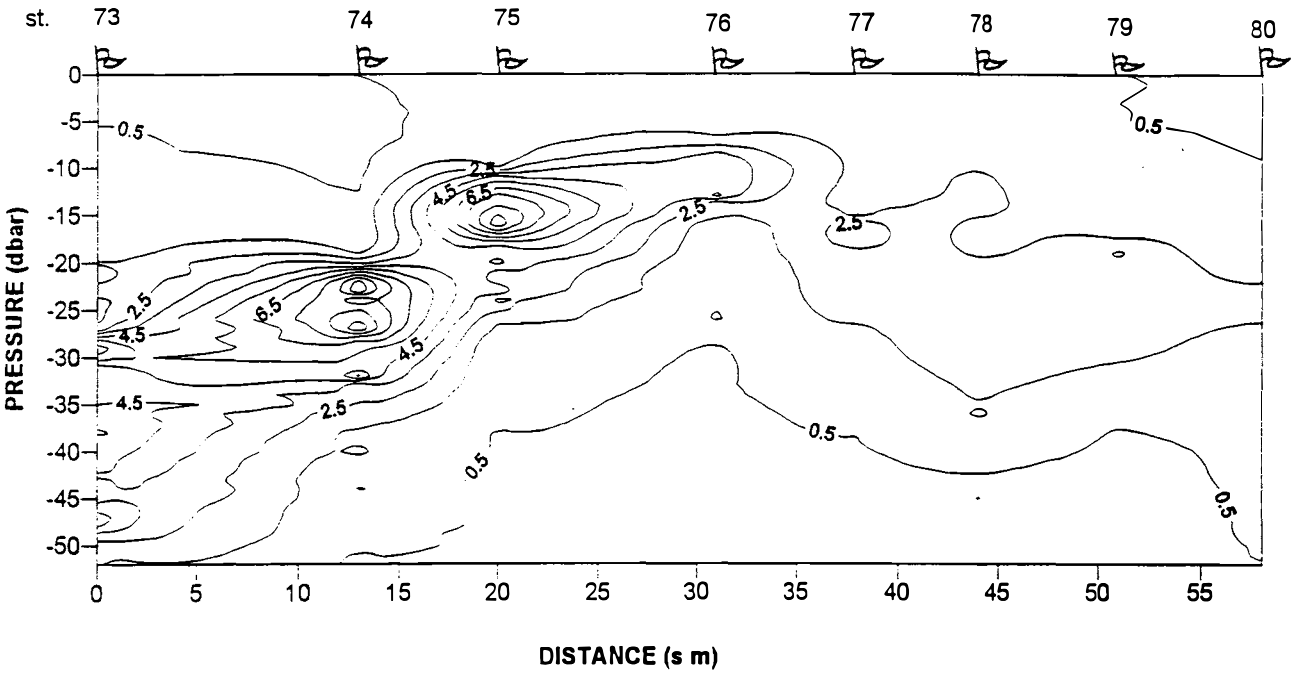


Fig.26 Distribution of chlorofill-A in upper layer of water in the cross section 2, R/V "Lance", "ICE-BAR'85", june 1995

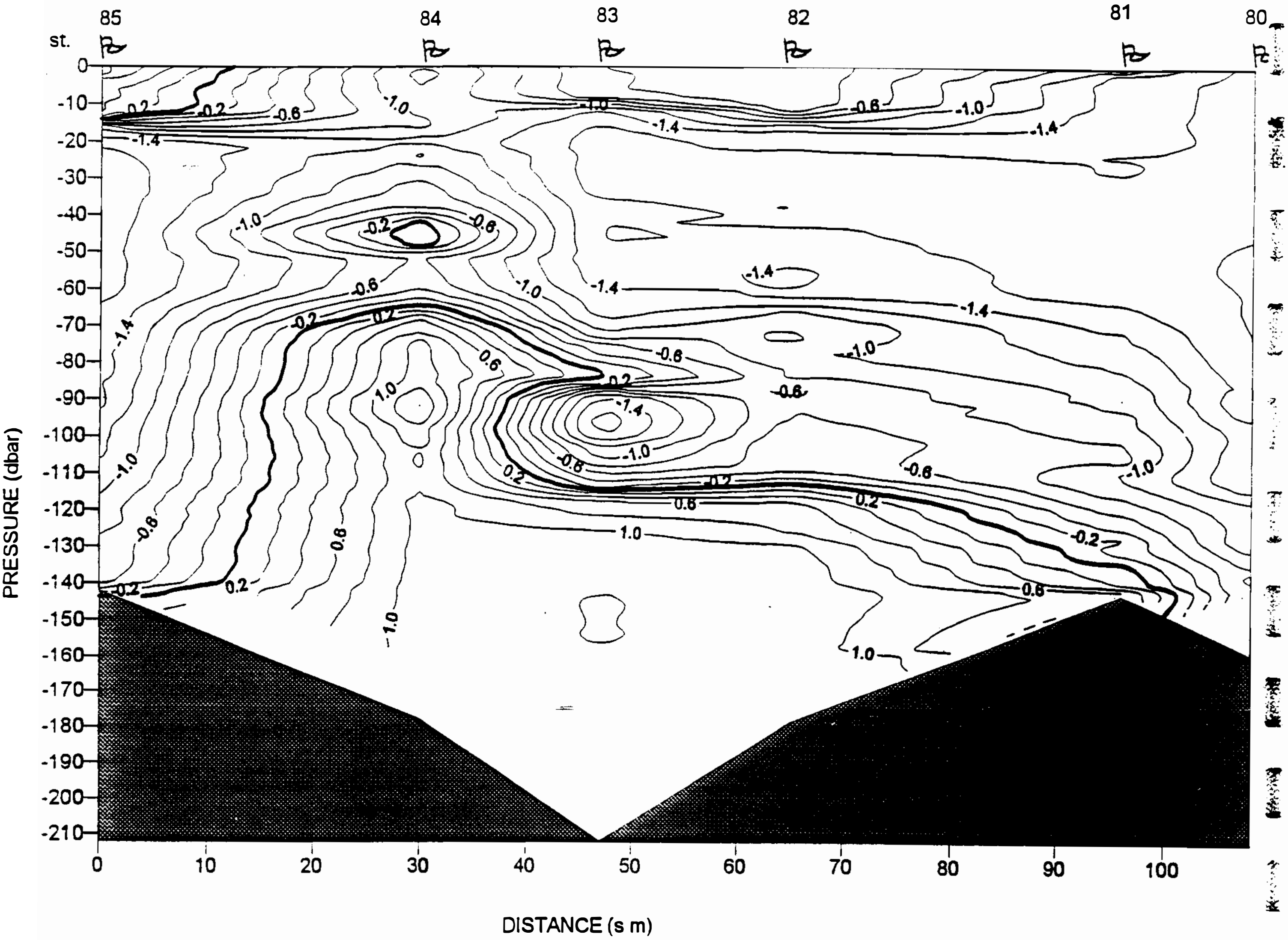


Fig.17 Distribution of temperature in the cross section 3,
R/V "Lance", "ICE-BAR'95", june 1995

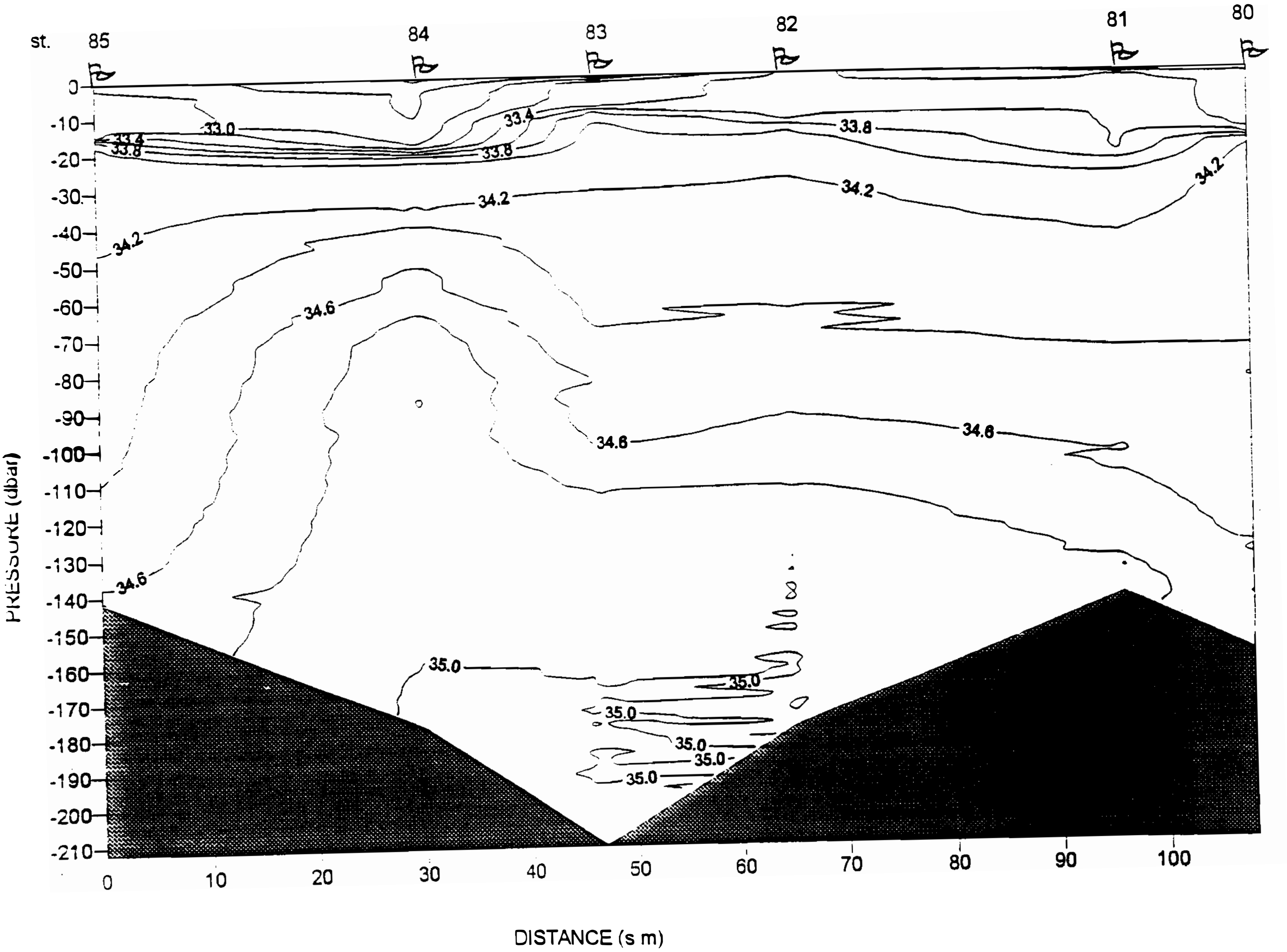


Fig.23 Distribution of salinity in the cross section 3, R/V "Lance", "ICE-BAR'95", june 1995

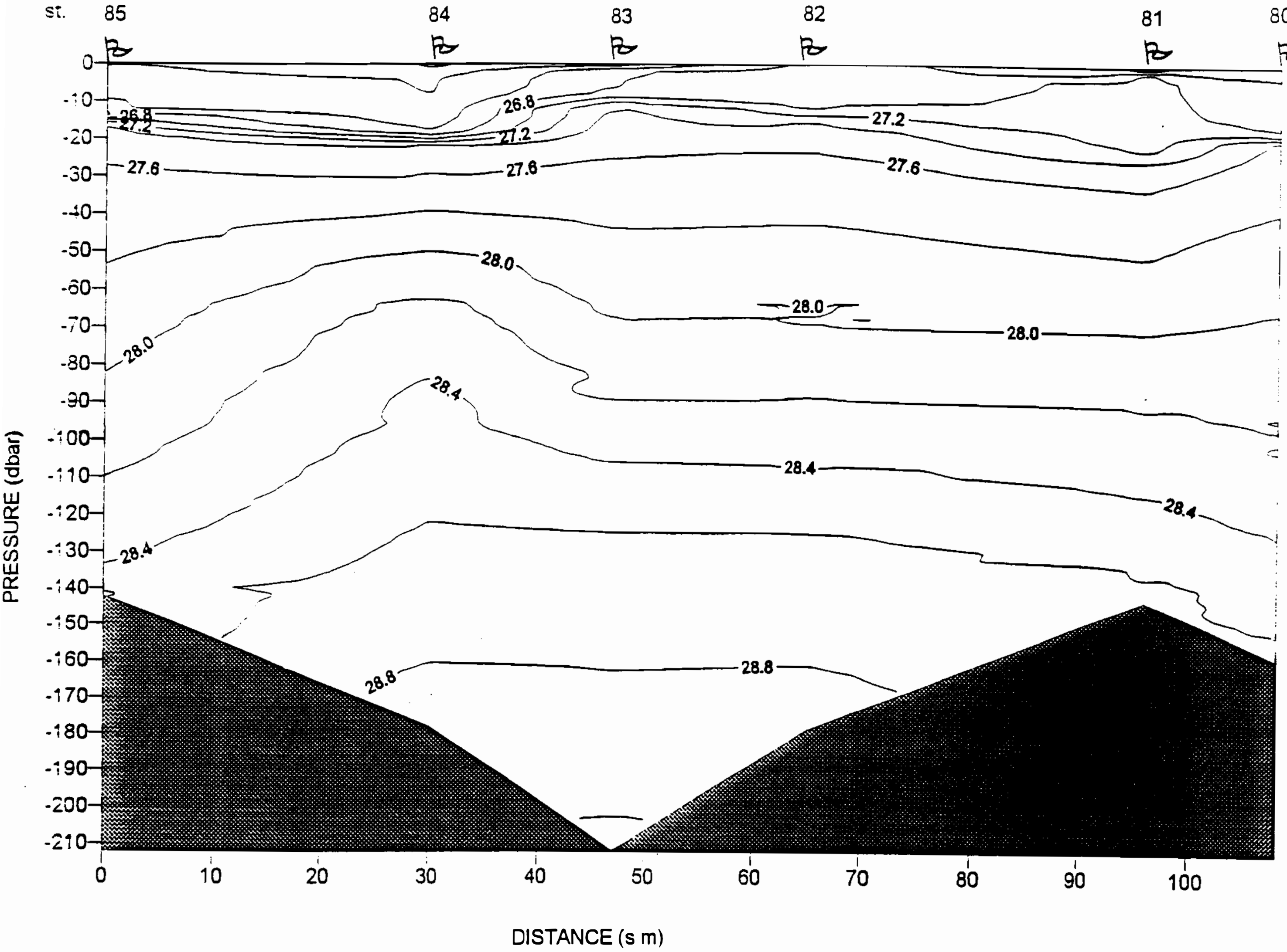


Fig.19 Distribution of density in the cross section 3,
R/V "Lance", "ICE-BAR'95", june 1995

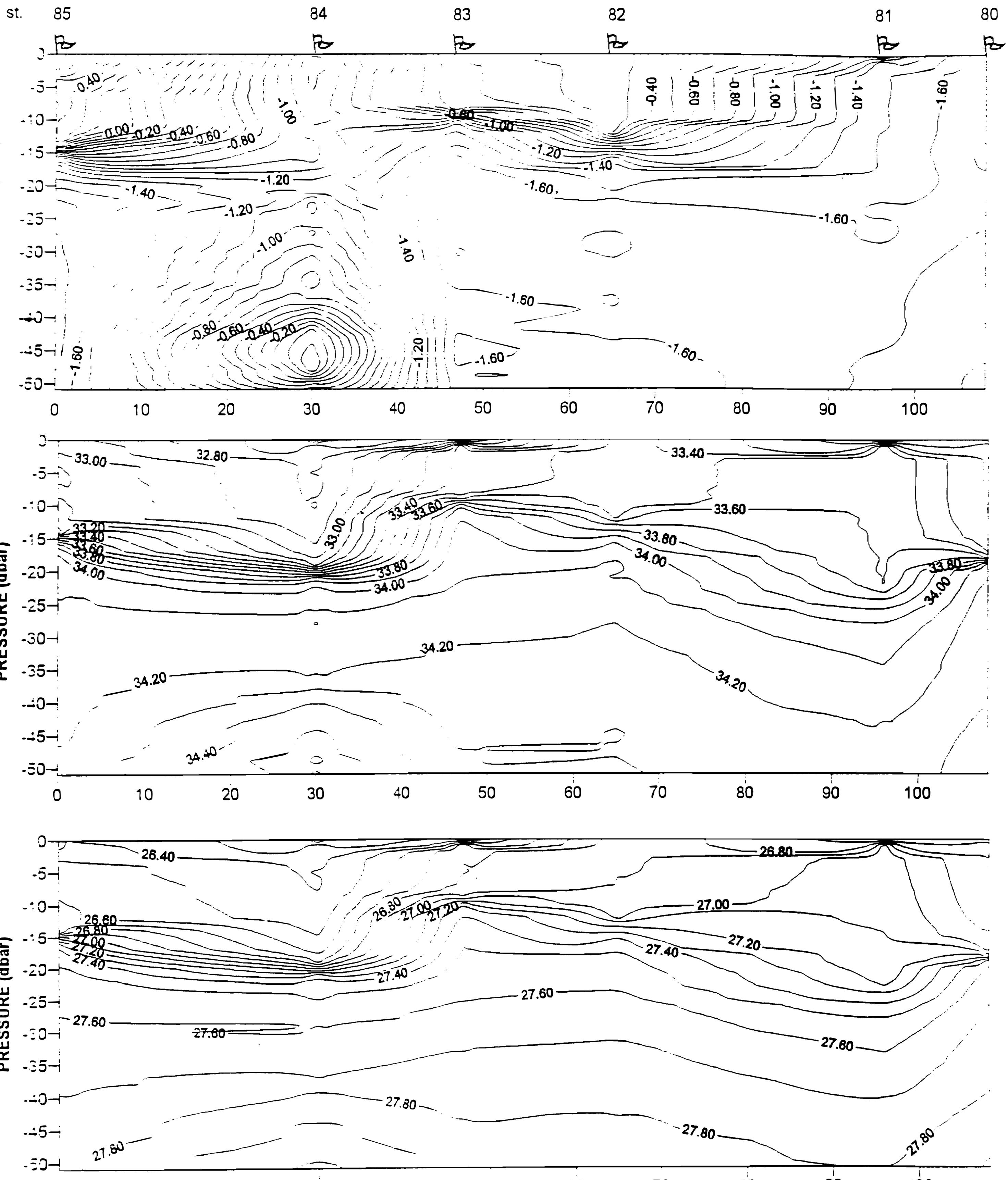


Fig 3a Distribution of temperature (a), salinity (b) and density (c)in uppen layer of water in the cross section 3, R/V "Lance", "ICE-BAR'95", june 1995

Appendix 2

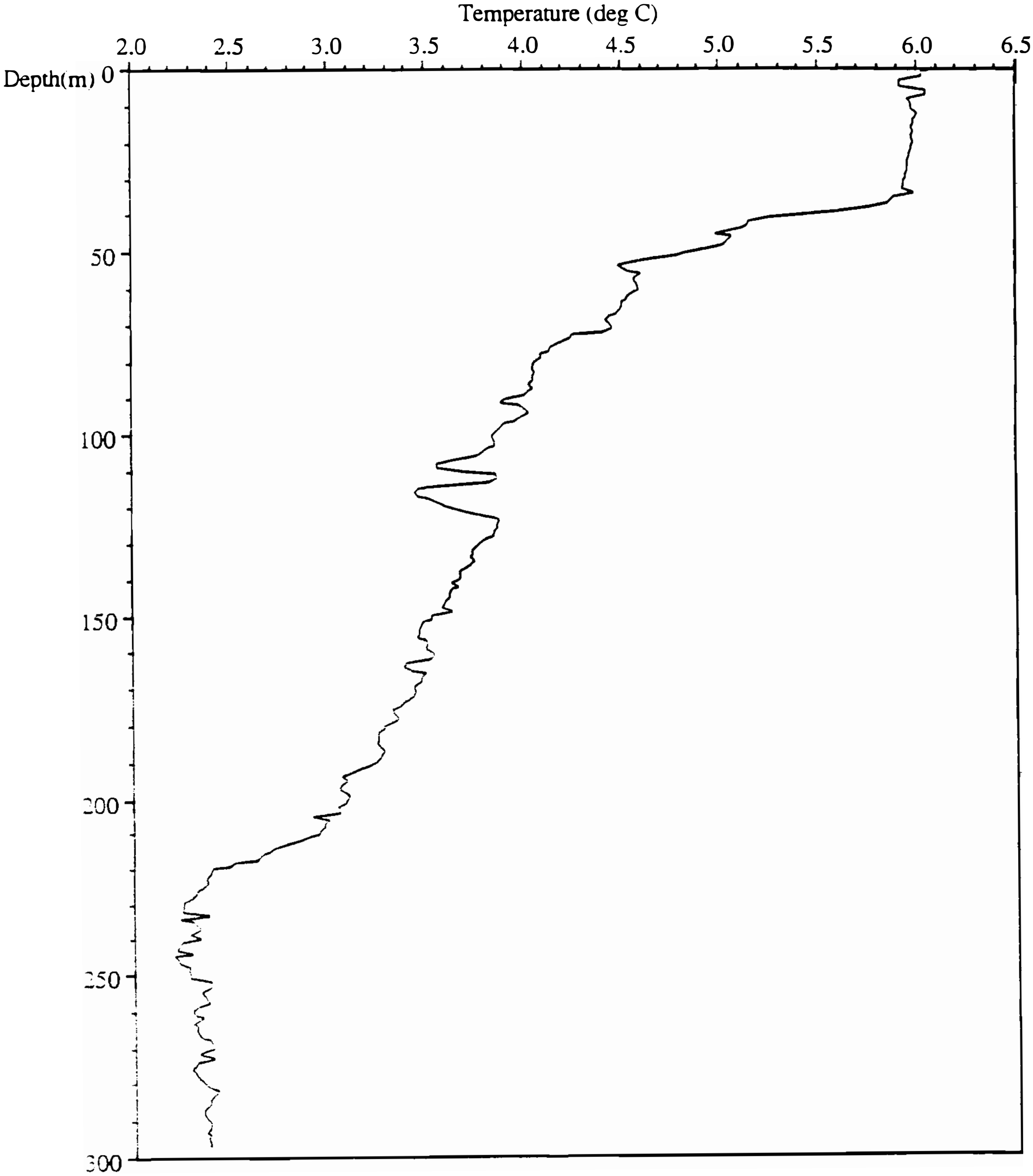
Physical Oceanography Program

XBT Data: Plots

ICE-BAR 1995

XBT Data   Station "4"

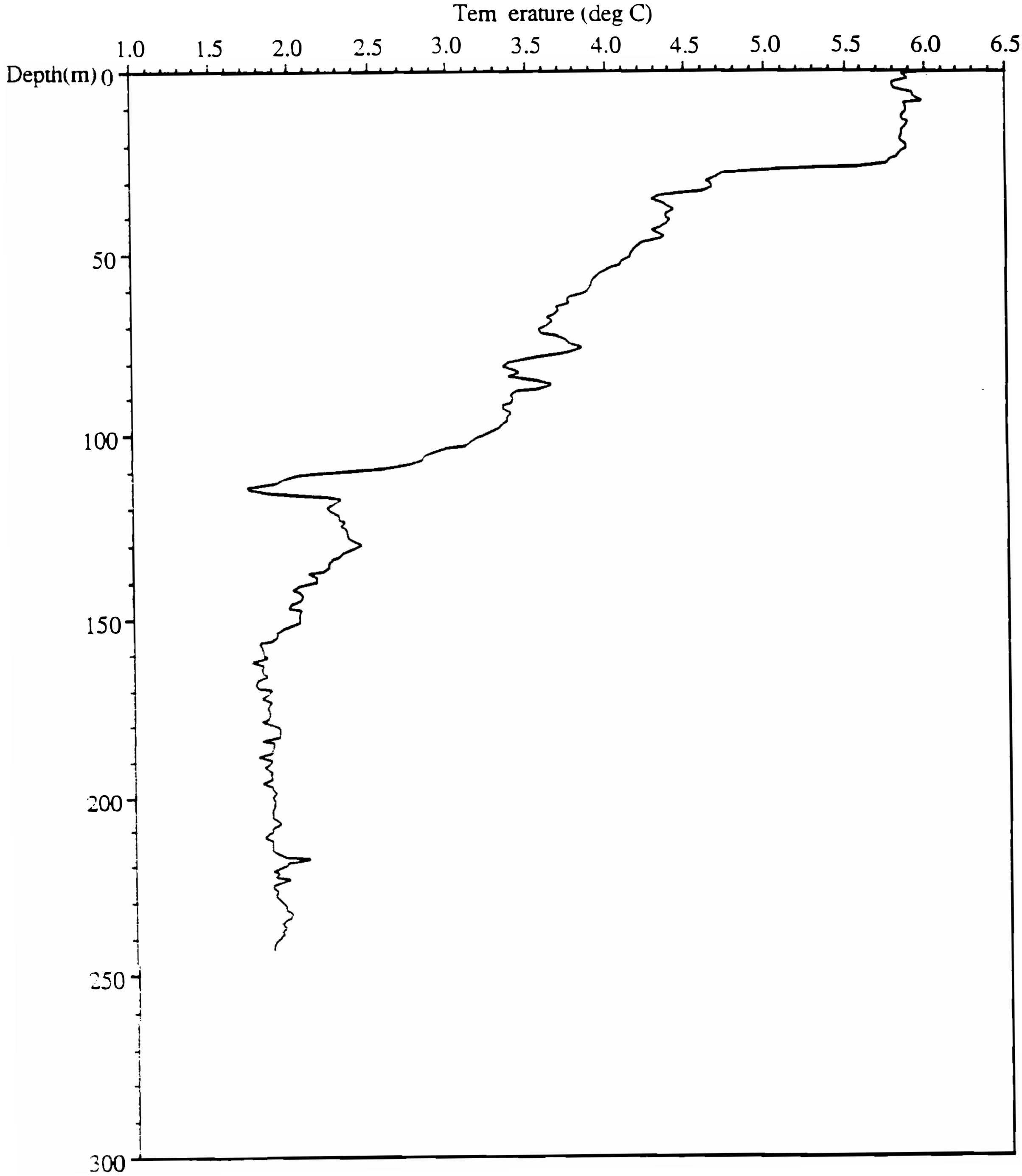
Date 11/June 0008 UT   Lat 73°40.00′   Lon 19°05.00′



ICE-BAR 1995

XBT Data Station "6"

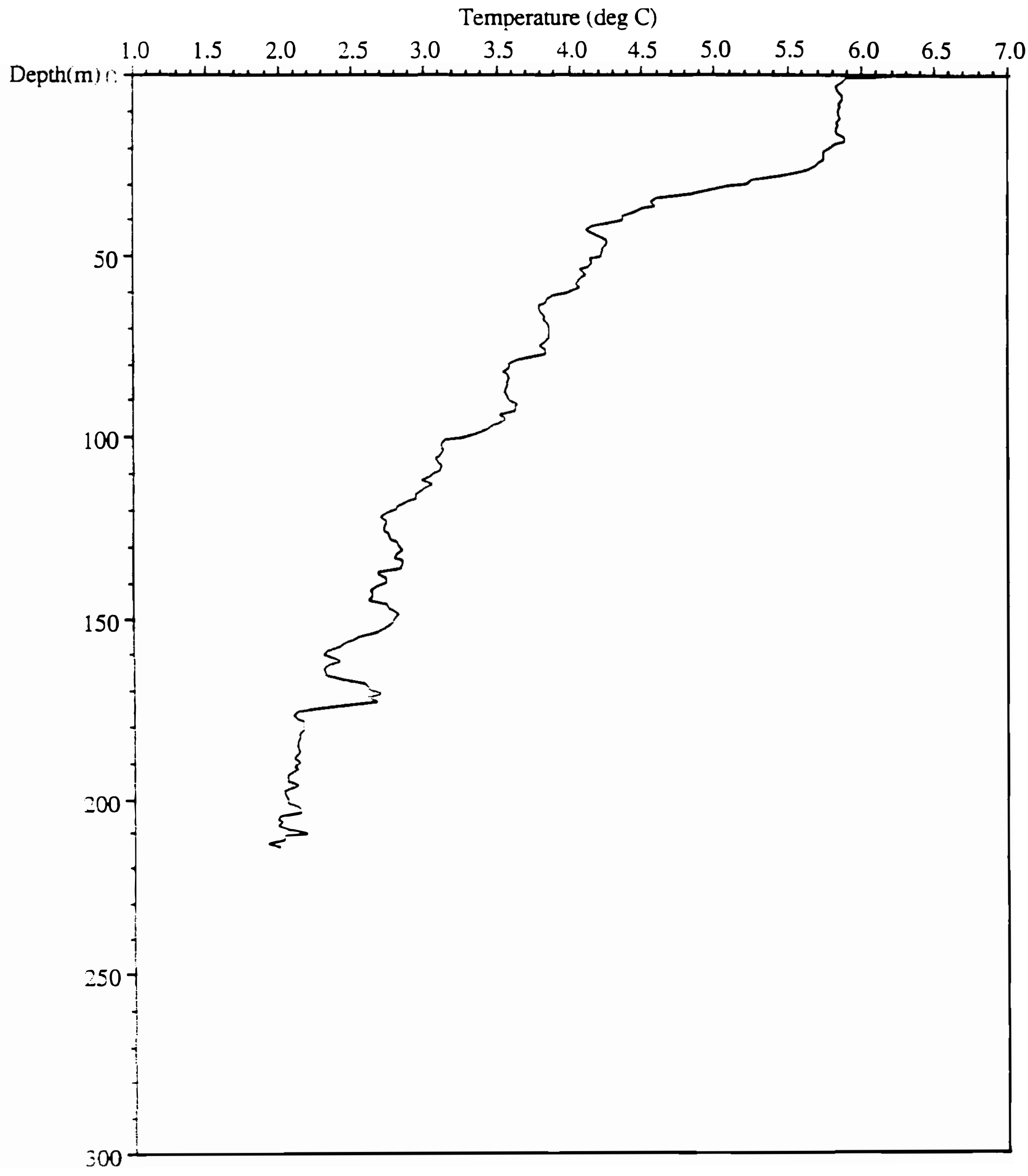
Date 11/June 0219 UT Lat 73°48.00´ Lon 19°05.00´



ICE-BAR 1995

XBT Data Station "7"

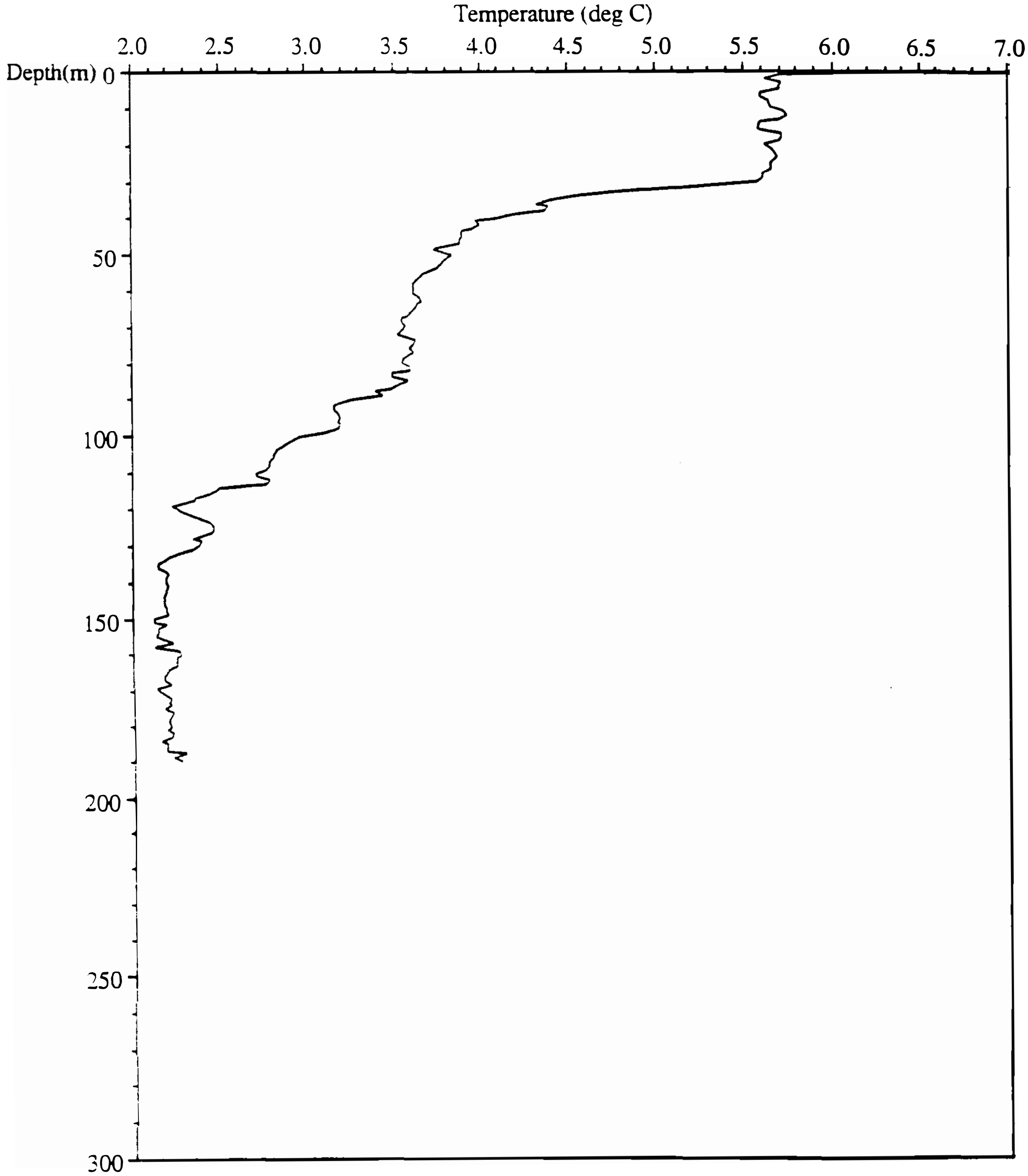
Date 11/June 0234 UT Lat 73°50.00´ Lon 19°05.00´



ICE-BAR 1995

XBT Data Station "8"

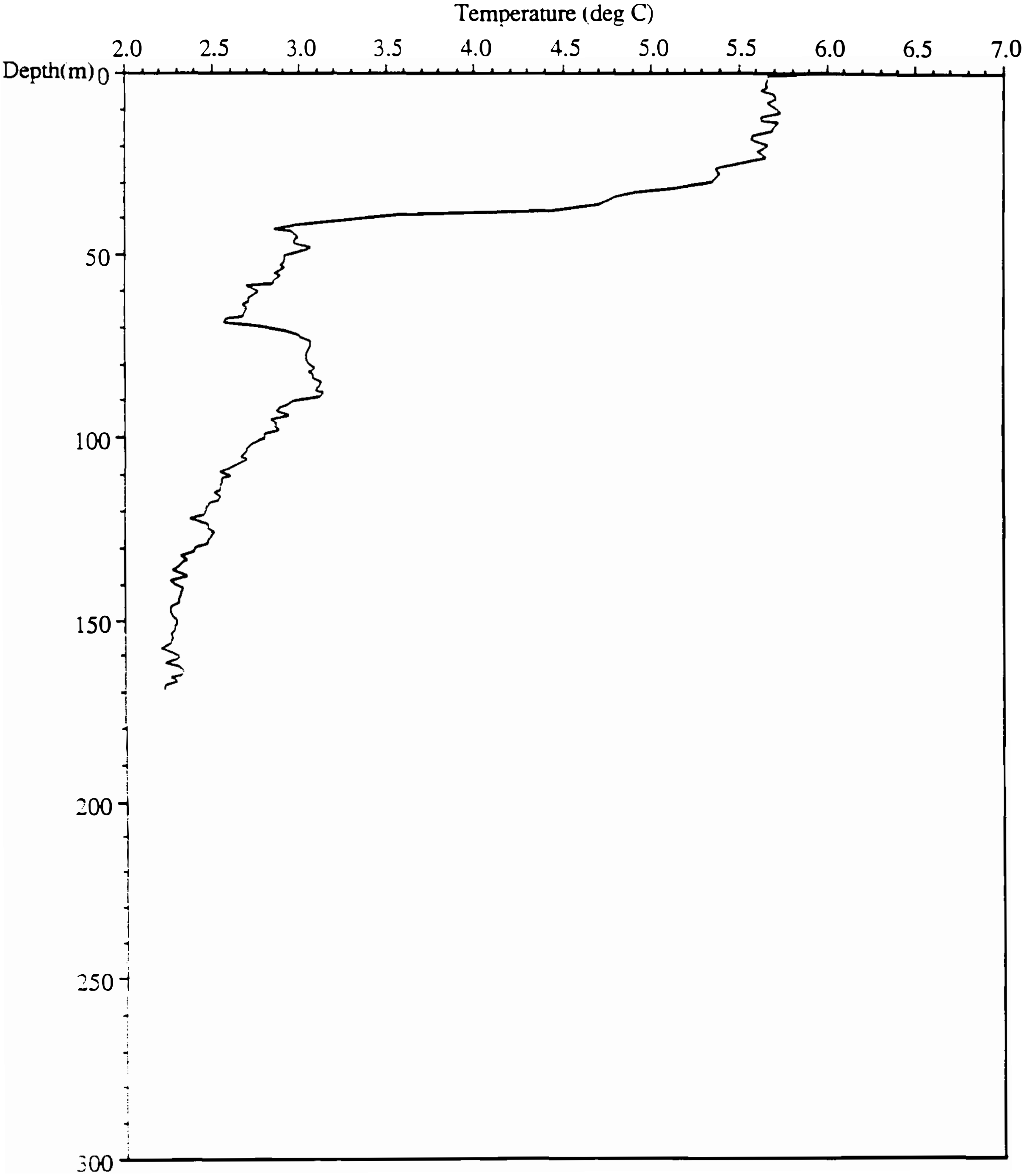
Date 11/June 0250UT Lat 73°52.00´ Lon 19°05.00´



ICE-BAR 1995

XBT Data Station "9"

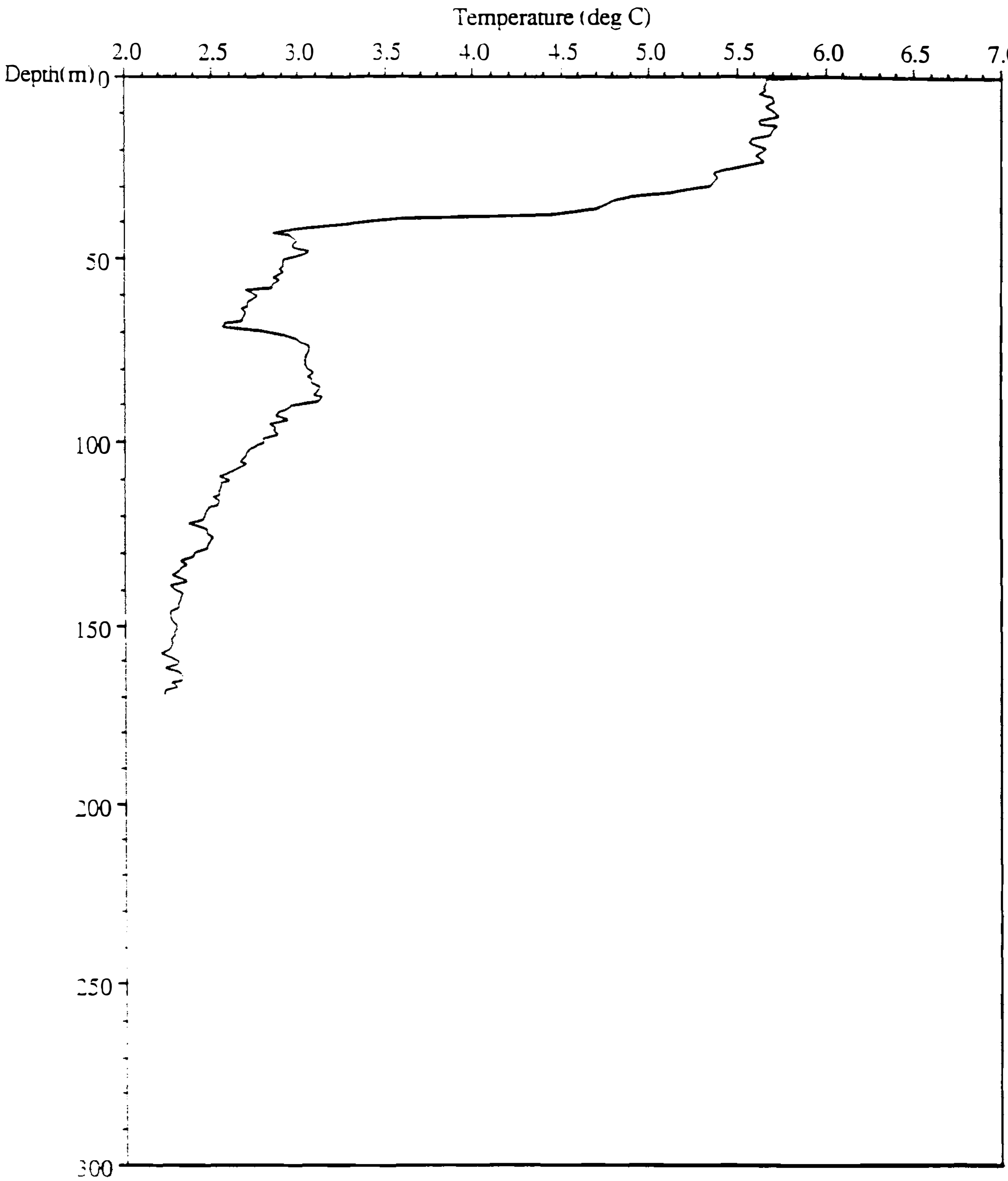
Date 11/June 0305 UT Lat 73°54.00′ Lon 19°05.00′



<u>ICE-BAR 1995</u>

XBT Data Station "9"

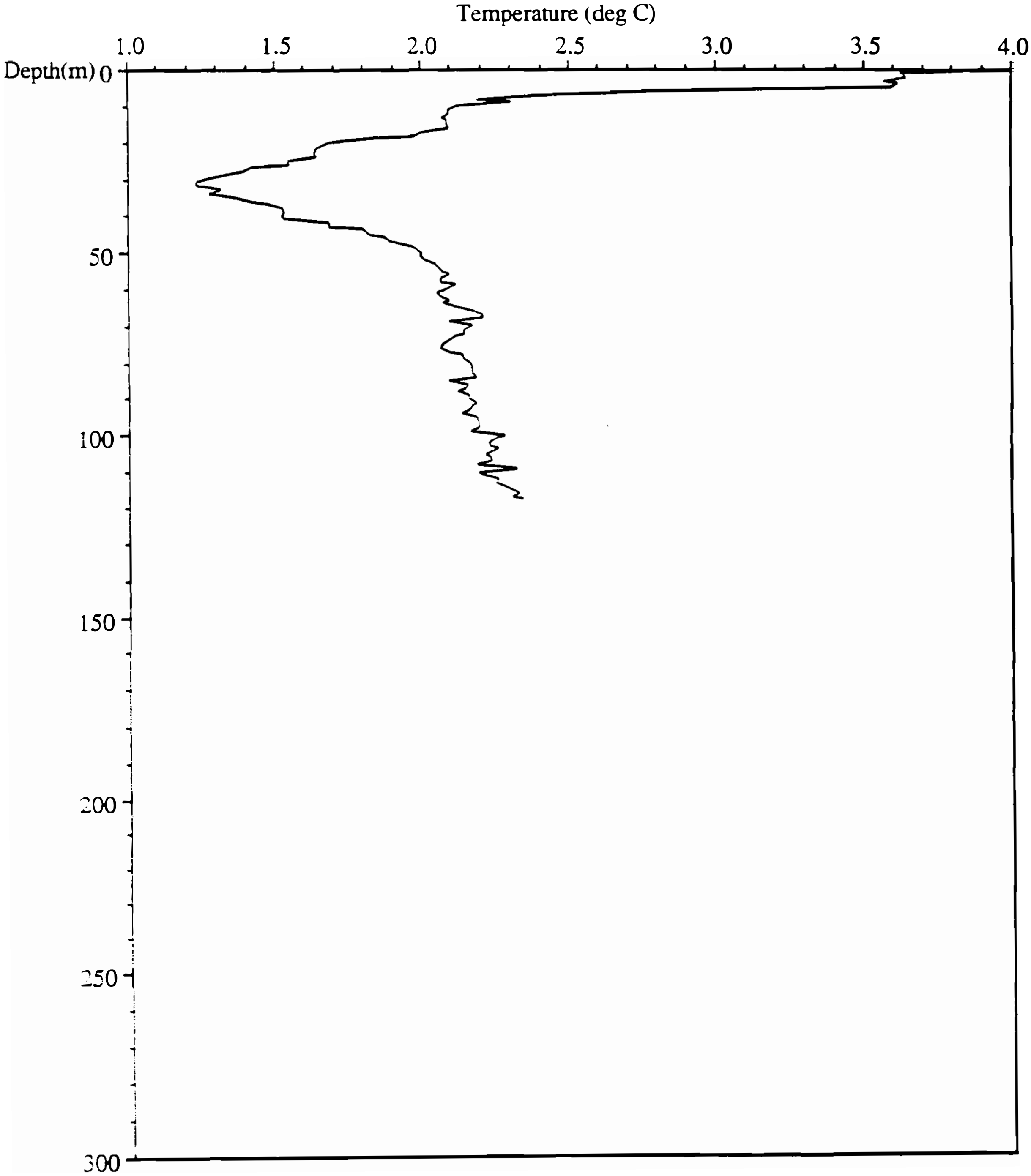
Date 11/June 0305 UT Lat 73°54.00′ Lon 19°05.00′



ICE-BAR 1995

XBT Data Station "11"

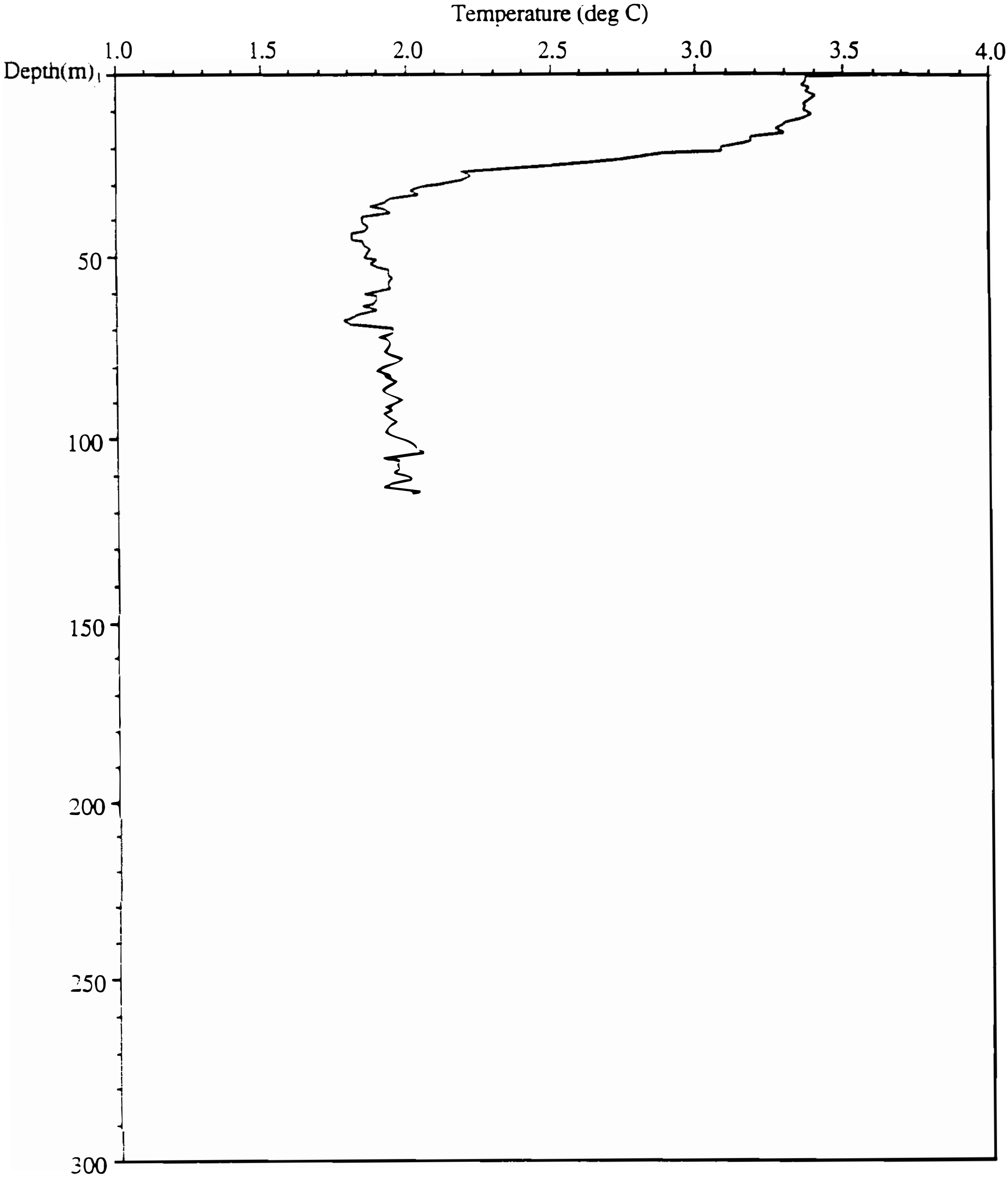
Date 11/June 0350 UT Lat 73°58.00´ Lon 19°05.00´



ICE-BAR 1995

XBT Data Station "12"

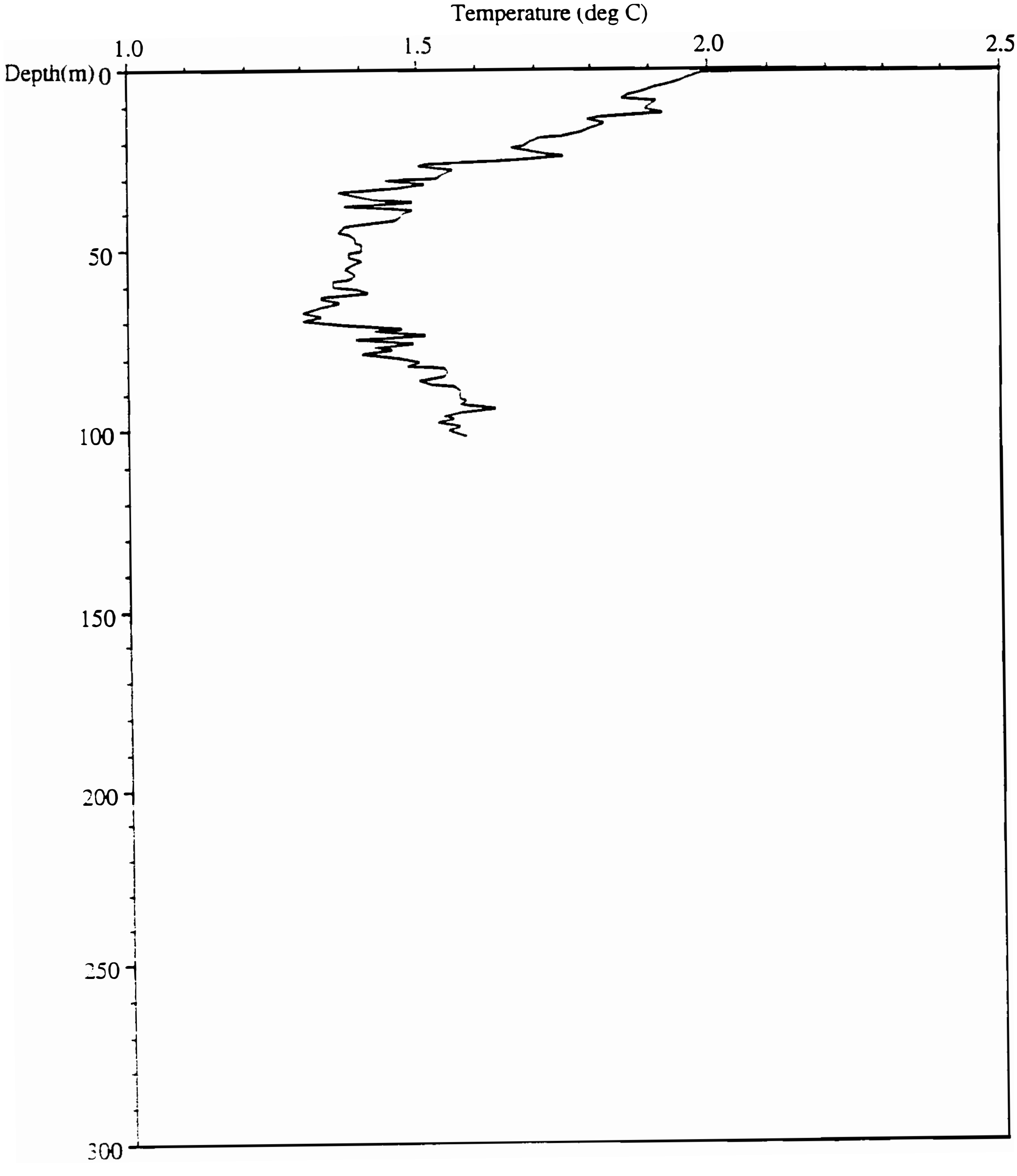
Date 11/June 0411 UT Lat 74°00.00´ Lon 19°05.00´



ICE-BAR 1995

XBT Data   Station "13"

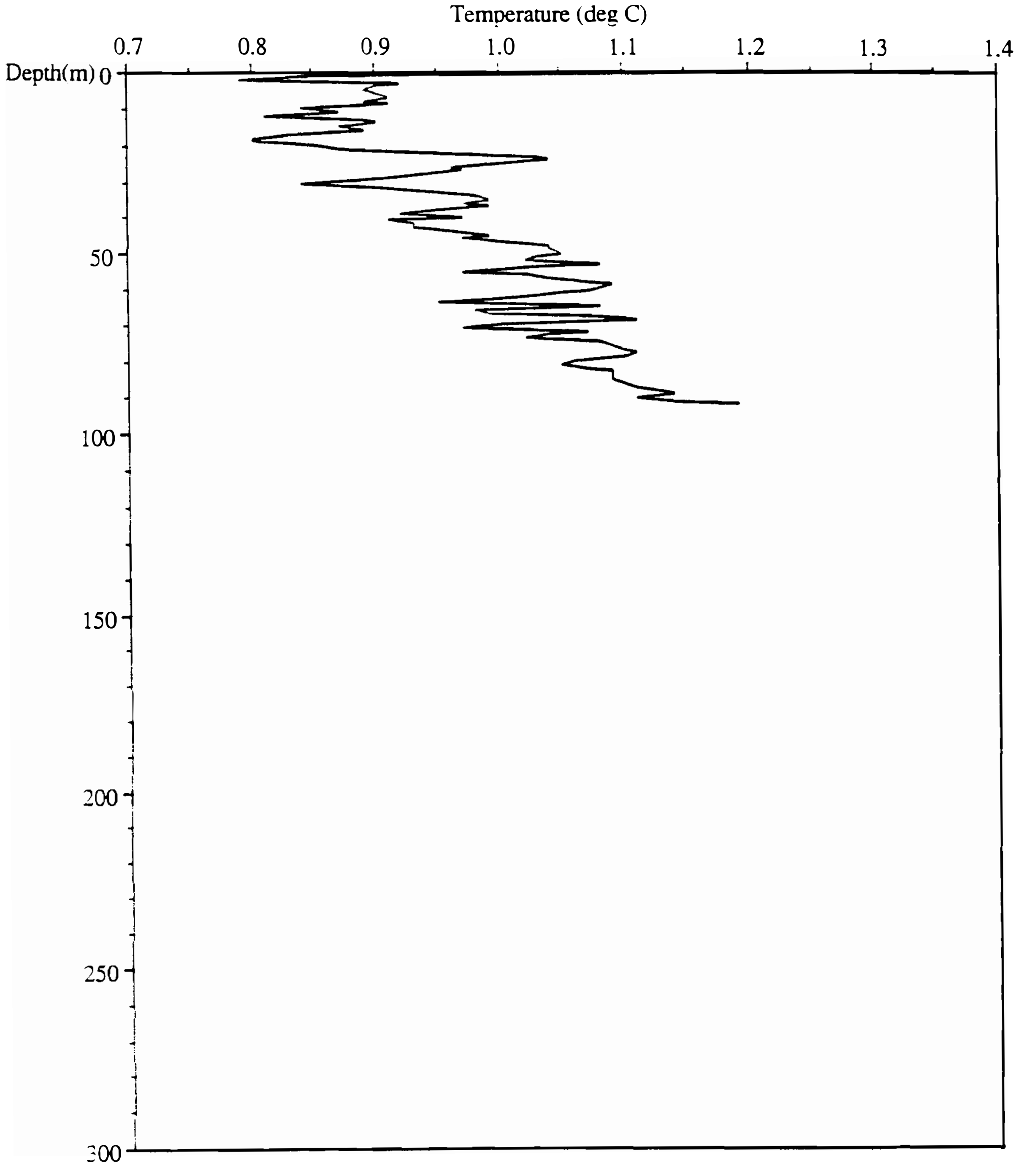
Date 11/June 0425 UT   Lat 74°02.00´   Lon 19°04.80´



ICE-BAR 1995

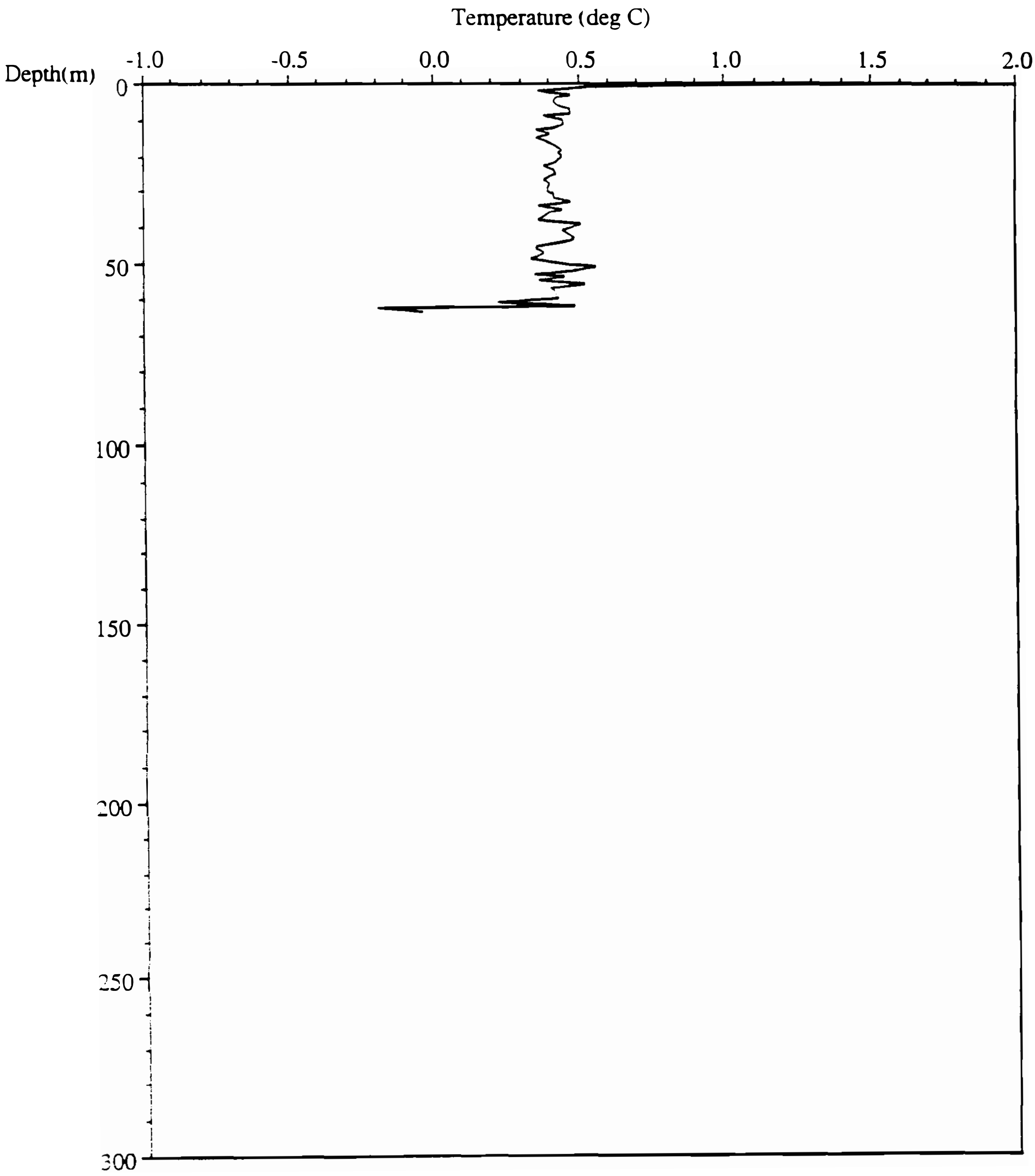
XBT Data Station "14"

Date 11/June 0440 UT Lat 74°04.00´ Lon 19°05.00´



XBT Data Station "15"

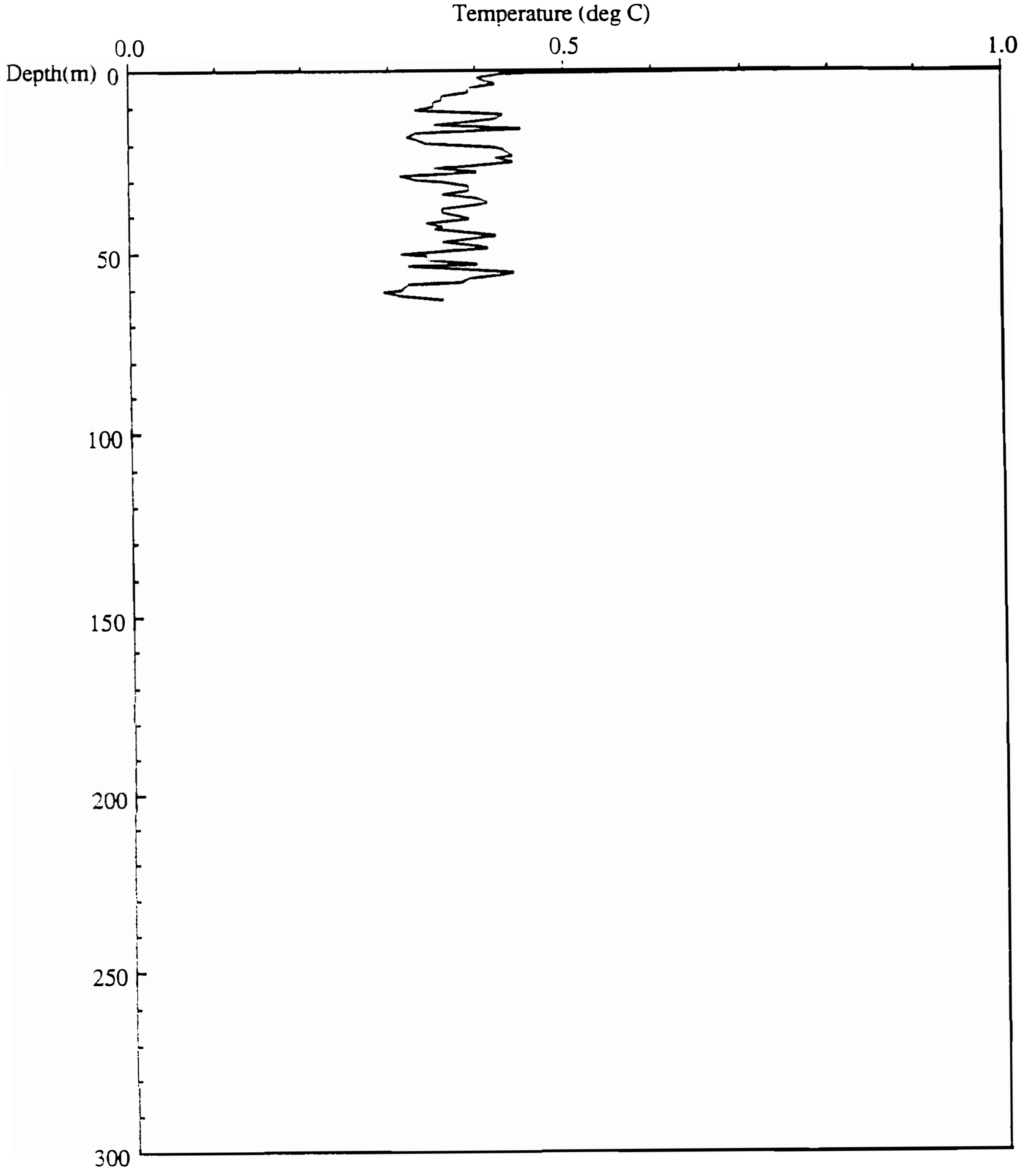
Date 11/June 0515 UT Lat 74°06.00´ Lon 19°04.90´



ICE-BAR 1995

XBT Data Station "16"

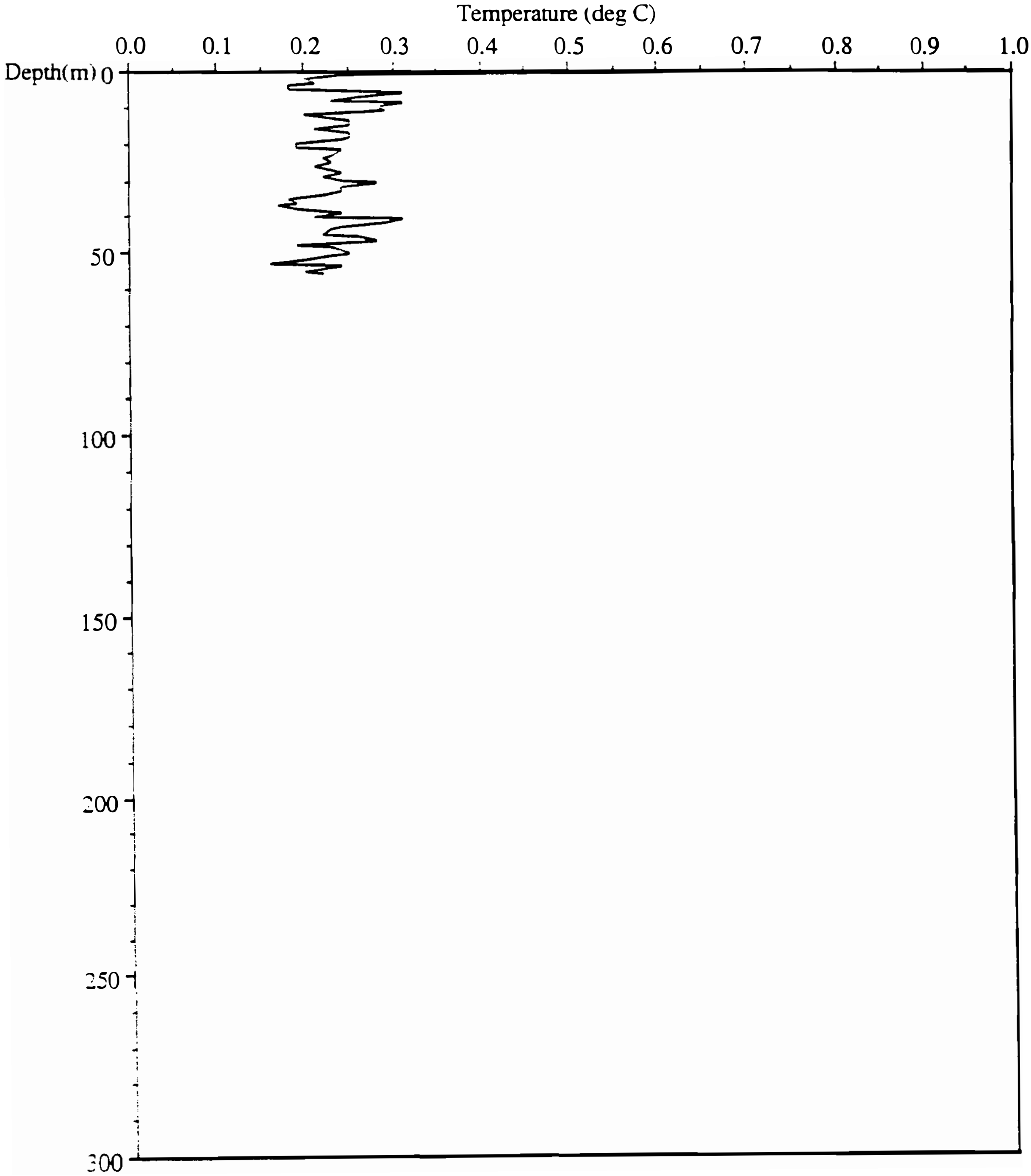
Date 11/June 0534 UT Lat 74°08.00´ Lon 19°04.50´



ICE-BAR 1995

XBT Data Station "17"

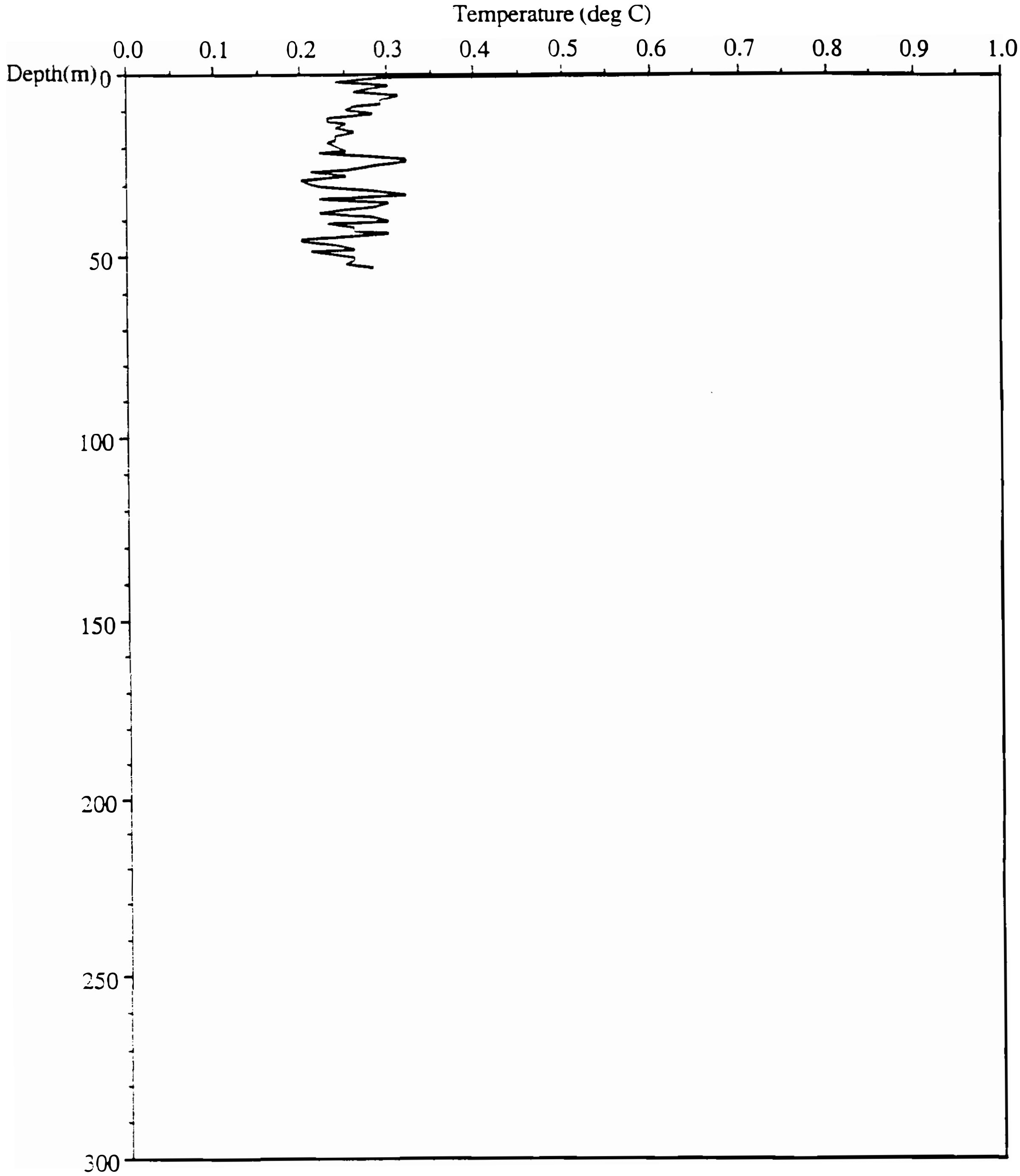
Date 11/June 0549 UT Lat 74°10.00´ Lon 19°04.60´



ICE-BAR 1995

XBT Data Station "18"

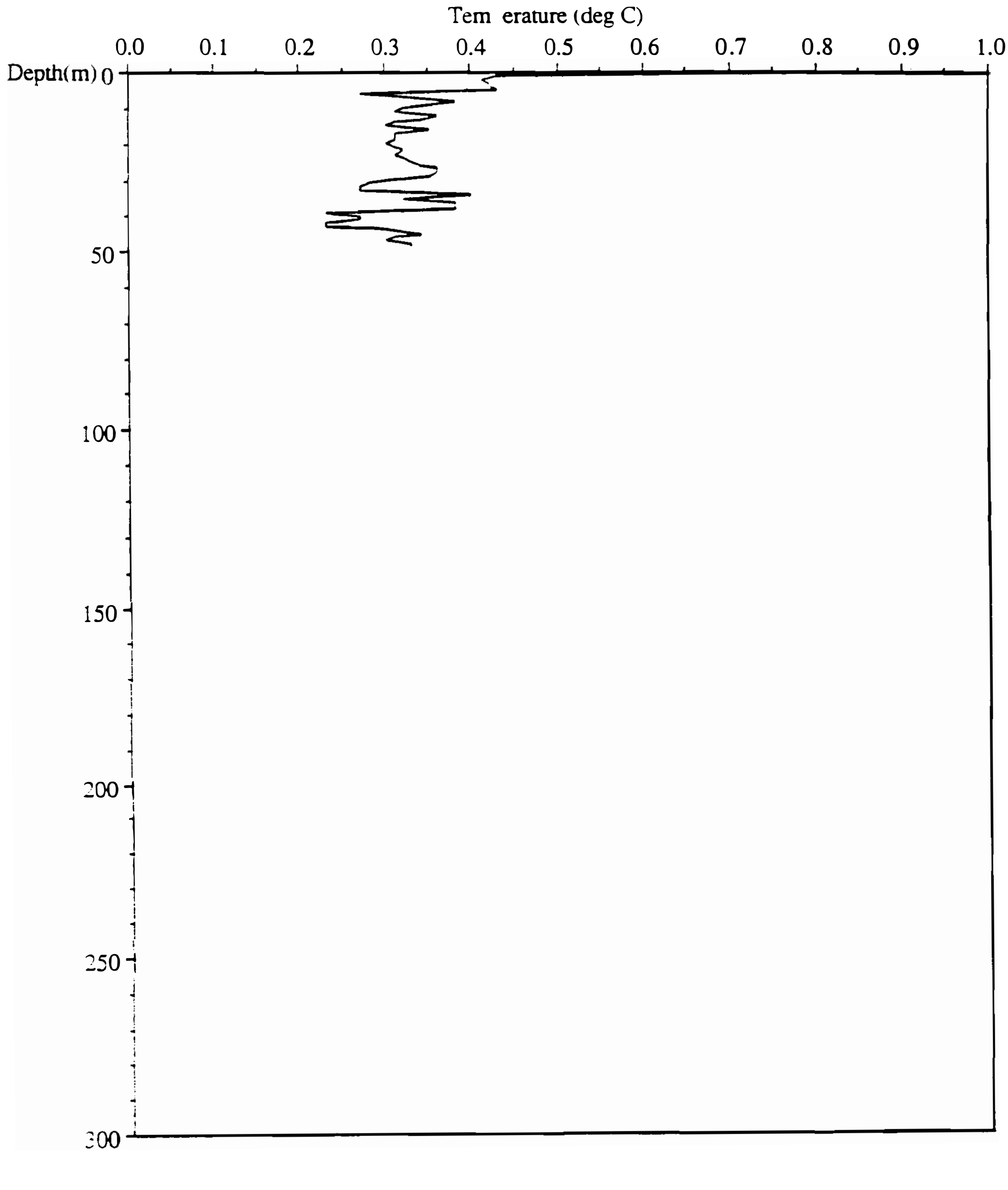
Date 11/June 0604 UT Lat 74°12.00´ Lon 19°04.70´



ICE-BAR 1995

XBT Data Station "19"

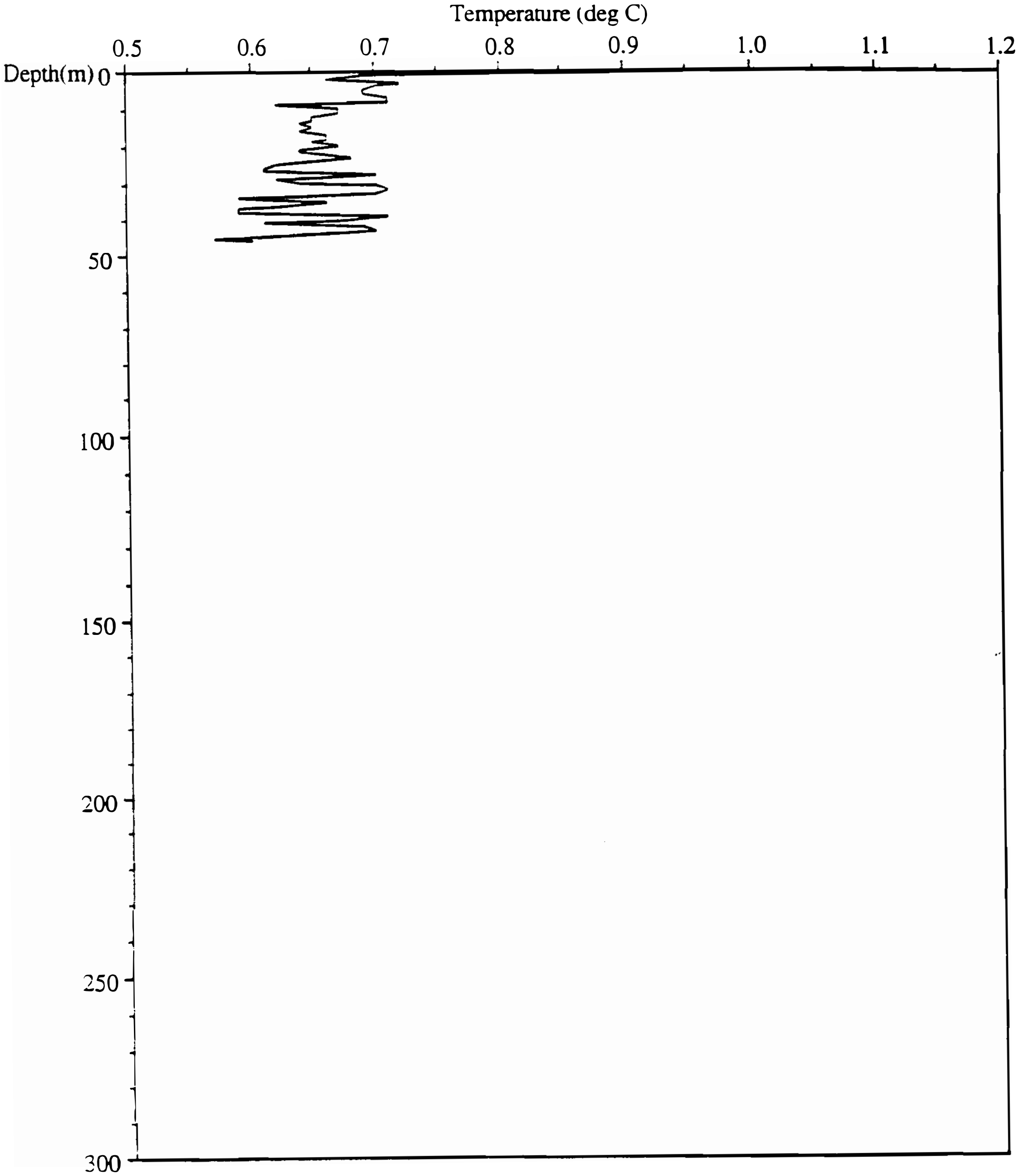
Date 11/June 0622 UT Lat 74°14.00´ Lon 19°04.50´



ICE-BAR 1995

XBT Data Station "20"

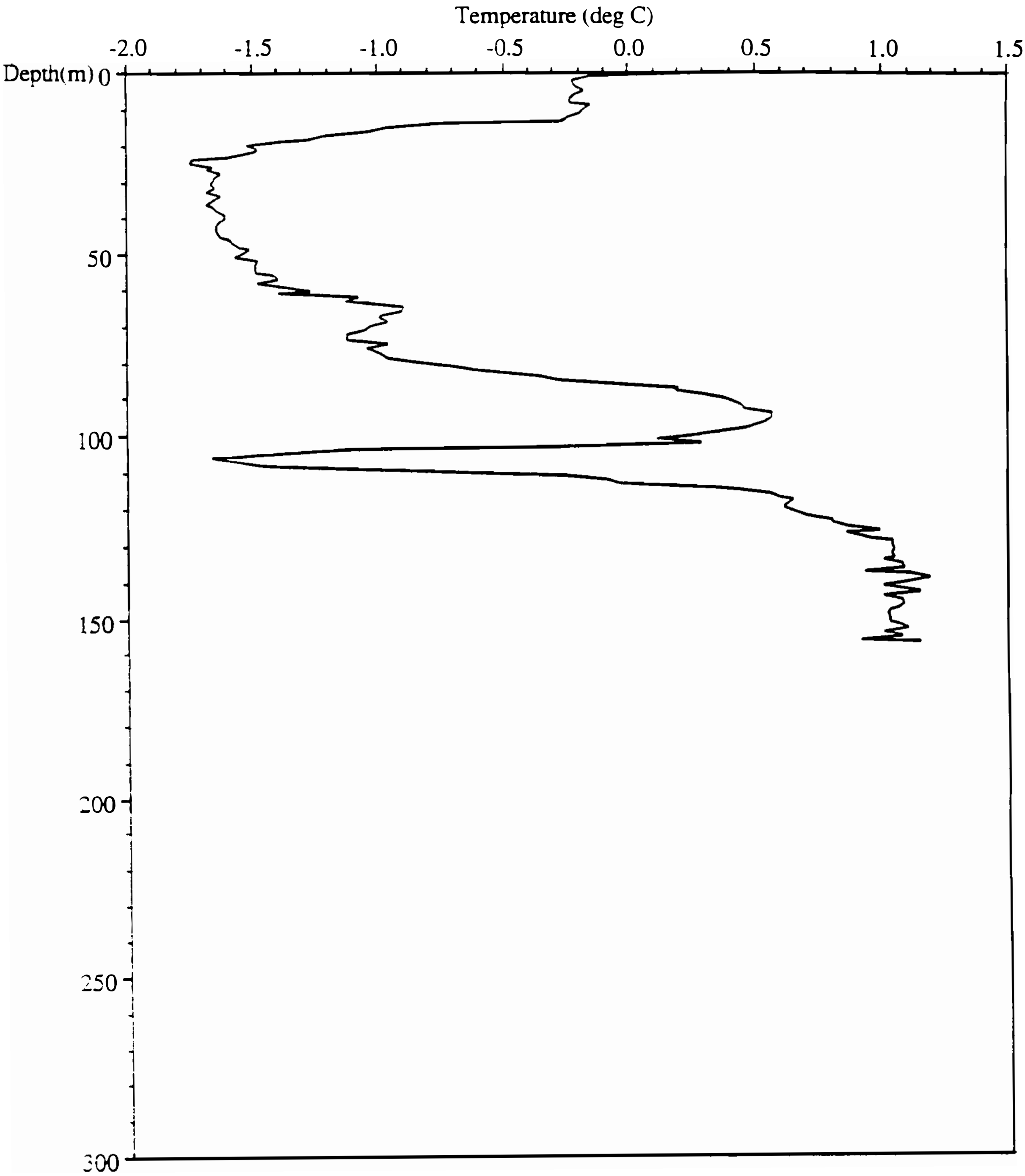
Date 11/June 0647 UT Lat 74°16.00′ Lon 19°04.00′



ICE-BAR 1995

XBT Data Station "63I"

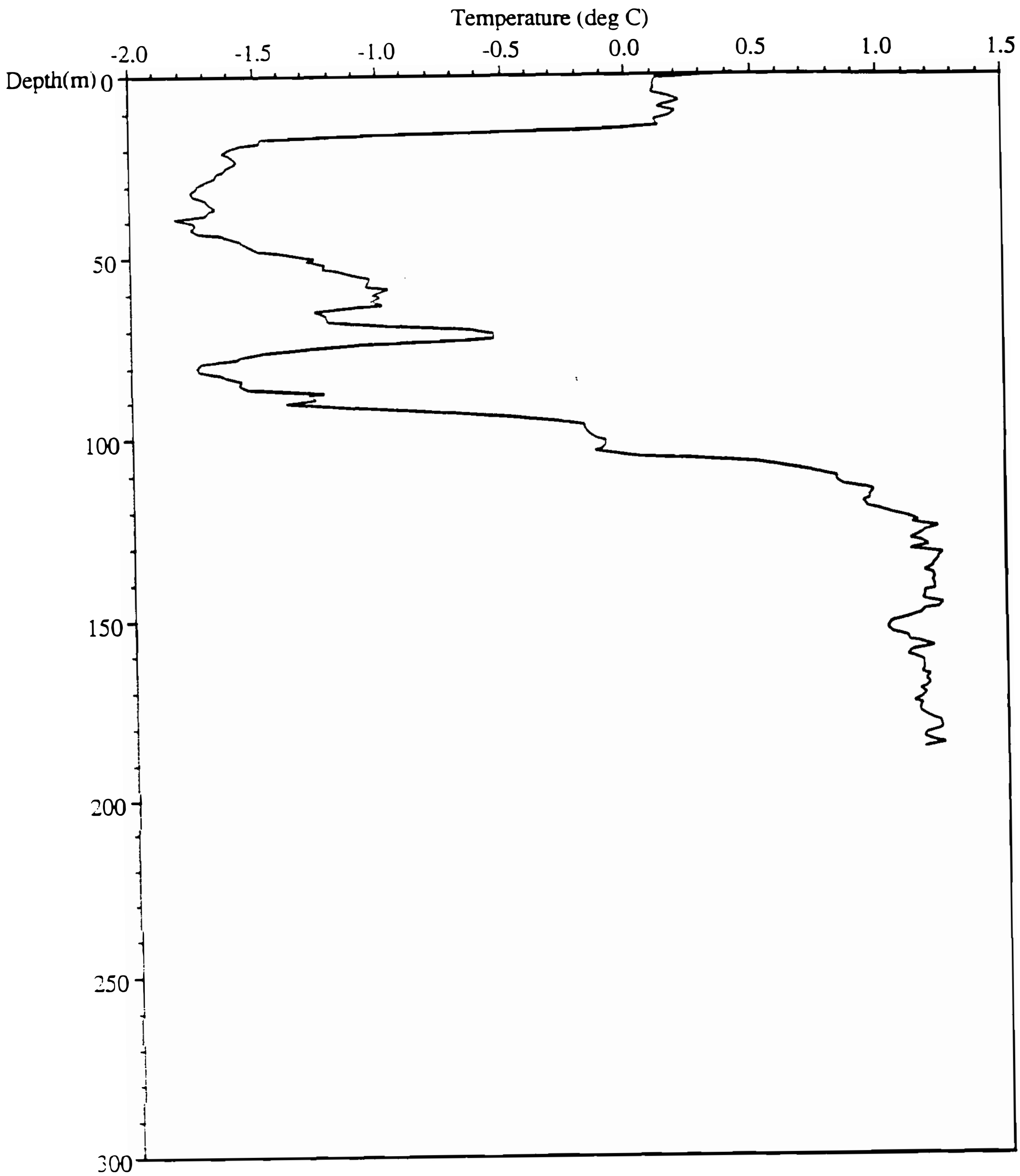
Date 25/June 1120 UT Lat 77°19.77′ Lon 31°24.86′



ICE-BAR 1995

XBT Data Station "64A"

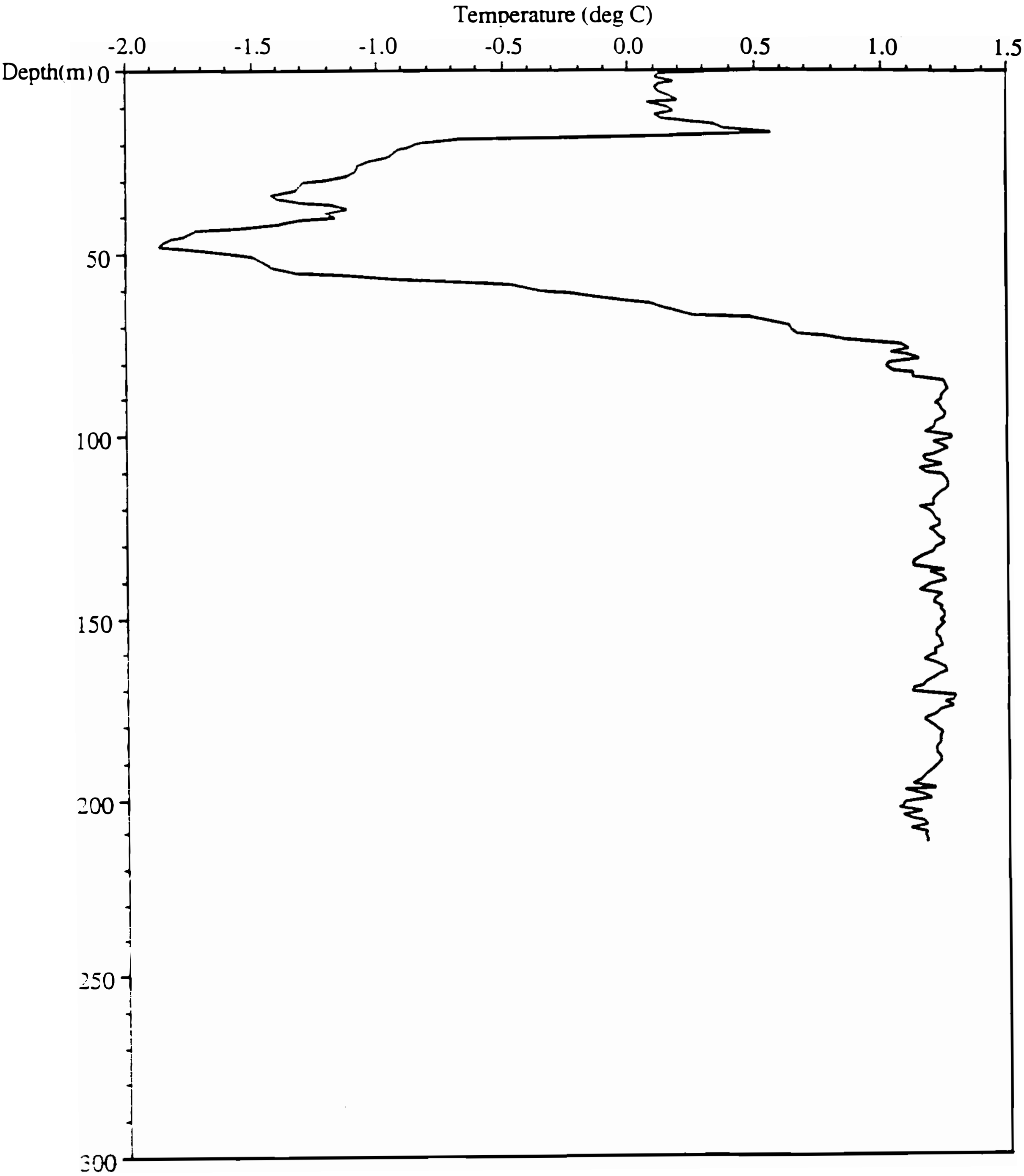
Date 25/June 1305 UT Lat 77°10.76´ Lon 30°30.00´



ICE-BAR 1995

XBT Data Station "64B"

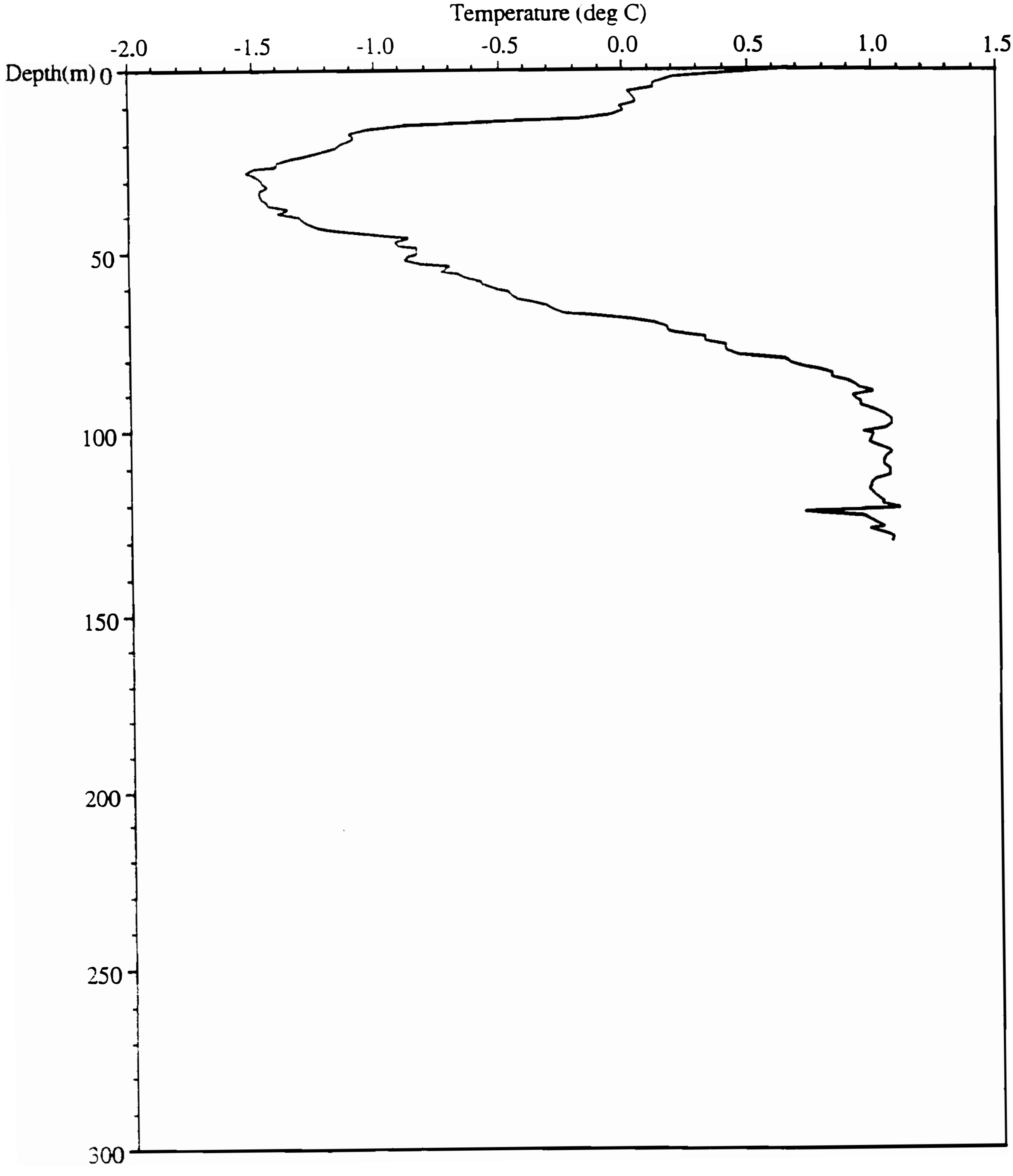
Date 25/June 1500 UT Lat 77°02.21´ Lon 29°30.00´



ICE-BAR 1995

XBT Data Station "66E"

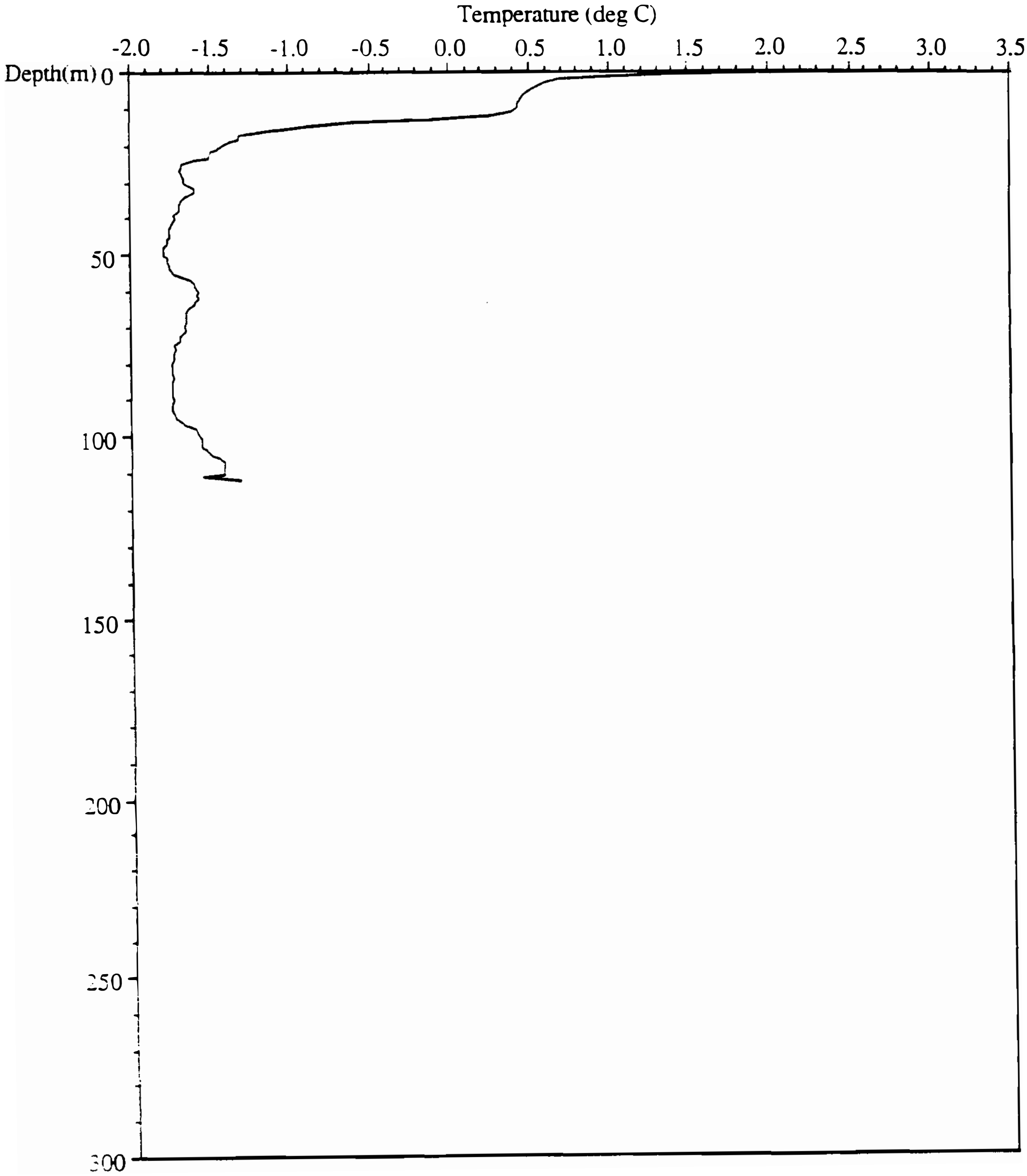
Date 26/June 0847 UT Lat 77°49.25´ Lon 28°30.00´



ICE-BAR 1995

XBT Data Station "66I"

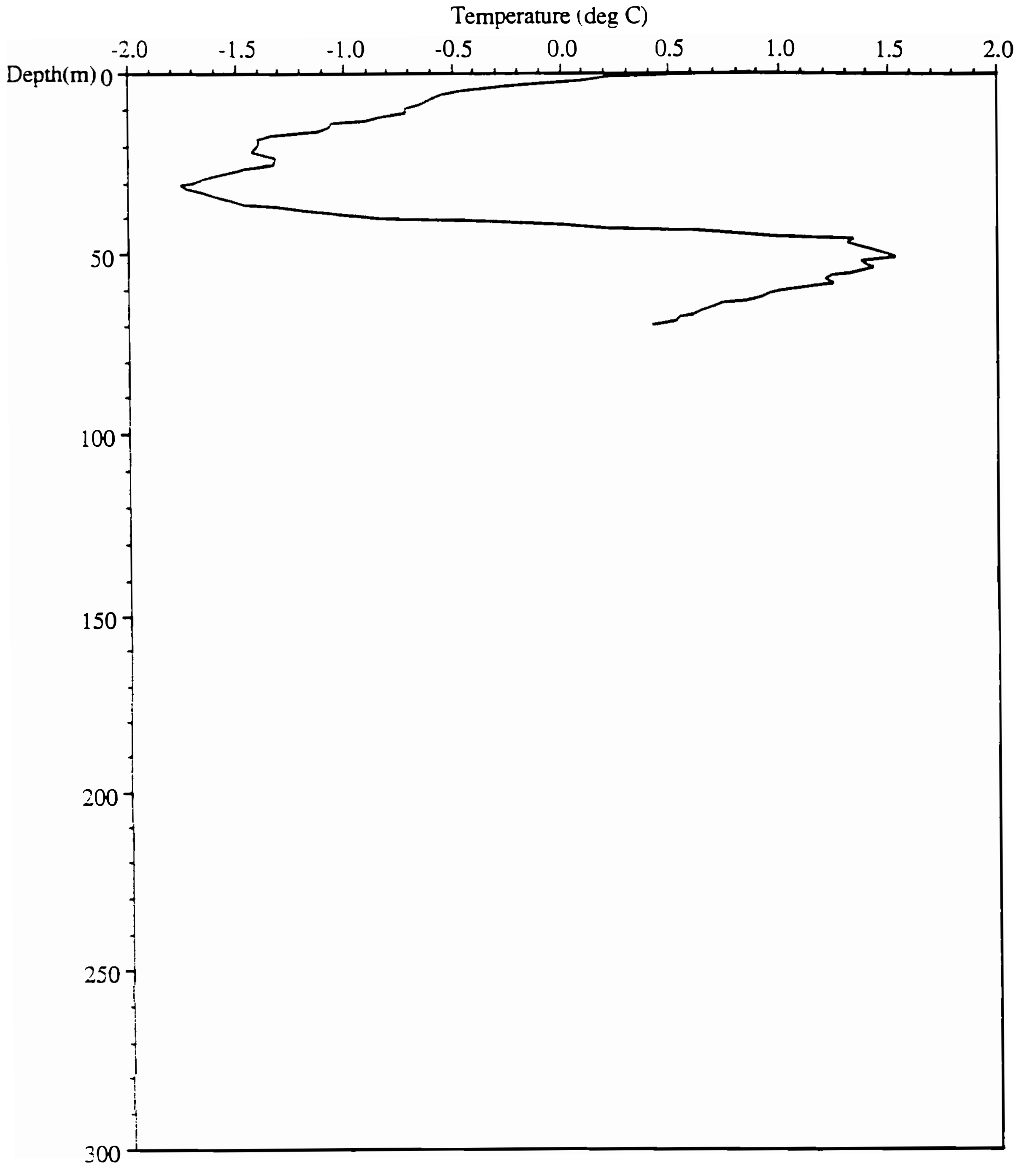
Date 26/June 1325 UT Lat 76°41.50′ Lon 27°30.00′



ICE-BAR 1995

XBT Data   Station "*29307"

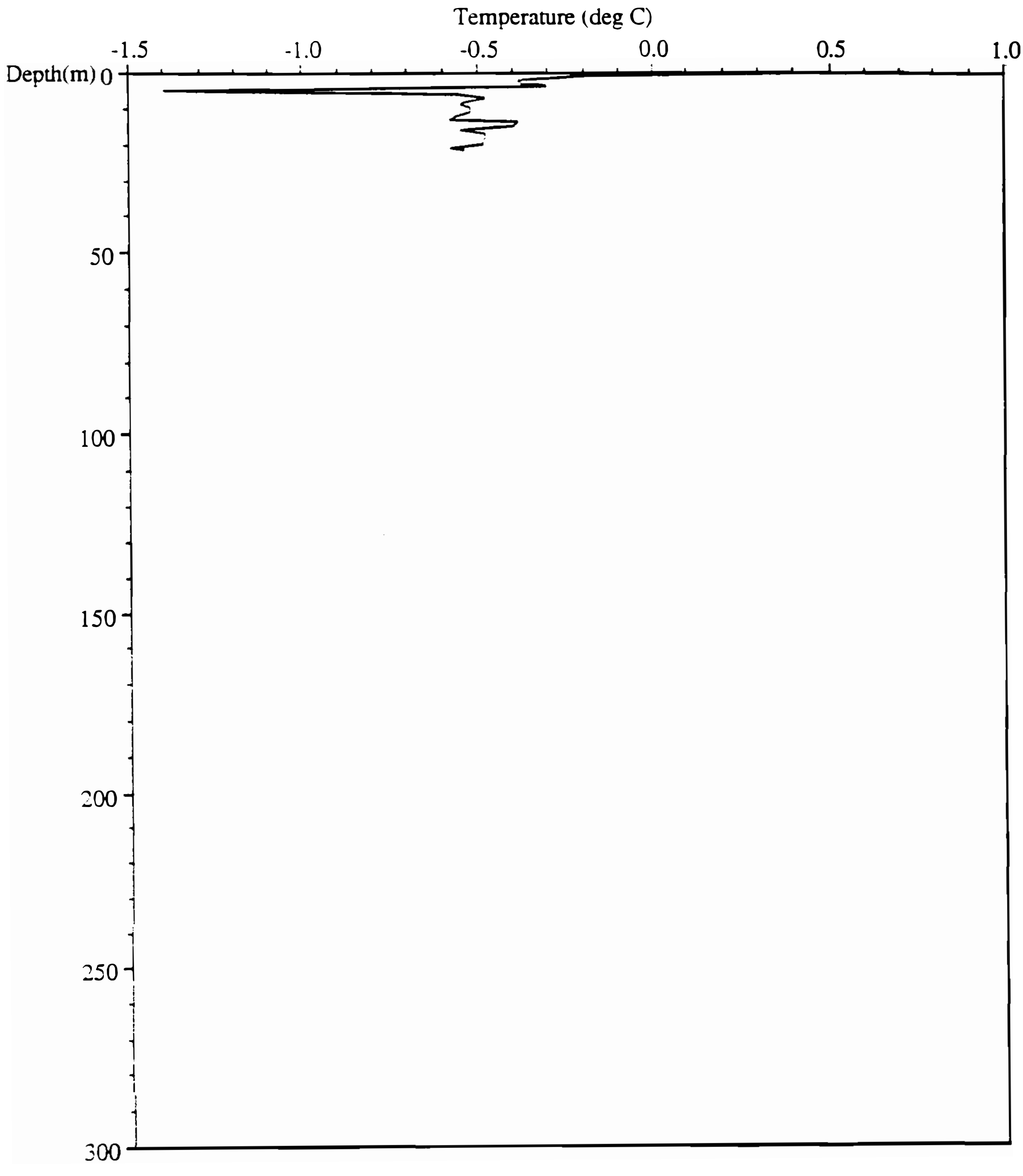
Date 26/June 1448 UT Lat 76°38.91′ Lon 26°30.00′



ICE-BAR 1995

XBT Data   Station "*29308"

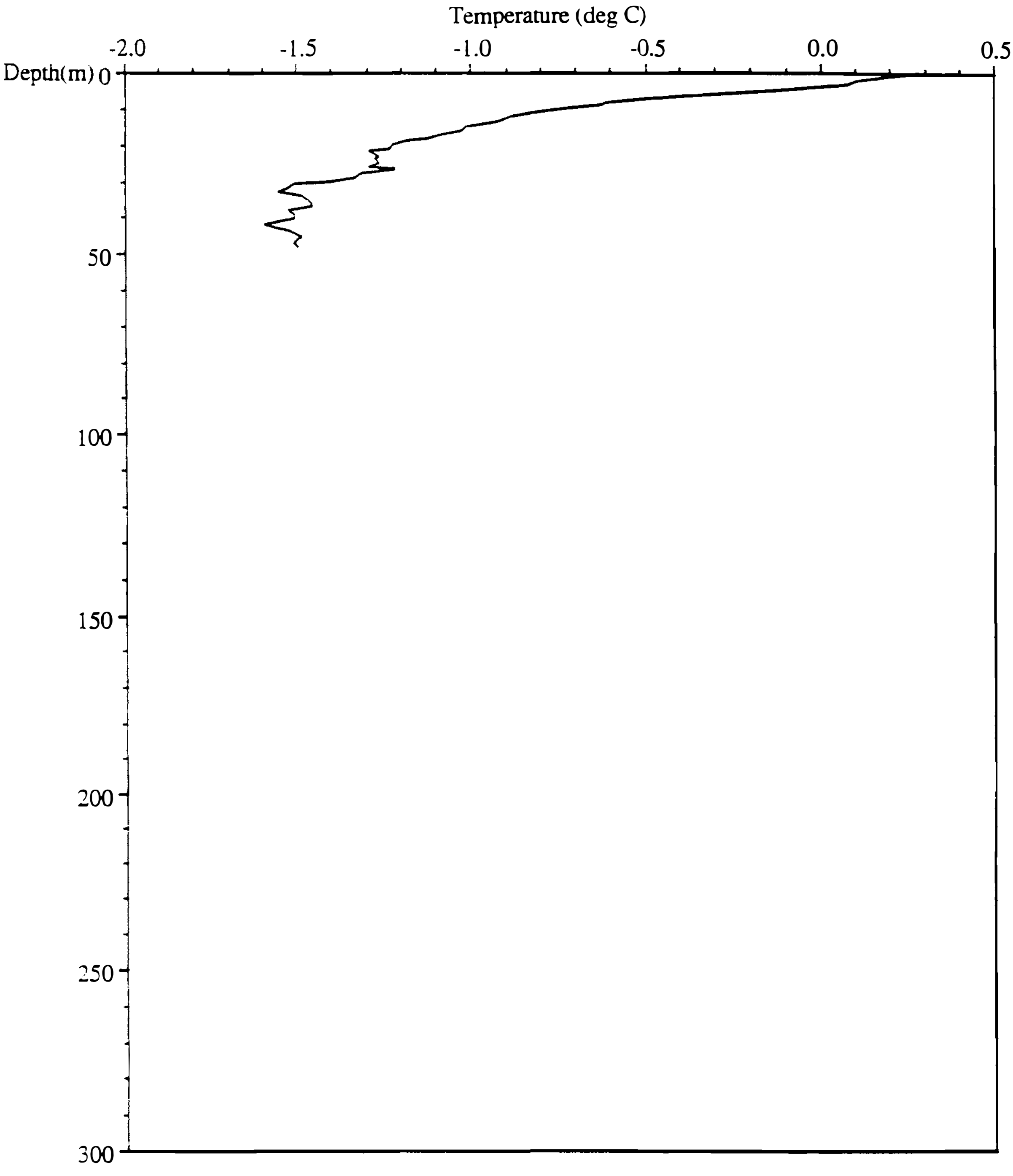
Date 26/June 1608 UT Lat 76°37.20´   Lon 25°30.00´



ICE-BAR 1995

XBT Data Station "*29309"

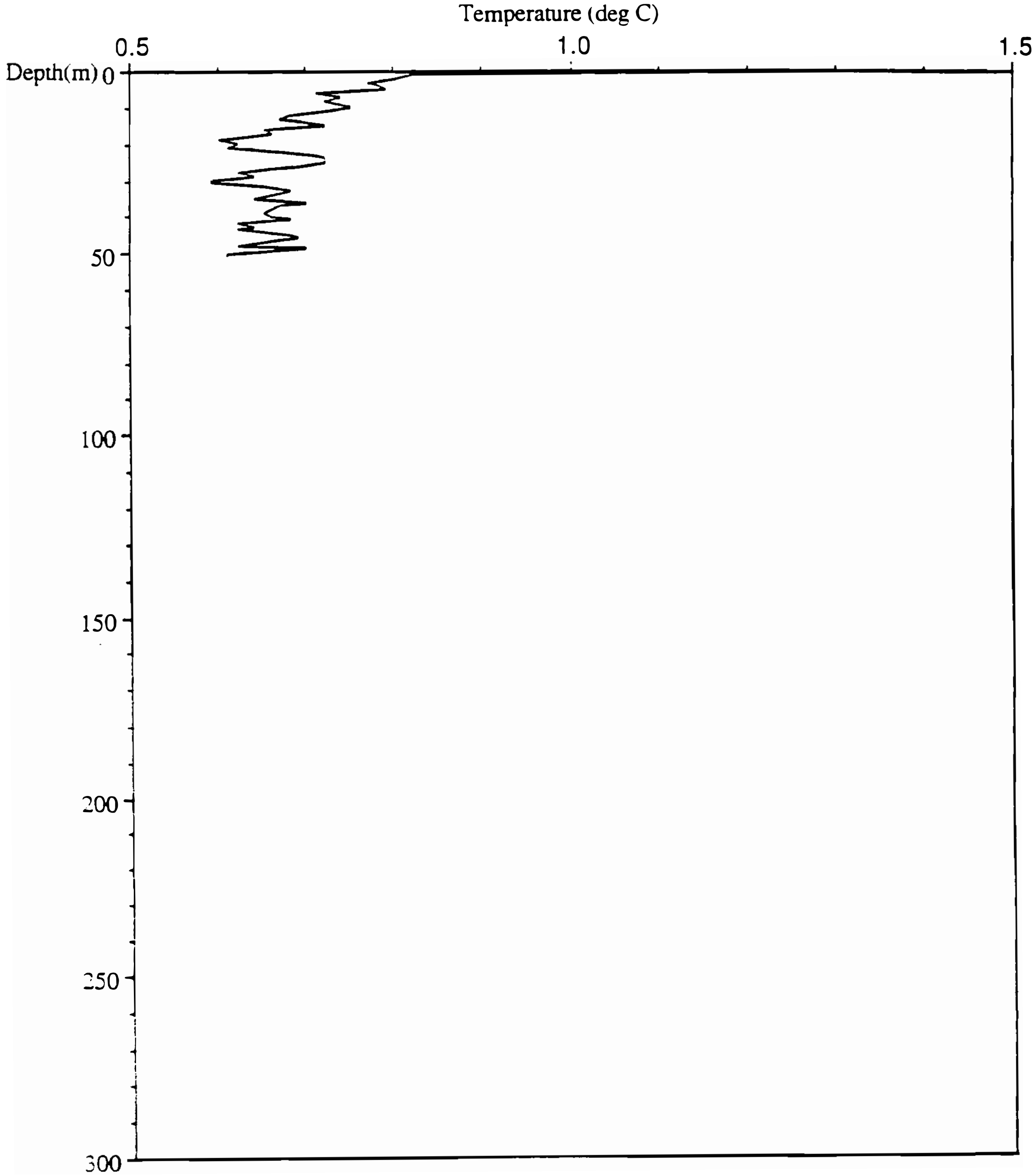
Date 26/June 2242 UT Lat 76°23.31′ Lon 25°00.00′



ICE-BAR 1995

XBT Data   Station "*29310"

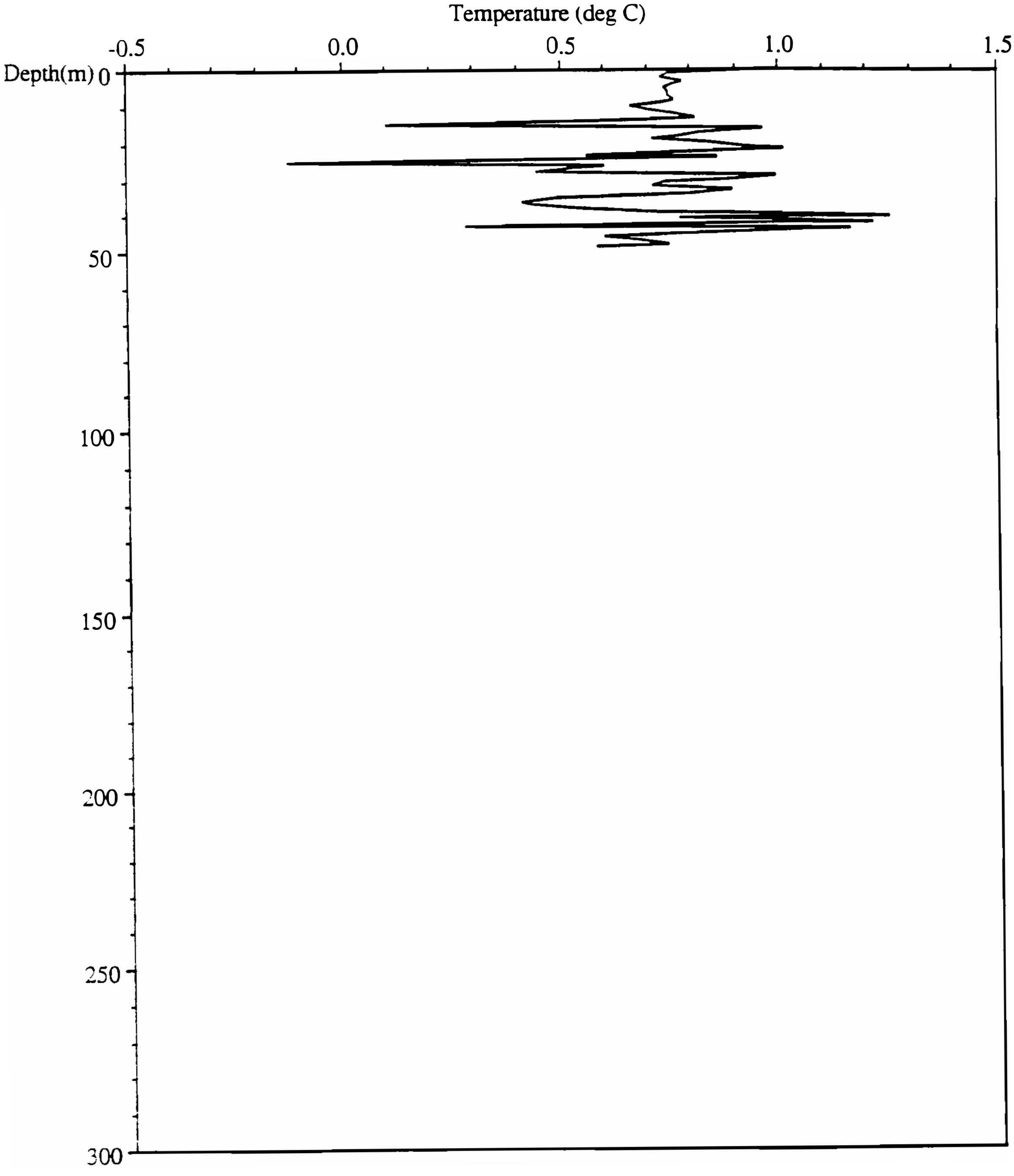
Date 27/June 0312 UT Lat 75°46.00´ Lon 23°00.00´



ICE-BAR 1995

XBT Data Station "*29311"

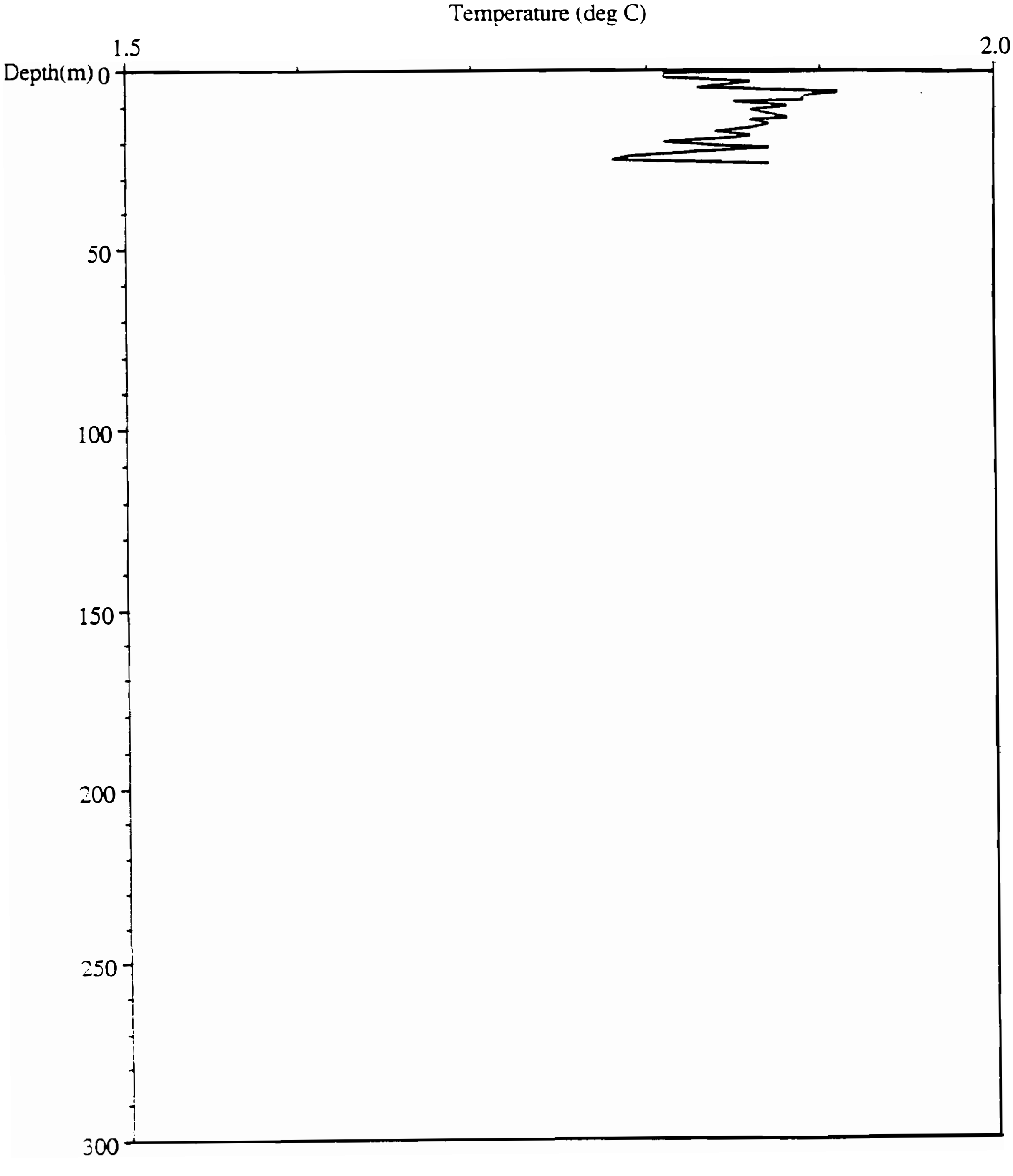
Date 27/June 0745 UT Lat 74°56.96´ Lon 21°00.00´



ICE-BAR 1995

XBT Data Station "*29312"

Date 27/June 1342 UT Lat 74°25.08′ Lon 19°20.84′



Appendix 3

Physical Oceanography Program

XBT Data: Tables

ICE-BAR 1995

XBT Data Station "4"

Date 11/June 0008 UT Lat 73°40.00' Lon 19°05.00'

Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)
0	6.08	50	4.81	100	3.83	150	3.52	200	3.08	250	2.28
1	6.02	51	4.78	101	3.83	151	3.52	201	3.07	251	2.28
2	6.02	52	4.63	102	3.84	152	3.48	202	3.03	252	2.39
3	5.91	53	4.52	103	3.84	153	3.47	203	3.04	253	2.39
4	5.91	54	4.48	104	3.81	154	3.46	204	3.04	254	2.37
5	5.91	55	4.53	105	3.77	155	3.46	205	2.91	255	2.33
6	6.04	56	4.59	106	3.75	156	3.45	206	2.99	256	2.35
7	6.04	57	4.56	107	3.64	157	3.49	207	2.97	257	2.36
8	5.95	58	4.56	108	3.55	158	3.50	208	2.97	258	2.37
9	5.96	59	4.57	109	3.55	159	3.49	209	2.95	259	2.31
10	5.97	60	4.58	110	3.69	160	3.52	210	2.94	260	2.29
11	5.97	61	4.56	111	3.84	161	3.53	211	2.90	261	2.30
12	6.00	62	4.53	112	3.85	162	3.51	212	2.84	262	2.34
13	5.99	63	4.52	113	3.81	163	3.39	213	2.77	263	2.29
14	5.98	64	4.50	114	3.56	164	3.37	214	2.71	264	2.31
15	5.98	65	4.50	115	3.46	165	3.42	215	2.68	265	2.31
16	5.97	66	4.49	116	3.44	166	3.49	216	2.65	266	2.31
17	5.98	67	4.47	117	3.46	167	3.47	217	2.61	267	2.33
18	5.97	68	4.44	118	3.50	168	3.47	218	2.51	268	2.38
19	5.97	69	4.42	119	3.57	169	3.44	219	2.48	269	2.39
20	5.98	70	4.44	120	3.59	170	3.43	220	2.40	270	2.40
21	5.97	71	4.45	121	3.66	171	3.44	221	2.39	271	2.33
22	5.97	72	4.40	122	3.74	172	3.43	222	2.38	272	2.32
23	5.96	73	4.25	123	3.84	173	3.40	223	2.36	273	2.40
24	5.96	74	4.23	124	3.86	174	3.38	224	2.38	274	2.31
25	5.95	75	4.18	125	3.85	175	3.35	225	2.34	275	2.30
26	5.95	76	4.14	126	3.85	176	3.31	226	2.32	276	2.28
27	5.95	77	4.12	127	3.84	177	3.32	227	2.31	277	2.30
28	5.95	78	4.08	128	3.83	178	3.34	228	2.29	278	2.31
29	5.94	79	4.08	129	3.80	179	3.33	229	2.25	279	2.33
30	5.94	80	4.05	130	3.77	180	3.27	230	2.25	280	2.35
31	5.93	81	4.04	131	3.75	181	3.27	231	2.25	281	2.36
32	5.93	82	4.04	132	3.73	182	3.24	232	2.24	282	2.42
33	5.92	83	4.05	133	3.73	183	3.24	233	2.37	283	2.40
34	5.98	84	4.04	134	3.72	184	3.24	234	2.23	284	2.37
35	5.87	85	4.04	135	3.74	185	3.23	235	2.29	285	2.37
36	5.85	86	4.02	136	3.72	186	3.25	236	2.31	286	2.36
37	5.84	87	4.04	137	3.69	187	3.27	237	2.33	287	2.34
38	5.75	88	4.02	138	3.67	188	3.26	238	2.30	288	2.34
39	5.60	89	4.00	139	3.67	189	3.25	239	2.28	289	2.35
40	5.37	90	3.90	140	3.67	190	3.23	240	2.33	290	2.37
41	5.25	91	3.88	141	3.63	191	3.19	241	2.24	291	2.37
42	5.15	92	3.97	142	3.66	192	3.16	242	2.23	292	2.37
43	5.14	93	4.00	143	3.63	193	3.08	243	2.21	293	2.35
44	5.11	94	4.02	144	3.61	194	3.05	244	2.29	294	2.37
45	4.98	95	3.98	145	3.61	195	3.08	245	2.20	295	2.36
46	5.06	96	3.95	146	3.59	196	3.05	246	2.22	296	2.37
47	5.04	97	3.90	147	3.58	197	3.04	247	2.23	297	2.37
48	5.02	98	3.87	148	3.57	198	3.05	248	2.28		
49	4.98	99	3.85	149	3.62	199	3.09	249	2.27		

ICE-BAR 1995

XBT Data Station "6"

Date 11/June 0219 UT Lat 73° 48.00' Lon 19° 05.00'

Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)
0	6.02	50	4.14	100	3.21	150	2.03	200	1.86		
1	5.85	51	4.14	101	3.17	151	2.04	201	1.87		
2	5.89	52	4.09	102	3.13	152	2.00	202	1.87		
3	5.79	53	4.07	103	3.09	153	1.93	203	1.87		
4	5.78	54	4.03	104	2.98	154	1.89	204	1.85		
5	5.80	55	3.95	105	2.86	155	1.89	205	1.86		
6	5.91	56	3.93	106	2.84	156	1.86	206	1.85		
7	5.92	57	3.91	107	2.82	157	1.78	207	1.88		
8	5.98	58	3.90	108	2.74	158	1.79	208	1.90		
9	5.86	59	3.90	109	2.56	159	1.81	209	1.85		
10	5.87	60	3.87	110	2.19	160	1.81	210	1.85		
11	5.88	61	3.84	111	2.03	161	1.83	211	1.83		
12	5.85	62	3.76	112	1.94	162	1.73	212	1.80		
13	5.85	63	3.74	113	1.89	163	1.80	213	1.85		
14	5.89	64	3.76	114	1.72	164	1.79	214	1.85		
15	5.88	65	3.68	115	1.71	165	1.80	215	1.85		
16	5.85	66	3.69	116	1.84	166	1.83	216	1.85		
17	5.85	67	3.65	117	2.22	167	1.76	217	1.93		
18	5.84	68	3.61	118	2.30	168	1.75	218	2.08		
19	5.84	69	3.65	119	2.24	169	1.76	219	1.95		
20	5.87	70	3.61	120	2.21	170	1.85	220	1.94		
21	5.87	71	3.57	121	2.24	171	1.83	221	1.86		
22	5.85	72	3.58	122	2.29	172	1.79	222	1.89		
23	5.81	73	3.67	123	2.29	173	1.86	223	1.87		
24	5.77	74	3.73	124	2.33	174	1.84	224	1.96		
25	5.75	75	3.75	125	2.30	175	1.83	225	1.86		
26	5.56	76	3.83	126	2.34	176	1.84	226	1.86		
27	5.12	77	3.76	127	2.34	177	1.84	227	1.88		
28	4.73	78	3.69	128	2.35	178	1.83	228	1.87		
29	4.69	79	3.50	129	2.38	179	1.79	229	1.89		
30	4.63	80	3.37	130	2.43	180	1.89	230	1.92		
31	4.65	81	3.34	131	2.38	181	1.91	231	1.93		
32	4.66	82	3.41	132	2.31	182	1.90	232	1.93		
33	4.60	83	3.44	133	2.29	183	1.90	233	1.97		
34	4.33	84	3.37	134	2.25	184	1.79	234	1.96		
35	4.28	85	3.54	135	2.22	185	1.87	235	1.93		
36	4.35	86	3.64	136	2.23	186	1.87	236	1.90		
37	4.37	87	3.57	137	2.19	187	1.86	237	1.93		
38	4.42	88	3.43	138	2.10	188	1.86	238	1.90		
39	4.37	89	3.38	139	2.15	189	1.76	239	1.92		
40	4.37	90	3.40	140	2.15	190	1.85	240	1.89		
41	4.40	91	3.38	141	2.04	191	1.83	241	1.87		
42	4.37	92	3.34	142	2.00	192	1.80	242	1.86		
43	4.32	93	3.33	143	2.03	193	1.85	243	1.85		
44	4.28	94	3.39	144	2.06	194	1.84				
45	4.35	95	3.36	145	2.05	195	1.85				
46	4.33	96	3.36	146	1.98	196	1.79				
47	4.21	97	3.33	147	1.97	197	1.85				
48	4.18	98	3.31	148	2.05	198	1.86				
49	4.17	99	3.26	149	2.04	199	1.88				

ICE-BAR 1995
XBT Data Station "7"
Date 11/June 0234 UT Lat 73°50.00' Lon 19°05.00'

Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)
0	6.33	50	4.20	100	3.25	150	2.78	200	2.05		
1	5.88	51	4.13	101	3.15	151	2.77	201	2.05		
2	5.86	52	4.15	102	3.12	152	2.76	202	2.11		
3	5.81	53	4.12	103	3.12	153	2.71	203	2.13		
4	5.82	54	4.06	104	3.13	154	2.66	204	2.13		
5	5.83	55	4.10	105	3.10	155	2.54	205	1.99		
6	5.86	56	4.07	106	3.07	156	2.49	206	1.98		
7	5.86	57	4.05	107	3.09	157	2.45	207	2.00		
8	5.83	58	4.03	108	3.12	158	2.40	208	1.97		
9	5.84	59	4.06	109	3.10	159	2.32	209	2.05		
10	5.83	60	3.96	110	3.05	160	2.29	210	2.17		
11	5.83	61	3.88	111	3.03	161	2.34	211	2.02		
12	5.84	62	3.84	112	2.97	162	2.40	212	2.02		
13	5.82	63	3.82	113	3.05	163	2.32	213	1.90		
14	5.83	64	3.79	114	2.99	164	2.29	214	1.99		
15	5.82	65	3.79	115	2.98	165	2.31				
16	5.82	66	3.80	116	2.93	166	2.31				
17	5.87	67	3.82	117	2.94	167	2.42				
18	5.87	68	3.81	118	2.88	168	2.57				
19	5.81	69	3.84	119	2.79	169	2.60				
20	5.78	70	3.85	120	2.79	170	2.60				
21	5.74	71	3.86	121	2.73	171	2.68				
22	5.73	72	3.86	122	2.69	172	2.59				
23	5.74	73	3.85	123	2.73	173	2.65				
24	5.71	74	3.83	124	2.73	174	2.53				
25	5.68	75	3.78	125	2.71	175	2.30				
26	5.62	76	3.82	126	2.71	176	2.11				
27	5.57	77	3.82	127	2.74	177	2.09				
28	5.42	78	3.75	128	2.76	178	2.12				
29	5.24	79	3.63	129	2.79	179	2.16				
30	5.20	80	3.58	130	2.81	180	2.15				
31	5.08	81	3.58	131	2.84	181	2.15				
32	4.95	82	3.54	132	2.79	182	2.13				
33	4.83	83	3.56	133	2.78	183	2.13				
34	4.59	84	3.58	134	2.84	184	2.12				
35	4.55	85	3.56	135	2.84	185	2.11				
36	4.58	86	3.56	136	2.82	186	2.12				
37	4.50	87	3.55	137	2.67	187	2.13				
38	4.44	88	3.55	138	2.67	188	2.11				
39	4.36	89	3.56	139	2.73	189	2.09				
40	4.36	90	3.58	140	2.73	190	2.13				
41	4.28	91	3.63	141	2.65	191	2.08				
42	4.14	92	3.62	142	2.61	192	2.11				
43	4.10	93	3.62	143	2.63	193	2.05				
44	4.13	94	3.50	144	2.63	194	2.05				
45	4.22	95	3.55	145	2.60	195	2.04				
46	4.24	96	3.50	146	2.72	196	2.11				
47	4.24	97	3.46	147	2.74	197	2.04				
48	4.22	98	3.42	148	2.77	198	2.02				
49	4.22	99	3.35	149	2.81	199	2.03				

ICE-BAR 1995
XBT Data Station "8"
Date 11/June 0250 UT Lat 73°52.00' Lon 19°05.00'

Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)
0	6.62	50	3.83	100	2.95	150	2.11				
1	5.69	51	3.81	101	2.93	151	2.11				
2	5.61	52	3.78	102	2.88	152	2.18				
3	5.70	53	3.76	103	2.84	153	2.14				
4	5.69	54	3.75	104	2.82	154	2.14				
5	5.69	55	3.67	105	2.80	155	2.13				
6	5.59	56	3.65	106	2.80	156	2.18				
7	5.59	57	3.63	107	2.77	157	2.22				
8	5.64	58	3.61	108	2.77	158	2.12				
9	5.64	59	3.61	109	2.75	159	2.26				
10	5.65	60	3.61	110	2.70	160	2.27				
11	5.72	61	3.61	111	2.69	161	2.24				
12	5.74	62	3.64	112	2.78	162	2.24				
13	5.69	63	3.66	113	2.75	163	2.24				
14	5.59	64	3.63	114	2.49	164	2.20				
15	5.58	65	3.62	115	2.48	165	2.19				
16	5.58	66	3.60	116	2.43	166	2.17				
17	5.70	67	3.57	117	2.35	167	2.17				
18	5.70	68	3.54	118	2.35	168	2.21				
19	5.69	69	3.54	119	2.22	169	2.13				
20	5.61	70	3.56	120	2.24	170	2.14				
21	5.65	71	3.54	121	2.28	171	2.17				
22	5.66	72	3.52	122	2.33	172	2.21				
23	5.68	73	3.55	123	2.39	173	2.20				
24	5.67	74	3.62	124	2.43	174	2.21				
25	5.65	75	3.61	125	2.45	175	2.17				
26	5.65	76	3.58	126	2.45	176	2.22				
27	5.65	77	3.61	127	2.44	177	2.21				
28	5.60	78	3.58	128	2.33	178	2.20				
29	5.60	79	3.55	129	2.38	179	2.20				
30	5.57	80	3.54	130	2.37	180	2.21				
31	5.44	81	3.58	131	2.34	181	2.19				
32	5.15	82	3.59	132	2.25	182	2.22				
33	4.78	83	3.48	133	2.20	183	2.21				
34	4.53	84	3.48	134	2.19	184	2.15				
35	4.40	85	3.57	135	2.14	185	2.18				
36	4.32	86	3.52	136	2.14	186	2.18				
37	4.39	87	3.47	137	2.19	187	2.18				
38	4.36	88	3.38	138	2.20	188	2.29				
39	4.18	89	3.42	139	2.19	189	2.22				
40	4.07	90	3.25	140	2.19	190	2.27				
41	3.97	91	3.17	141	2.20						
42	3.99	92	3.15	142	2.19						
43	3.95	93	3.15	143	2.18						
44	3.89	94	3.17	144	2.17						
45	3.89	95	3.18	145	2.17						
46	3.87	96	3.17	146	2.17						
47	3.37	97	3.18	147	2.19						
48	3.76	98	3.17	148	2.19						
49	3.72	99	3.09	149	2.20						

ICE-BAR 1995
XBT Data   Station "9"
Date 11/June 0305 UT   Lat 73°54.00'   Lon 19°05.00'

Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)
0	6.00	50	2.90	100	2.79	150	2.29				
1	5.65	51	2.91	101	2.75	151	2.29				
2	5.66	52	2.90	102	2.71	152	2.28				
3	5.64	53	2.88	103	2.68	153	2.28				
4	5.66	54	2.91	104	2.68	154	2.26				
5	5.62	55	2.85	105	2.65	155	2.27				
6	5.69	56	2.88	106	2.68	156	2.25				
7	5.70	57	2.85	107	2.64	157	2.24				
8	5.65	58	2.83	108	2.59	158	2.20				
9	5.67	59	2.69	109	2.53	159	2.26				
10	5.70	60	2.75	110	2.59	160	2.30				
11	5.72	61	2.73	111	2.55	161	2.29				
12	5.62	62	2.70	112	2.54	162	2.22				
13	5.62	63	2.70	113	2.53	163	2.30				
14	5.71	64	2.66	114	2.53	164	2.32				
15	5.69	65	2.68	115	2.50	165	2.31				
16	5.68	66	2.67	116	2.53	166	2.26				
17	5.57	67	2.66	117	2.52	167	2.29				
18	5.56	68	2.57	118	2.47	168	2.22				
19	5.58	69	2.56	119	2.45	169	2.22				
20	5.65	70	2.76	120	2.45						
21	5.62	71	2.90	121	2.44						
22	5.60	72	2.99	122	2.36						
23	5.64	73	3.00	123	2.43						
24	5.59	74	3.05	124	2.46						
25	5.48	75	3.05	125	2.46						
26	5.38	76	3.04	126	2.50						
27	5.37	77	3.03	127	2.49						
28	5.39	78	3.03	128	2.46						
29	5.37	79	3.03	129	2.46						
30	5.34	80	3.04	130	2.39						
31	5.26	81	3.08	131	2.38						
32	5.13	82	3.04	132	2.31						
33	4.90	83	3.07	133	2.35						
34	4.80	84	3.07	134	2.32						
35	4.75	85	3.11	135	2.30						
36	4.69	86	3.10	136	2.27						
37	4.60	87	3.08	137	2.33						
38	4.42	88	3.13	138	2.35						
39	3.54	89	3.10	139	2.25						
40	3.30	90	2.95	140	2.28						
41	3.20	91	2.92	141	2.33						
42	2.96	92	2.88	142	2.31						
43	2.35	93	2.86	143	2.31						
44	2.94	94	2.93	144	2.30						
45	2.39	95	2.82	145	2.30						
46	2.96	96	2.86	146	2.26						
47	2.96	97	2.85	147	2.26						
48	3.05	98	2.87	148	2.26						
49	3.03	99	2.79	149	2.27						

ICE-BAR 1995
XBT Data Station "11"
Date 11/June 0350 UT Lat 73°58.00' Lon 19°05.00'

Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)
0	3.91	50	2.00	100	2.27						
1	3.62	51	1.99	101	2.24						
2	3.64	52	2.01	102	2.22						
3	3.56	53	2.04	103	2.22						
4	3.61	54	2.05	104	2.25						
5	3.58	55	2.07	105	2.21						
6	2.80	56	2.09	106	2.22						
7	2.38	57	2.06	107	2.23						
8	2.19	58	2.06	108	2.18						
9	2.30	59	2.11	109	2.31						
10	2.12	60	2.07	110	2.19						
11	2.09	61	2.05	111	2.20						
12	2.09	62	2.06	112	2.25						
13	2.07	63	2.09	113	2.24						
14	2.08	64	2.07	114	2.28						
15	2.08	65	2.11	115	2.29						
16	2.09	66	2.17	116	2.32						
17	2.00	67	2.20	117	2.30						
18	1.97	68	2.20	118	2.33						
19	1.82	69	2.09								
20	1.68	70	2.17								
21	1.65	71	2.14								
22	1.64	72	2.14								
23	1.63	73	2.11								
24	1.64	74	2.09								
25	1.54	75	2.07								
26	1.54	76	2.06								
27	1.42	77	2.09								
28	1.39	78	2.13								
29	1.32	79	2.14								
30	1.26	80	2.16								
31	1.23	81	2.17								
32	1.23	82	2.17								
33	1.31	83	2.17								
34	1.27	84	2.18								
35	1.36	85	2.09								
36	1.42	86	2.15								
37	1.47	87	2.14								
38	1.52	88	2.12								
39	1.53	89	2.15								
40	1.52	90	2.16								
41	1.53	91	2.18								
42	1.68	92	2.17								
43	1.68	93	2.16								
44	1.79	94	2.13								
45	1.82	95	2.18								
46	1.87	96	2.19								
47	1.89	97	2.19								
48	1.95	98	2.19								
49	1.97	99	2.16								

ICE-BAR 1995

XBT Data Station "12"

Date 11/June 0411 UT Lat 74°00.00' Lon 19°05.00'

Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)
0	3.72	50	1.85	100	1.98						
1	3.37	51	1.89	101	2.01						
2	3.37	52	1.87	102	2.02						
3	3.35	53	1.90	103	2.03						
4	3.38	54	1.93	104	2.05						
5	3.37	55	1.93	105	1.91						
6	3.40	56	1.95	106	1.97						
7	3.38	57	1.93	107	1.96						
8	3.36	58	1.93	108	1.97						
9	3.37	59	1.94	109	1.95						
10	3.36	60	1.85	110	2.00						
11	3.39	61	1.89	111	2.01						
12	3.35	62	1.89	112	1.94						
13	3.30	63	1.88	113	1.91						
14	3.29	64	1.84	114	2.04						
15	3.26	65	1.89	115	2.01						
16	3.29	66	1.83								
17	3.18	67	1.80								
18	3.18	68	1.78								
19	3.15	69	1.80								
20	3.08	70	1.95								
21	3.08	71	1.95								
22	2.88	72	1.90								
23	2.73	73	1.93								
24	2.66	74	1.94								
25	2.49	75	1.93								
26	2.29	76	1.92								
27	2.18	77	1.95								
28	2.22	78	1.98								
29	2.18	79	1.96								
30	2.11	80	1.91								
31	2.05	81	1.89								
32	2.01	82	1.94								
33	2.04	83	1.92								
34	1.94	84	1.96								
35	1.92	85	1.93								
36	1.87	86	1.91								
37	1.91	87	1.92								
38	1.94	88	1.94								
39	1.84	89	1.98								
40	1.84	90	1.95								
41	1.84	91	1.92								
42	1.86	92	1.95								
43	1.85	93	1.91								
44	1.81	94	1.93								
45	1.81	95	1.96								
46	1.84	96	1.93								
47	1.85	97	1.93								
48	1.87	98	1.92								
49	1.86	99	1.94								

ICE-BAR 1995

XBT Data Station "13"

Date 11/June 0425 UT Lat 74°02.00' Lon 19°04.80'

Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)
0	2.51	50	1.40	100	1.55						
1	1.99	51	1.38	101	1.56						
2	1.97	52	1.38	102	1.58						
3	1.95	53	1.40								
4	1.94	54	1.39								
5	1.91	55	1.37								
6	1.89	56	1.38								
7	1.86	57	1.39								
8	1.85	58	1.38								
9	1.91	59	1.35								
10	1.90	60	1.35								
11	1.89	61	1.39								
12	1.92	62	1.41								
13	1.81	63	1.33								
14	1.79	64	1.33								
15	1.82	65	1.36								
16	1.80	66	1.33								
17	1.78	67	1.31								
18	1.75	68	1.30								
19	1.71	69	1.33								
20	1.69	70	1.30								
21	1.68	71	1.36								
22	1.66	72	1.47								
23	1.72	73	1.42								
24	1.75	74	1.51								
25	1.66	75	1.39								
26	1.51	76	1.49								
27	1.50	77	1.42								
28	1.56	78	1.45								
29	1.54	79	1.40								
30	1.53	80	1.46								
31	1.44	81	1.50								
32	1.51	82	1.48								
33	1.46	83	1.54								
34	1.36	84	1.55								
35	1.39	85	1.54								
36	1.42	86	1.50								
37	1.49	87	1.52								
38	1.37	88	1.56								
39	1.49	89	1.57								
40	1.47	90	1.57								
41	1.47	91	1.57								
42	1.46	92	1.58								
43	1.40	93	1.57								
44	1.37	94	1.63								
45	1.36	95	1.57								
46	1.38	96	1.54								
47	1.39	97	1.56								
48	1.39	98	1.53								
49	1.40	99	1.57								

ICE-BAR 1995
XBT Data Station "14"
Date 11/June 0440 UT Lat 74°04.00' Lon 19°05.00'

Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)
0	1.35	50	1.05								
1	0.85	51	1.03								
2	0.79	52	1.02								
3	0.92	53	1.08								
4	0.90	54	1.03								
5	0.89	55	0.97								
6	0.90	56	1.02								
7	0.91	57	1.04								
8	0.89	58	1.07								
9	0.91	59	1.09								
10	0.84	60	1.07								
11	0.87	61	1.05								
12	0.81	62	1.02								
13	0.89	63	0.98								
14	0.90	64	0.95								
15	0.87	65	1.08								
16	0.89	66	0.98								
17	0.83	67	0.99								
18	0.80	68	1.07								
19	0.80	69	1.11								
20	0.85	70	1.00								
21	0.87	71	0.97								
22	0.90	72	1.07								
23	1.03	73	1.04								
24	1.04	74	1.02								
25	1.00	75	1.08								
26	0.96	76	1.09								
27	0.97	77	1.10								
28	0.94	78	1.11								
29	0.91	79	1.10								
30	0.86	80	1.06								
31	0.84	81	1.05								
32	0.90	82	1.07								
33	0.94	83	1.09								
34	0.98	84	1.09								
35	0.99	85	1.09								
36	0.97	86	1.10								
37	0.99	87	1.11								
38	0.95	88	1.12								
39	0.92	89	1.14								
40	0.97	90	1.11								
41	0.91	91	1.14								
42	0.93	92	1.19								
43	0.93										
44	0.95										
45	0.99										
46	0.97										
47	1.00										
48	1.04										
49	1.04										

ICE-BAR 1995
XBT Data Station "15"
Date 11/June 0515 UT Lat 74°06.00' Lon 19°04.90'

Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)
0	1.87	50	0.46								
1	0.54	51	0.55								
2	0.36	52	0.48								
3	0.47	53	0.34								
4	0.42	54	0.45								
5	0.41	55	0.36								
6	0.43	56	0.52								
7	0.47	57	0.40								
8	0.47	58	0.41								
9	0.38	59	0.42								
10	0.44	60	0.43								
11	0.45	61	0.21								
12	0.41	62	0.48								
13	0.35	63	-0.20								
14	0.40	64	-0.04								
15	0.35										
16	0.39										
17	0.42										
18	0.44										
19	0.43										
20	0.44										
21	0.43										
22	0.42										
23	0.38										
24	0.41										
25	0.42										
26	0.40										
27	0.38										
28	0.40										
29	0.39										
30	0.39										
31	0.41										
32	0.41										
33	0.47										
34	0.36										
35	0.44										
36	0.40										
37	0.38										
38	0.36										
39	0.50										
40	0.46										
41	0.44										
42	0.46										
43	0.48										
44	0.47										
45	0.35										
46	0.35										
47	0.38										
48	0.35										
49	0.33										

ICE-BAR 1995

XBT Data Station "16"

Date 11/June 0534 UT Lat 74°08.00' Lon 19°04.50'

Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)
0	1.00	50	0.31								
1	0.43	51	0.34								
2	0.40	52	0.34								
3	0.41	53	0.40								
4	0.42	54	0.32								
5	0.39	55	0.44								
6	0.39	56	0.43								
7	0.36	57	0.39								
8	0.36	58	0.38								
9	0.35	59	0.32								
10	0.35	60	0.31								
11	0.33	61	0.29								
12	0.43	62	0.31								
13	0.42	63	0.36								
14	0.40										
15	0.35										
16	0.45										
17	0.33										
18	0.32										
19	0.33										
20	0.34										
21	0.42										
22	0.43										
23	0.44										
24	0.42										
25	0.44										
26	0.39										
27	0.35										
28	0.40										
29	0.31										
30	0.33										
31	0.36										
32	0.39										
33	0.39										
34	0.36										
35	0.40										
36	0.41										
37	0.40										
38	0.36										
39	0.36										
40	0.38										
41	0.39										
42	0.34										
43	0.36										
44	0.35										
45	0.42										
46	0.40										
47	0.36										
48	0.40										
49	0.41										

ICE-BAR 1995
XBT Data Station "17"
Date 11/June 0549 UT Lat 74°10.00' Lon 19°04.60'

Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)
0	0.99	50	0.25								
1	0.24	51	0.23								
2	0.20	52	0.20								
3	0.21	53	0.16								
4	0.18	54	0.24								
5	0.18	55	0.20								
6	0.31	56	0.22								
7	0.26										
8	0.23										
9	0.31										
10	0.28										
11	0.29										
12	0.20										
13	0.23										
14	0.25										
15	0.25										
16	0.21										
17	0.25										
18	0.25										
19	0.24										
20	0.19										
21	0.19										
22	0.24										
23	0.23										
24	0.22										
25	0.23										
26	0.21										
27	0.22										
28	0.24										
29	0.22										
30	0.24										
31	0.28										
32	0.24										
33	0.24										
34	0.22										
35	0.18										
36	0.19										
37	0.17										
38	0.19										
39	0.24										
40	0.21										
41	0.31										
42	0.29										
43	0.24										
44	0.23										
45	0.22										
46	0.26										
47	0.28										
48	0.19										
49	0.23										

ICE-BAR 1995
XBT Data Station "18"
Date 11/June 0604 UT Lat 74°12.00' Lon 19°04.70'

Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)
0	0.90	50	0.26								
1	0.29	51	0.26								
2	0.24	52	0.25								
3	0.30	53	0.28								
4	0.28										
5	0.26										
6	0.31										
7	0.29										
8	0.29										
9	0.26										
10	0.25										
11	0.28										
12	0.23										
13	0.23										
14	0.25										
15	0.24										
16	0.26										
17	0.24										
18	0.24										
19	0.23										
20	0.24										
21	0.25										
22	0.22										
23	0.32										
24	0.32										
25	0.28										
26	0.25										
27	0.21										
28	0.25										
29	0.20										
30	0.21										
31	0.22										
32	0.28										
33	0.32										
34	0.22										
35	0.30										
36	0.28										
37	0.25										
38	0.22										
39	0.28										
40	0.30										
41	0.23										
42	0.26										
43	0.26										
44	0.30										
45	0.20										
46	0.20										
47	0.24										
48	0.26										
49	0.21										

ICE-BAR 1995
XBT Data Station "19"
Date 11/June 0622 UT Lat 74°14.00' Lon 19°04.50'

Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)
0	0.97										
1	0.43										
2	0.41										
3	0.42										
4	0.42										
5	0.43										
6	0.27										
7	0.33										
8	0.38										
9	0.36										
10	0.32										
11	0.31										
12	0.36										
13	0.34										
14	0.31										
15	0.30										
16	0.35										
17	0.31										
18	0.31										
19	0.31										
20	0.30										
21	0.31										
22	0.32										
23	0.31										
24	0.32										
25	0.33										
26	0.34										
27	0.36										
28	0.36										
29	0.35										
30	0.30										
31	0.28										
32	0.27										
33	0.27										
34	0.40										
35	0.32										
36	0.38										
37	0.38										
38	0.38										
39	0.23										
40	0.27										
41	0.27										
42	0.23										
43	0.23										
44	0.29										
45	0.34										
46	0.31										
47	0.30										
48	0.33										
49	0.33										

ICE-BAR 1995
XBT Data Station "20"
Date 11/June 0647 UT Lat 74°16.00' Lon 19°04.00'

Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)
0	1.10										
1	0.69										
2	0.66										
3	0.72										
4	0.70										
5	0.69										
6	0.69										
7	0.71										
8	0.71										
9	0.62										
10	0.67										
11	0.67										
12	0.65										
13	0.65										
14	0.64										
15	0.65										
16	0.64										
17	0.66										
18	0.66										
19	0.65										
20	0.67										
21	0.64										
22	0.64										
23	0.68										
24	0.66										
25	0.62										
26	0.61										
27	0.61										
28	0.70										
29	0.62										
30	0.64										
31	0.70										
32	0.71										
33	0.70										
34	0.59										
35	0.66										
36	0.62										
37	0.59										
38	0.59										
39	0.71										
40	0.67										
41	0.61										
42	0.69										
43	0.70										
44	0.67										
45	0.57										
46	0.60										

ICE-BAR 1995
XBT Data Station "63I"
Date 25/June 1120 UT Lat 77°19.77' Lon 31°24.86'

Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)
0	0.38	50	-1.55	100	0.21	150	1.02				
1	-0.16	51	-1.57	101	0.10	151	1.02				
2	-0.23	52	-1.48	102	0.28	152	1.05				
3	-0.22	53	-1.49	103	-0.34	153	1.09				
4	-0.21	54	-1.49	104	-1.14	154	1.00				
5	-0.18	55	-1.49	105	-1.54	155	1.07				
6	-0.22	56	-1.42	106	-1.67	156	0.91				
7	-0.24	57	-1.40	107	-1.58	157	1.14				
8	-0.24	58	-1.48	108	-1.46						
9	-0.16	59	-1.43	109	-1.02						
10	-0.18	60	-1.27	110	-0.55						
11	-0.20	61	-1.40	111	-0.27						
12	-0.25	62	-1.08	112	-0.10						
13	-0.27	63	-1.13	113	-0.04						
14	-0.75	64	-1.06	114	0.33						
15	-0.97	65	-0.90	115	0.42						
16	-1.04	66	-0.91	116	0.55						
17	-1.21	67	-0.99	117	0.59						
18	-1.28	68	-1.00	118	0.64						
19	-1.39	69	-0.97	119	0.61						
20	-1.52	70	-1.03	120	0.61						
21	-1.48	71	-1.06	121	0.65						
22	-1.49	72	-1.12	122	0.70						
23	-1.60	73	-1.12	123	0.79						
24	-1.74	74	-1.12	124	0.79						
25	-1.75	75	-0.97	125	0.85						
26	-1.66	76	-1.05	126	0.98						
27	-1.68	77	-1.01	127	0.85						
28	-1.63	78	-0.99	128	0.95						
29	-1.65	79	-0.97	129	1.03						
30	-1.66	80	-0.85	130	1.03						
31	-1.67	81	-0.71	131	1.04						
32	-1.65	82	-0.61	132	1.03						
33	-1.68	83	-0.53	133	1.04						
34	-1.63	84	-0.37	134	1.00						
35	-1.66	85	-0.29	135	1.07						
36	-1.68	86	-0.05	136	1.08						
37	-1.66	87	0.19	137	0.92						
38	-1.64	88	0.18	138	1.10						
39	-1.61	89	0.29	139	1.18						
40	-1.61	90	0.38	140	1.09						
41	-1.63	91	0.42	141	1.00						
42	-1.64	92	0.44	142	1.09						
43	-1.64	93	0.45	143	1.14						
44	-1.64	94	0.56	144	1.00						
45	-1.63	95	0.56	145	1.07						
46	-1.59	96	0.53	146	1.08						
47	-1.58	97	0.51	147	1.05						
48	-1.55	98	0.45	148	1.02						
49	-1.51	99	0.33	149	1.01						

ICE-BAR 1995

XBT Data Station "64A"

Date 25/June 1305 UT Lat 77°10.76' Lon 30°30.00'

Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)
0	0.43	50	-1.26	100	-0.13	150	1.09				
1	0.12	51	-1.29	101	-0.10	151	1.03				
2	0.11	52	-1.22	102	-0.10	152	1.02				
3	0.11	53	-1.23	103	-0.12	153	1.01				
4	0.11	54	-1.17	104	-0.14	154	1.03				
5	0.10	55	-1.08	105	0.03	155	1.09				
6	0.18	56	-1.04	106	0.25	156	1.10				
7	0.22	57	-1.05	107	0.51	157	1.14				
8	0.14	58	-1.06	108	0.61	158	1.20				
9	0.13	59	-0.97	109	0.71	159	1.11				
10	0.20	60	-1.03	110	0.78	160	1.09				
11	0.18	61	-1.00	111	0.82	161	1.12				
12	0.11	62	-1.04	112	0.82	162	1.16				
13	0.12	63	-0.99	113	0.84	163	1.16				
14	0.13	64	-1.12	114	0.94	164	1.16				
15	-0.16	65	-1.26	115	0.96	165	1.15				
16	-1.01	66	-1.22	116	0.95	166	1.18				
17	-1.47	67	-1.21	117	0.95	167	1.17				
18	-1.48	68	-1.21	118	0.92	168	1.18				
19	-1.55	69	-1.00	119	0.94	169	1.17				
20	-1.60	70	-0.64	120	0.98	170	1.14				
21	-1.63	71	-0.55	121	1.03	171	1.17				
22	-1.60	72	-0.55	122	1.10	172	1.15				
23	-1.57	73	-0.65	123	1.14	173	1.12				
24	-1.58	74	-1.10	124	1.12	174	1.15				
25	-1.61	75	-1.30	125	1.22	175	1.14				
26	-1.63	76	-1.48	126	1.17	176	1.14				
27	-1.65	77	-1.57	127	1.16	177	1.17				
28	-1.66	78	-1.58	128	1.11	178	1.20				
29	-1.70	79	-1.72	129	1.15	179	1.22				
30	-1.73	80	-1.74	130	1.18	180	1.23				
31	-1.73	81	-1.73	131	1.11	181	1.22				
32	-1.76	82	-1.64	132	1.24	182	1.17				
33	-1.75	83	-1.63	133	1.22	183	1.16				
34	-1.70	84	-1.56	134	1.22	184	1.20				
35	-1.68	85	-1.57	135	1.21	185	1.24				
36	-1.66	86	-1.54	136	1.20	186	1.16				
37	-1.68	87	-1.23	137	1.17						
38	-1.70	88	-1.29	138	1.20						
39	-1.82	89	-1.26	139	1.21						
40	-1.75	90	-1.38	140	1.20						
41	-1.74	91	-1.14	141	1.21						
42	-1.76	92	-0.99	142	1.21						
43	-1.73	93	-0.71	143	1.17						
44	-1.64	94	-0.47	144	1.17						
45	-1.56	95	-0.30	145	1.16						
46	-1.55	96	-0.18	146	1.24						
47	-1.52	97	-0.18	147	1.22						
48	-1.49	98	-0.17	148	1.17						
49	-1.41	99	-0.16	149	1.15						

ICE-BAR 1995

XBT Data Station "64B"

Date 25/June 1500 UT Lat 77°02.21' Lon 29°30.00'

Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)
0	0.63	50	-1.55	100	1.27	150	1.24	200	1.18		
1	0.12	51	-1.50	101	1.27	151	1.22	201	1.08		
2	0.10	52	-1.46	102	1.20	152	1.24	202	1.07		
3	0.18	53	-1.43	103	1.24	153	1.22	203	1.05		
4	0.12	54	-1.42	104	1.26	154	1.21	204	1.14		
5	0.10	55	-1.33	105	1.20	155	1.21	205	1.07		
6	0.12	56	-1.14	106	1.16	156	1.22	206	1.11		
7	0.16	57	-0.95	107	1.17	157	1.22	207	1.15		
8	0.19	58	-0.63	108	1.23	158	1.23	208	1.17		
9	0.07	59	-0.47	109	1.14	159	1.20	209	1.10		
10	0.14	60	-0.36	110	1.17	160	1.21	210	1.17		
11	0.18	61	-0.25	111	1.23	161	1.18	211	1.16		
12	0.10	62	-0.13	112	1.25	162	1.16	212	1.17		
13	0.13	63	0.00	113	1.26	163	1.21	213	1.17		
14	0.20	64	0.08	114	1.26	164	1.24				
15	0.34	65	0.13	115	1.25	165	1.25				
16	0.38	66	0.19	116	1.22	166	1.22				
17	0.56	67	0.26	117	1.21	167	1.20				
18	0.00	68	0.48	118	1.20	168	1.17				
19	-0.68	69	0.56	119	1.20	169	1.15				
20	-0.84	70	0.63	120	1.14	170	1.12				
21	-0.88	71	0.64	121	1.18	171	1.11				
22	-0.92	72	0.66	122	1.20	172	1.28				
23	-0.95	73	0.77	123	1.21	173	1.27				
24	-0.97	74	0.85	124	1.22	174	1.24				
25	-1.04	75	1.07	125	1.22	175	1.27				
26	-1.08	76	1.10	126	1.18	176	1.22				
27	-1.08	77	1.03	127	1.20	177	1.21				
28	-1.09	78	1.09	128	1.22	178	1.17				
29	-1.12	79	1.14	129	1.24	179	1.16				
30	-1.21	80	1.02	130	1.24	180	1.20				
31	-1.29	81	1.01	131	1.21	181	1.21				
32	-1.31	82	1.04	132	1.20	182	1.23				
33	-1.33	83	1.12	133	1.16	183	1.22				
34	-1.42	84	1.12	134	1.14	184	1.22				
35	-1.40	85	1.24	135	1.12	185	1.22				
36	-1.31	86	1.25	136	1.12	186	1.21				
37	-1.19	87	1.26	137	1.24	187	1.21				
38	-1.12	88	1.25	138	1.18	188	1.21				
39	-1.21	89	1.23	139	1.23	189	1.22				
40	-1.17	90	1.23	140	1.25	190	1.22				
41	-1.31	91	1.21	141	1.18	191	1.21				
42	-1.40	92	1.22	142	1.16	192	1.20				
43	-1.56	93	1.23	143	1.14	193	1.17				
44	-1.72	94	1.25	144	1.23	194	1.16				
45	-1.77	95	1.24	145	1.21	195	1.14				
46	-1.82	96	1.21	146	1.20	196	1.11				
47	-1.85	97	1.21	147	1.23	197	1.20				
48	-1.87	98	1.20	148	1.22	198	1.08				
49	-1.77	99	1.17	149	1.24	199	1.14				

ICE-BAR 1995
XBT Data Station "66E"
Date 26/June 0847 UT Lat 77°49.25' Lon 28°30.00'

Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)
0	0.66	50	-0.84	100	0.95						
1	0.45	51	-0.87	101	0.99						
2	0.20	52	-0.89	102	0.98						
3	0.14	53	-0.82	103	0.97						
4	0.12	54	-0.71	104	0.99						
5	0.12	55	-0.74	105	1.05						
6	0.01	56	-0.68	106	1.06						
7	0.03	57	-0.64	107	1.04						
8	0.05	58	-0.58	108	1.03						
9	0.05	59	-0.58	109	1.03						
10	-0.02	60	-0.51	110	1.05						
11	0.00	61	-0.47	111	1.05						
12	-0.05	62	-0.46	112	1.05						
13	-0.18	63	-0.43	113	1.00						
14	-0.45	64	-0.39	114	0.98						
15	-0.89	65	-0.32	115	0.98						
16	-1.04	66	-0.29	116	0.97						
17	-1.11	67	-0.25	117	0.99						
18	-1.09	68	-0.14	118	1.00						
19	-1.10	69	0.01	119	1.03						
20	-1.14	70	0.12	120	1.02						
21	-1.16	71	0.17	121	1.09						
22	-1.20	72	0.18	122	0.71						
23	-1.29	73	0.21	123	0.95						
24	-1.34	74	0.32	124	0.96						
25	-1.40	75	0.32	125	1.00						
26	-1.41	76	0.40	126	1.03						
27	-1.50	77	0.40	127	0.97						
28	-1.53	78	0.41	128	1.05						
29	-1.49	79	0.45	129	1.07						
30	-1.46	80	0.64	130	1.06						
31	-1.46	81	0.66								
32	-1.44	82	0.72								
33	-1.47	83	0.77								
34	-1.47	84	0.83								
35	-1.46	85	0.83								
36	-1.44	86	0.89								
37	-1.44	87	0.92								
38	-1.36	88	0.93								
39	-1.40	89	0.99								
40	-1.31	90	0.91								
41	-1.30	91	0.92								
42	-1.28	92	0.94								
43	-1.24	93	0.94								
44	-1.20	94	0.99								
45	-0.98	95	1.03								
46	-0.87	96	1.05								
47	-0.93	97	1.06								
48	-0.91	98	1.06								
49	-0.84	99	1.04								

ICE-BAR 1995

XBT Data Station "66I"

Date 26/June 1325 UT Lat 76°41.50' Lon 27°30.00'

Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)
0	3.09	50	-1.79	100	-1.58						
1	1.27	51	-1.77	101	-1.57						
2	0.68	52	-1.77	102	-1.57						
3	0.59	53	-1.76	103	-1.56						
4	0.56	54	-1.76	104	-1.54						
5	0.52	55	-1.73	105	-1.50						
6	0.48	56	-1.69	106	-1.47						
7	0.45	57	-1.63	107	-1.43						
8	0.44	58	-1.61	108	-1.43						
9	0.43	59	-1.61	109	-1.43						
10	0.42	60	-1.58	110	-1.43						
11	0.38	61	-1.59	111	-1.57						
12	0.25	62	-1.58	112	-1.33						
13	-0.14	63	-1.60								
14	-0.62	64	-1.61								
15	-0.93	65	-1.64								
16	-1.15	66	-1.65								
17	-1.32	67	-1.66								
18	-1.33	68	-1.65								
19	-1.38	69	-1.65								
20	-1.42	70	-1.67								
21	-1.47	71	-1.66								
22	-1.50	72	-1.68								
23	-1.52	73	-1.70								
24	-1.60	74	-1.70								
25	-1.68	75	-1.73								
26	-1.68	76	-1.72								
27	-1.69	77	-1.73								
28	-1.68	78	-1.73								
29	-1.67	79	-1.73								
30	-1.67	80	-1.74								
31	-1.65	81	-1.75								
32	-1.60	82	-1.74								
33	-1.61	83	-1.74								
34	-1.66	84	-1.73								
35	-1.68	85	-1.74								
36	-1.70	86	-1.74								
37	-1.70	87	-1.74								
38	-1.70	88	-1.74								
39	-1.73	89	-1.74								
40	-1.72	90	-1.73								
41	-1.73	91	-1.74								
42	-1.74	92	-1.74								
43	-1.76	93	-1.74								
44	-1.76	94	-1.73								
45	-1.76	95	-1.72								
46	-1.77	96	-1.68								
47	-1.77	97	-1.67								
48	-1.79	98	-1.61								
49	-1.79	99	-1.59								

ICE-BAR 1995

XBT Data Station "*29307"

Date 26/June 1448 UT Lat 76°38.91' Lon 26°30.00'

Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)
0	0.87	50	1.50								
1	0.21	51	1.53								
2	0.09	52	1.37								
3	-0.17	53	1.40								
4	-0.28	54	1.42								
5	-0.46	55	1.31								
6	-0.55	56	1.23								
7	-0.60	57	1.20								
8	-0.64	58	1.24								
9	-0.65	59	1.17								
10	-0.72	60	0.99								
11	-0.72	61	0.95								
12	-0.84	62	0.91								
13	-0.91	63	0.84								
14	-1.06	64	0.74								
15	-1.07	65	0.69								
16	-1.13	66	0.64								
17	-1.34	67	0.60								
18	-1.41	68	0.54								
19	-1.40	69	0.52								
20	-1.41	70	0.41								
21	-1.42										
22	-1.43										
23	-1.32										
24	-1.32										
25	-1.33										
26	-1.47										
27	-1.50										
28	-1.58										
29	-1.66										
30	-1.70										
31	-1.76										
32	-1.73										
33	-1.66										
34	-1.60										
35	-1.53										
36	-1.47										
37	-1.32										
38	-1.19										
39	-1.03										
40	-0.85										
41	-0.43										
42	0.00										
43	0.21										
44	0.62										
45	0.96										
46	1.33										
47	1.30										
48	1.37										
49	1.41										

ICE-BAR 1995
XBT Data Station "*29308"
Date 26/June 1608 UT Lat 76°37.20' Lon 25°30.00'

Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)
0	0.71										
1	-0.21										
2	-0.39										
3	-0.38										
4	-0.31										
5	-1.40										
6	-0.56										
7	-0.48										
8	-0.54										
9	-0.55										
10	-0.52										
11	-0.52										
12	-0.56										
13	-0.58										
14	-0.39										
15	-0.40										
16	-0.55										
17	-0.48										
18	-0.48										
19	-0.49										
20	-0.49										
21	-0.58										
22	-0.54										

ICE-BAR 1995

XBT Data Station "*29309"

Date 26/June 2242 UT Lat 76°23.31' Lon 25°00.00'

Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)
0	0.28										
1	0.18										
2	0.10										
3	0.07										
4	0.00										
5	-0.13										
6	-0.31										
7	-0.50										
8	-0.62										
9	-0.63										
10	-0.74										
11	-0.83										
12	-0.89										
13	-0.92										
14	-0.95										
15	-1.02										
16	-1.03										
17	-1.09										
18	-1.13										
19	-1.19										
20	-1.23										
21	-1.24										
22	-1.30										
23	-1.27										
24	-1.28										
25	-1.27										
26	-1.30										
27	-1.22										
28	-1.32										
29	-1.34										
30	-1.41										
31	-1.51										
32	-1.53										
33	-1.56										
34	-1.49										
35	-1.47										
36	-1.46										
37	-1.46										
38	-1.53										
39	-1.51										
40	-1.51										
41	-1.55										
42	-1.60										
43	-1.56										
44	-1.53										
45	-1.49										
46	-1.50										
47	-1.51										
48	-1.50										

ICE-BAR 1995
XBT Data Station "*29310"
Date 27/June 0312 UT Lat 75° 46.00' Lon 23° 00.00'

Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)
0	1.47	50	0.61								
1	0.82	51	0.61								
2	0.80										
3	0.77										
4	0.78										
5	0.79										
6	0.71										
7	0.74										
8	0.72										
9	0.73										
10	0.75										
11	0.72										
12	0.68										
13	0.67										
14	0.69										
15	0.72										
16	0.65										
17	0.66										
18	0.62										
19	0.60										
20	0.62										
21	0.61										
22	0.64										
23	0.71										
24	0.72										
25	0.72										
26	0.69										
27	0.66										
28	0.62										
29	0.64										
30	0.59										
31	0.59										
32	0.65										
33	0.68										
34	0.66										
35	0.64										
36	0.70										
37	0.67										
38	0.66										
39	0.65										
40	0.66										
41	0.68										
42	0.62										
43	0.64										
44	0.62										
45	0.68										
46	0.69										
47	0.65										
48	0.62										
49	0.70										

ICE-BAR 1995
XBT Data Station "*29311"
Date 27/June 0745 UT Lat 74°56.96' Lon 21°00.00'

Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)
0	0.99										
1	0.75										
2	0.73										
3	0.78										
4	0.76										
5	0.74										
6	0.75										
7	0.75										
8	0.76										
9	0.74										
10	0.66										
11	0.70										
12	0.76										
13	0.81										
14	0.63										
15	0.10										
16	0.96										
17	0.82										
18	0.76										
19	0.71										
20	0.84										
21	0.92										
22	1.01										
23	0.56										
24	0.86										
25	-0.13										
26	0.60										
27	0.53										
28	0.44										
29	0.99										
30	0.88										
31	0.74										
32	0.71										
33	0.89										
34	0.79										
35	0.48										
36	0.41										
37	0.43										
38	0.53										
39	0.71										
40	1.25										
41	0.77										
42	1.21										
43	0.23										
44	1.16										
45	0.73										
46	0.60										
47	0.69										
48	0.75										
49	0.58										

ICE-BAR 1995
XBT Data Station "*29312"
Date 27/June 1342 UT Lat 74°25.08' Lon 19°20.84'

Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)	Depth (m)	Tempe (degC)
0	1.97										
1	1.81										
2	1.81										
3	1.86										
4	1.85										
5	1.83										
6	1.91										
7	1.89										
8	1.89										
9	1.85										
10	1.88										
11	1.86										
12	1.87										
13	1.88										
14	1.86										
15	1.87										
16	1.86										
17	1.84										
18	1.86										
19	1.85										
20	1.81										
21	1.84										
22	1.87										
23	1.81										
24	1.79										
25	1.78										
26	1.87										

Appendix 4

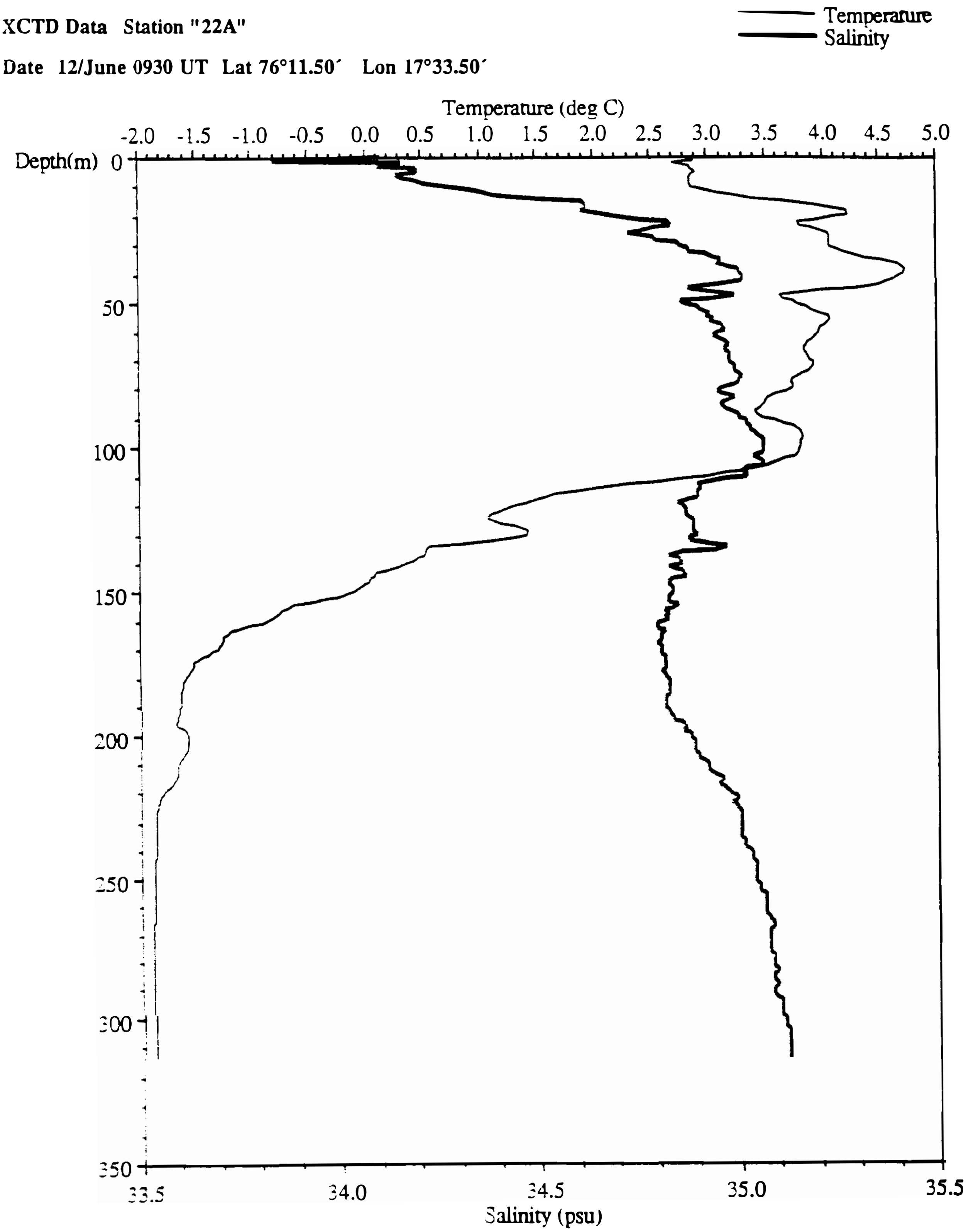
Physical Oceanography Program

XCTD Data: Plots

ICE-BAR 1995

XCTD Data Station "22A"

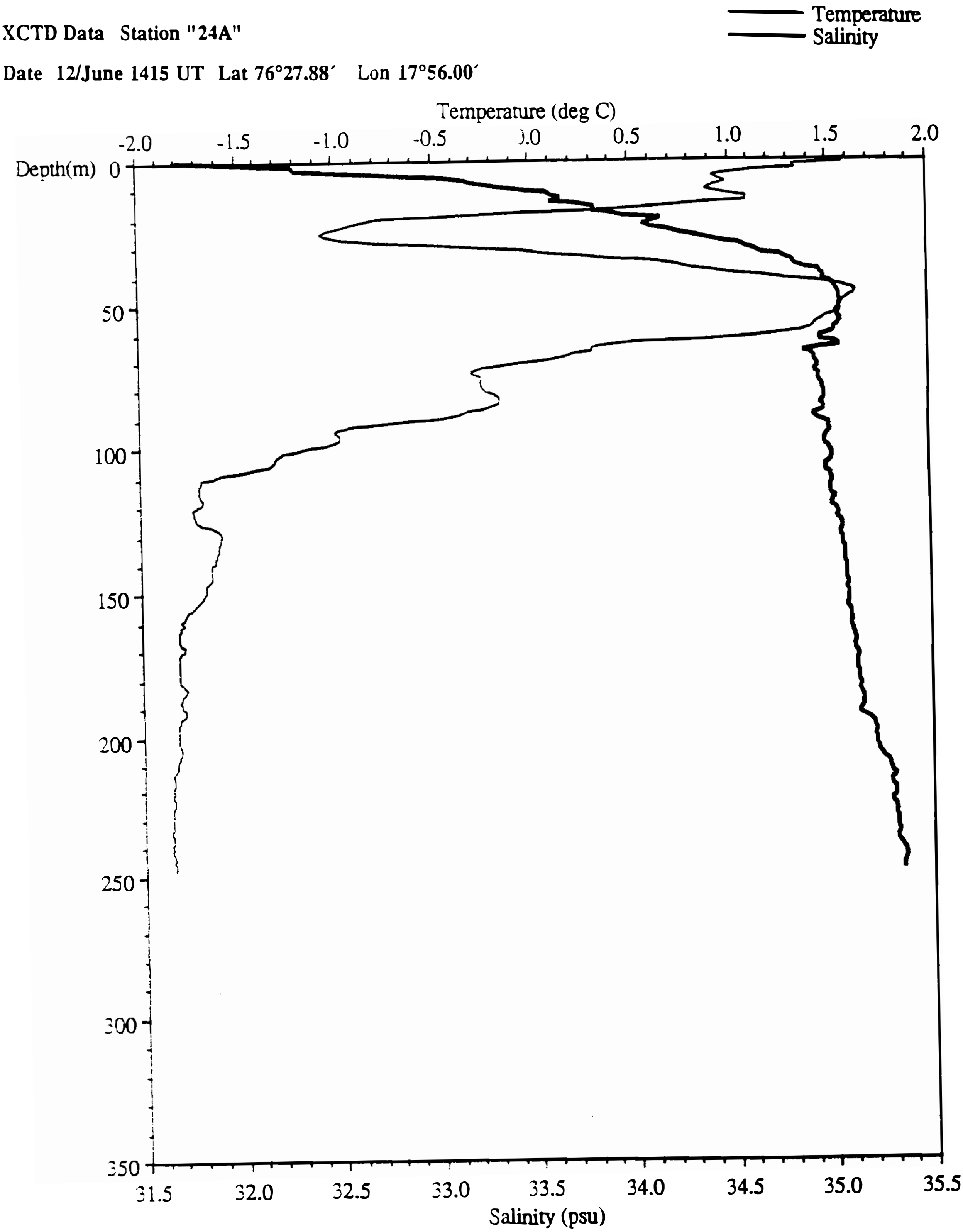
Date 12/June 0930 UT Lat 76°11.50´ Lon 17°33.50´



ICE-BAR 1995

XCTD Data Station "24A"

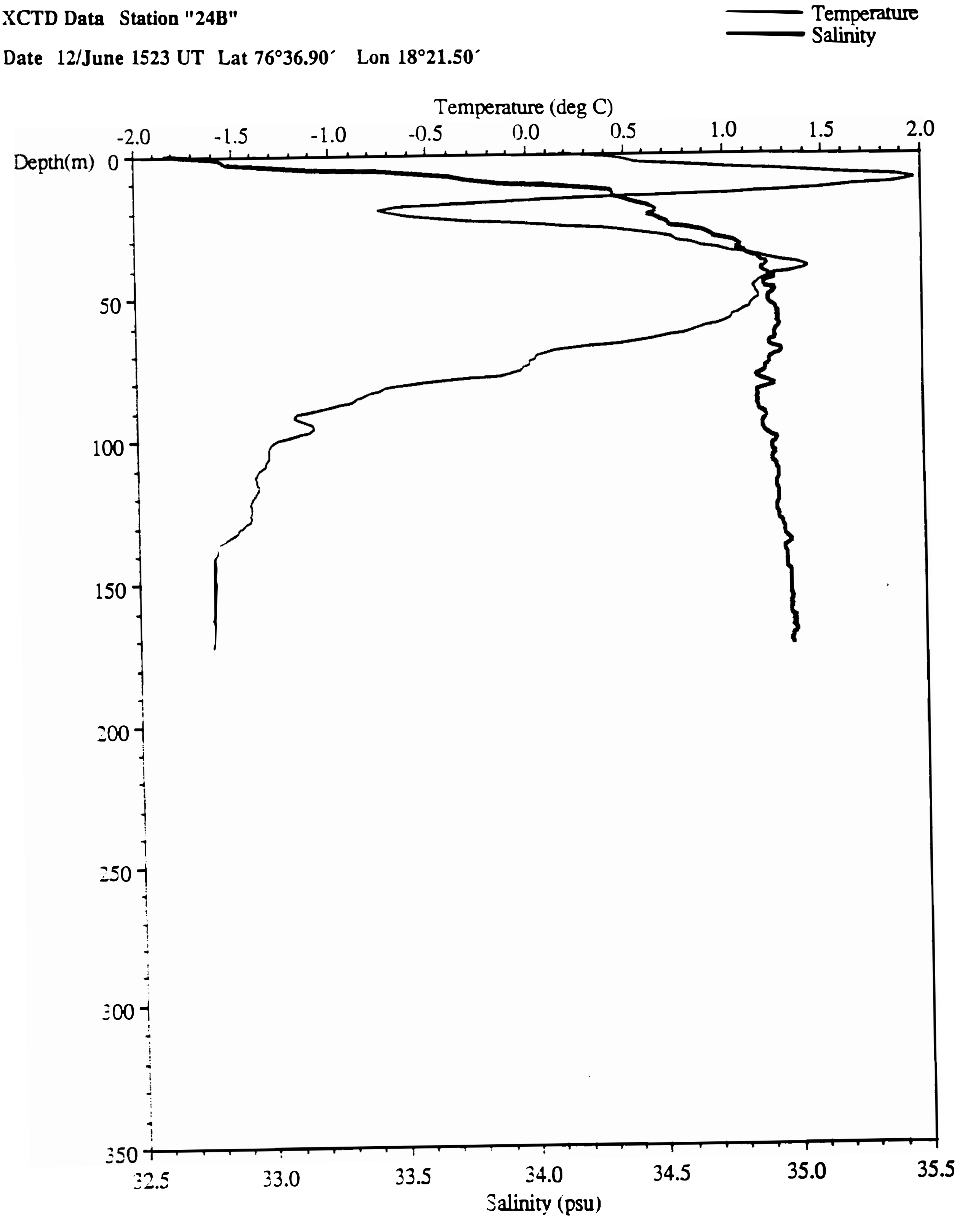
Date 12/June 1415 UT Lat 76°27.88′ Lon 17°56.00′



ICE-BAR 1995

XCTD Data Station "24B"

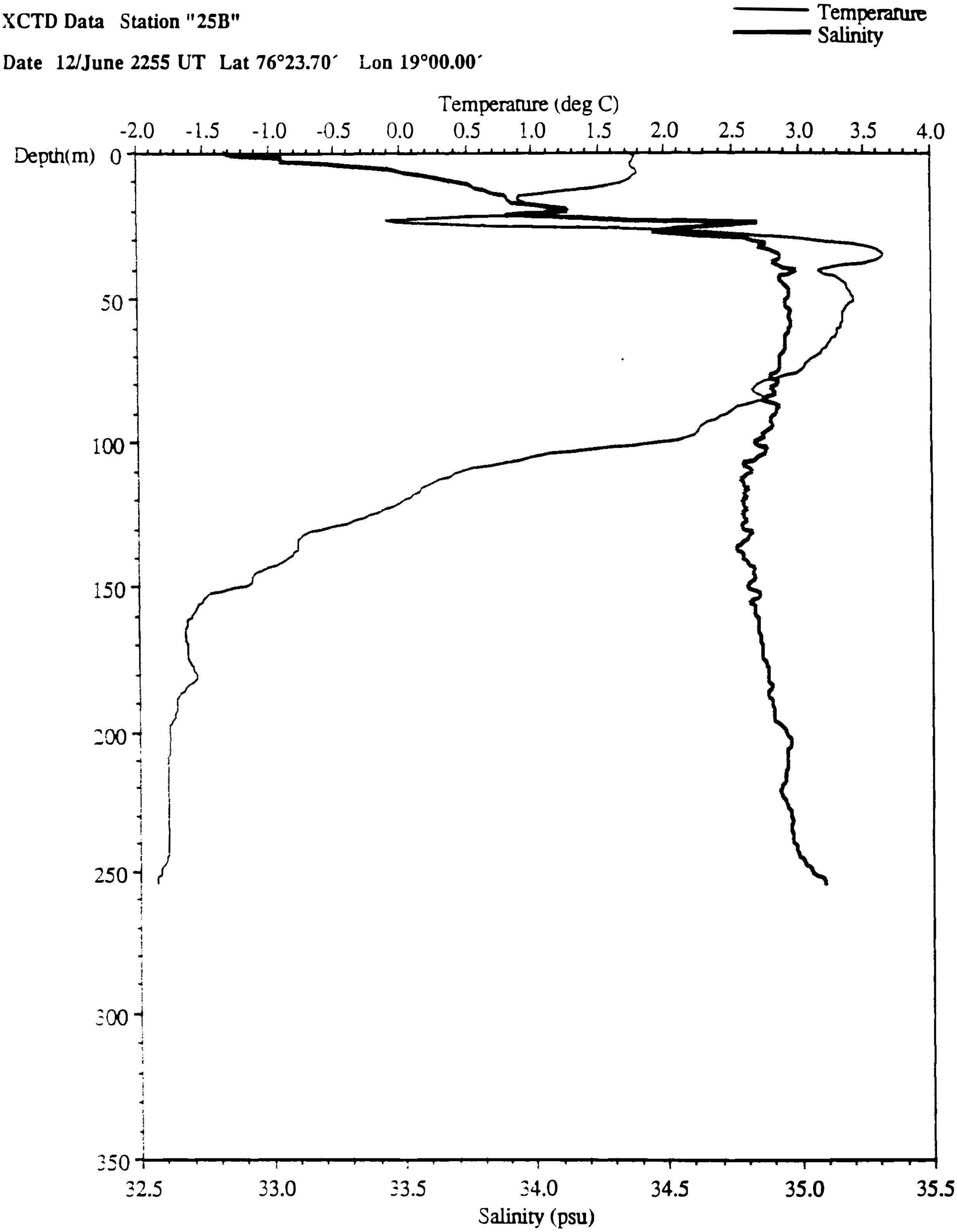
Date 12/June 1523 UT Lat 76°36.90´ Lon 18°21.50´



ICE-BAR 1995

XCTD Data Station "25B"

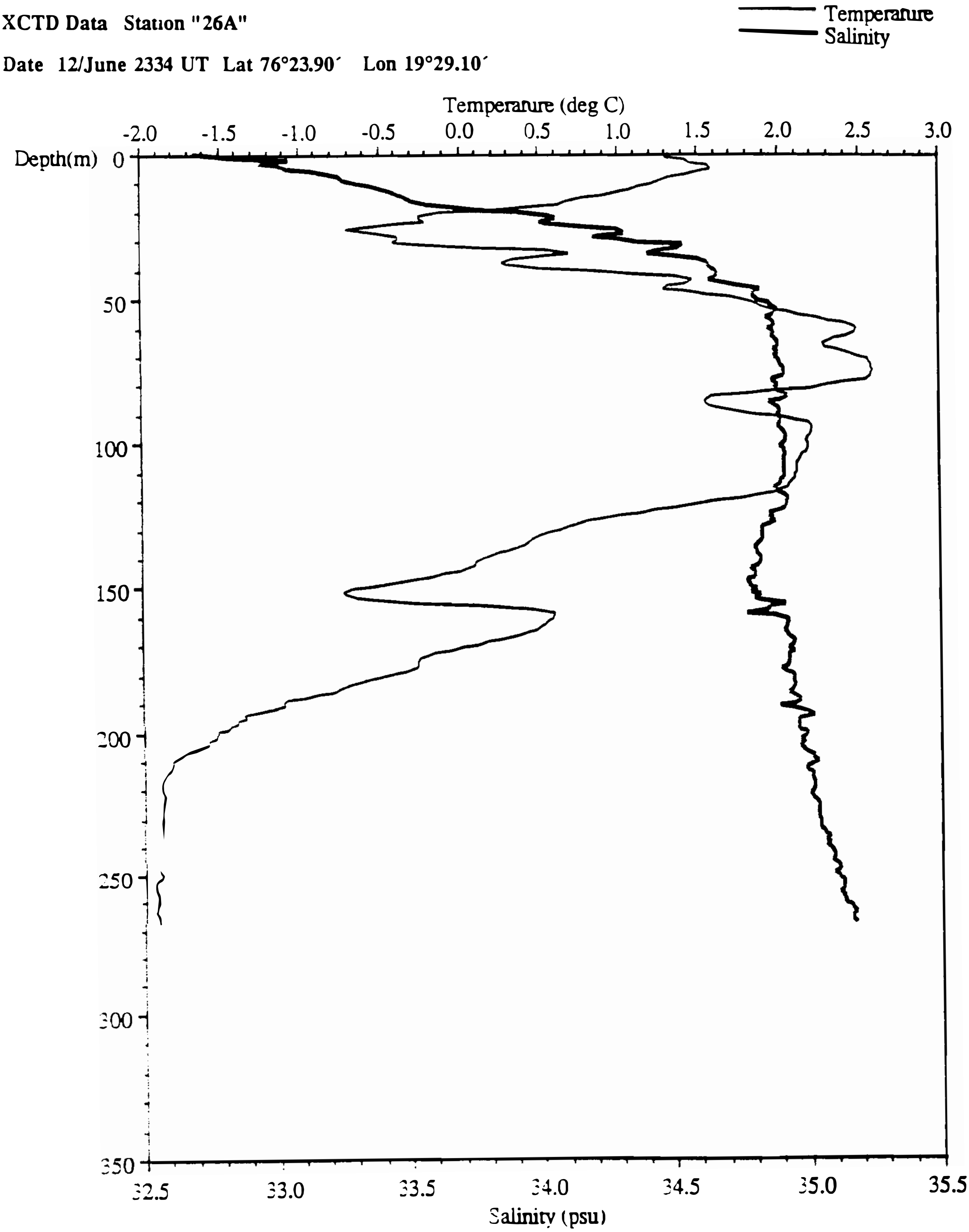
Date 12/June 2255 UT Lat 76°23.70′ Lon 19°00.00′



ICE-BAR 1995

XCTD Data Station "26A"

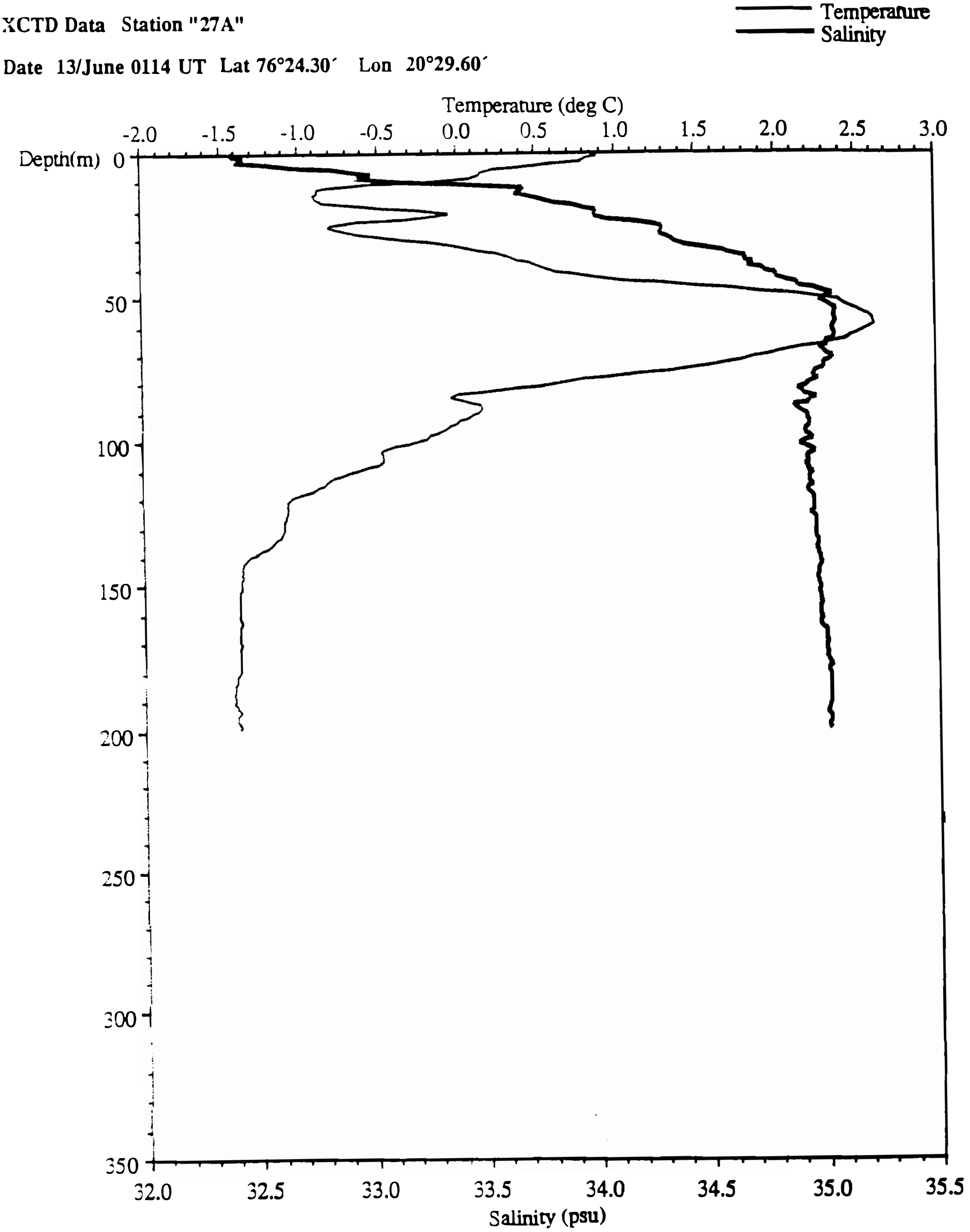
Date 12/June 2334 UT Lat 76°23.90´ Lon 19°29.10´



ICE-BAR 1995

XCTD Data Station "27A"

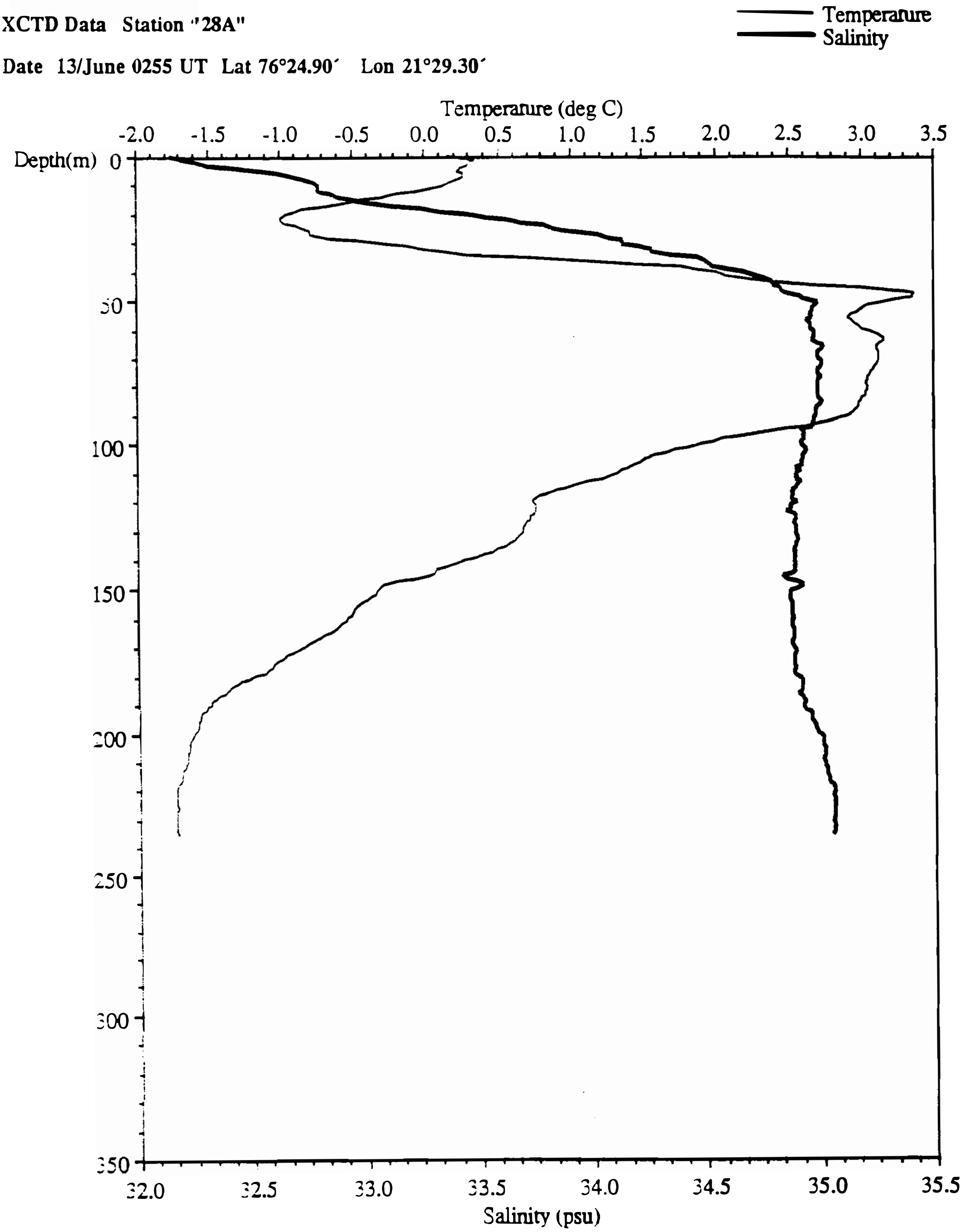
Date 13/June 0114 UT Lat 76°24.30´ Lon 20°29.60´



ICE-BAR 1995

XCTD Data Station "28A"

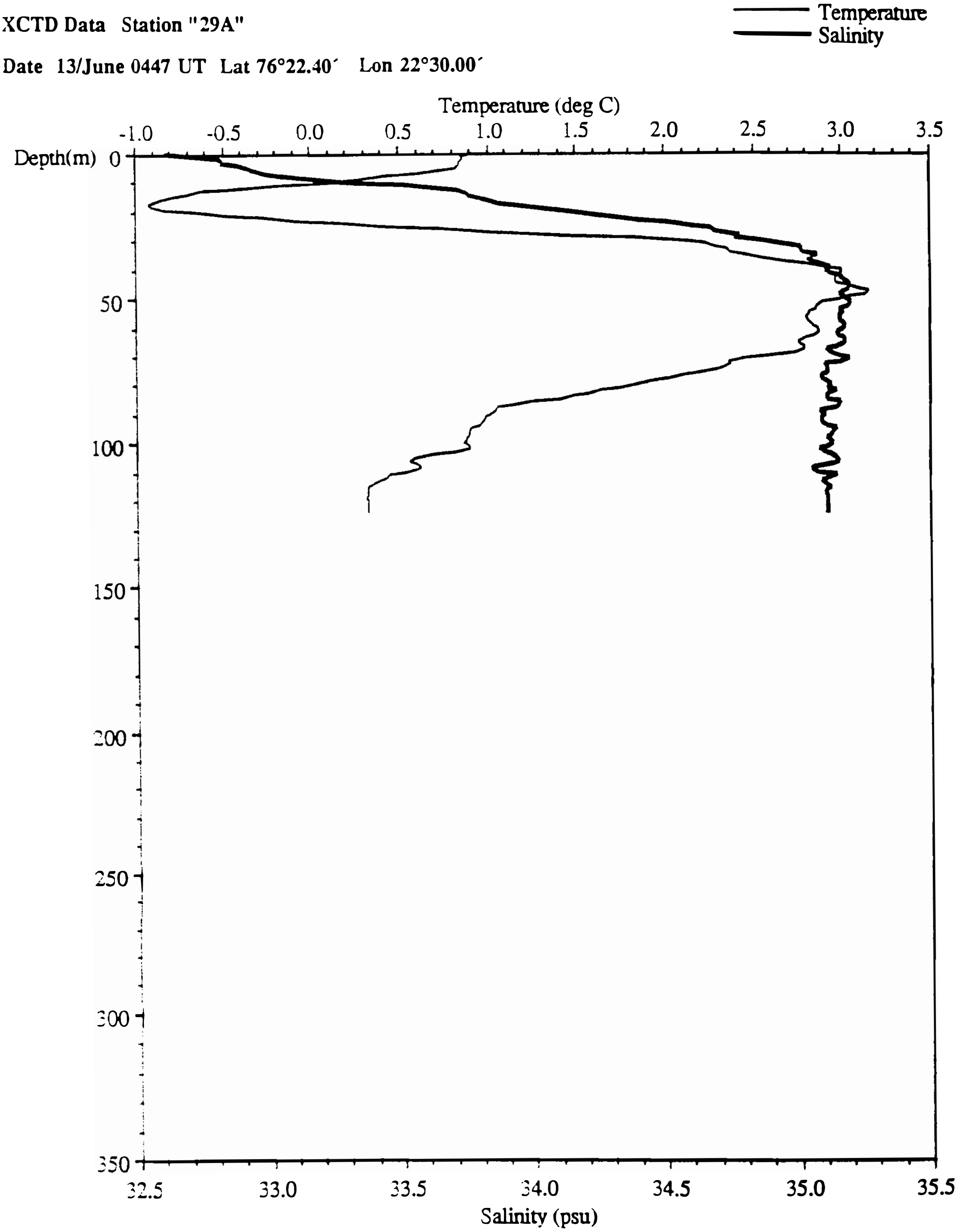
Date 13/June 0255 UT Lat 76°24.90´ Lon 21°29.30´



ICE-BAR 1995

XCTD Data Station "29A"

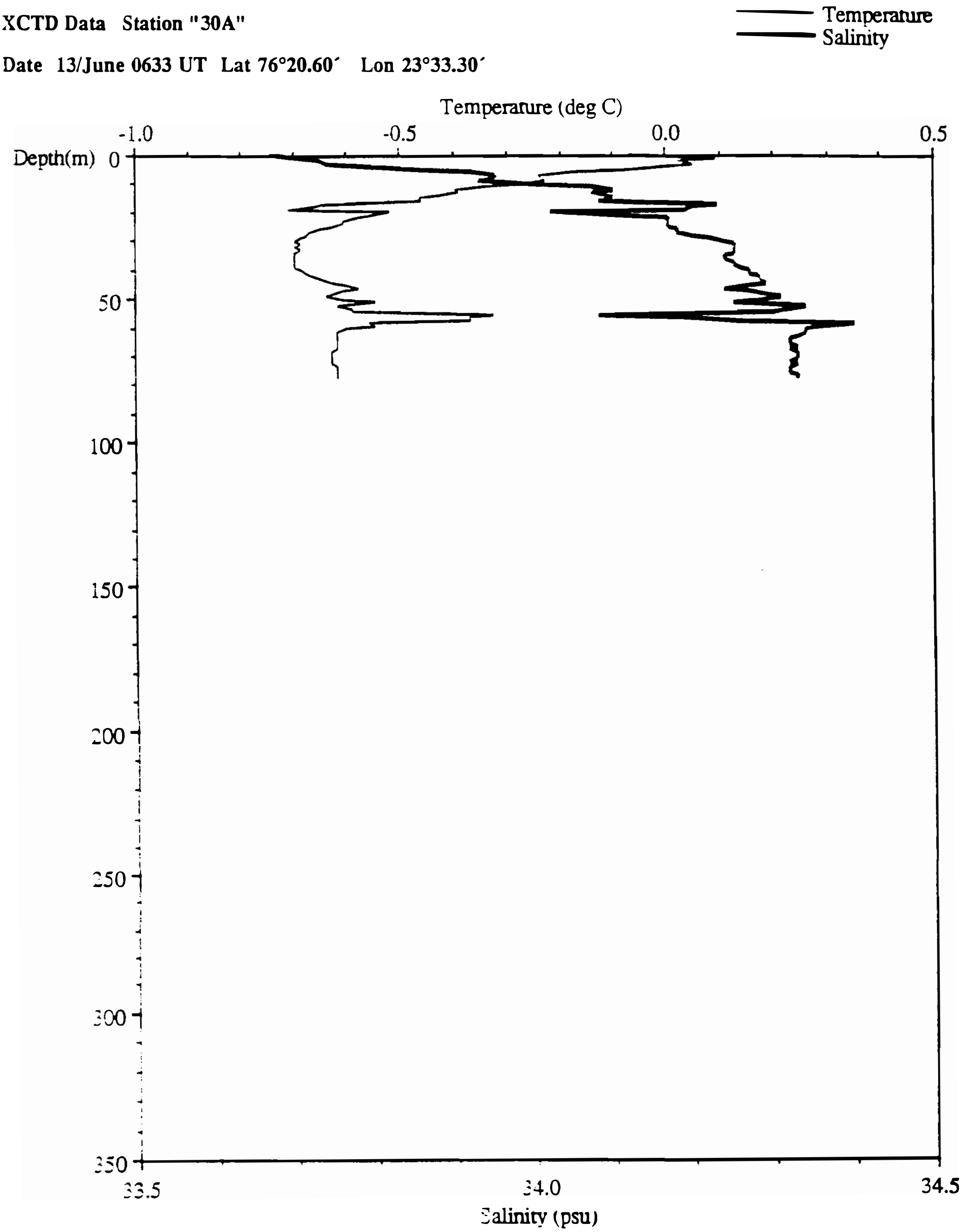
Date 13/June 0447 UT Lat 76°22.40´ Lon 22°30.00´



ICE-BAR 1995

XCTD Data Station "30A"

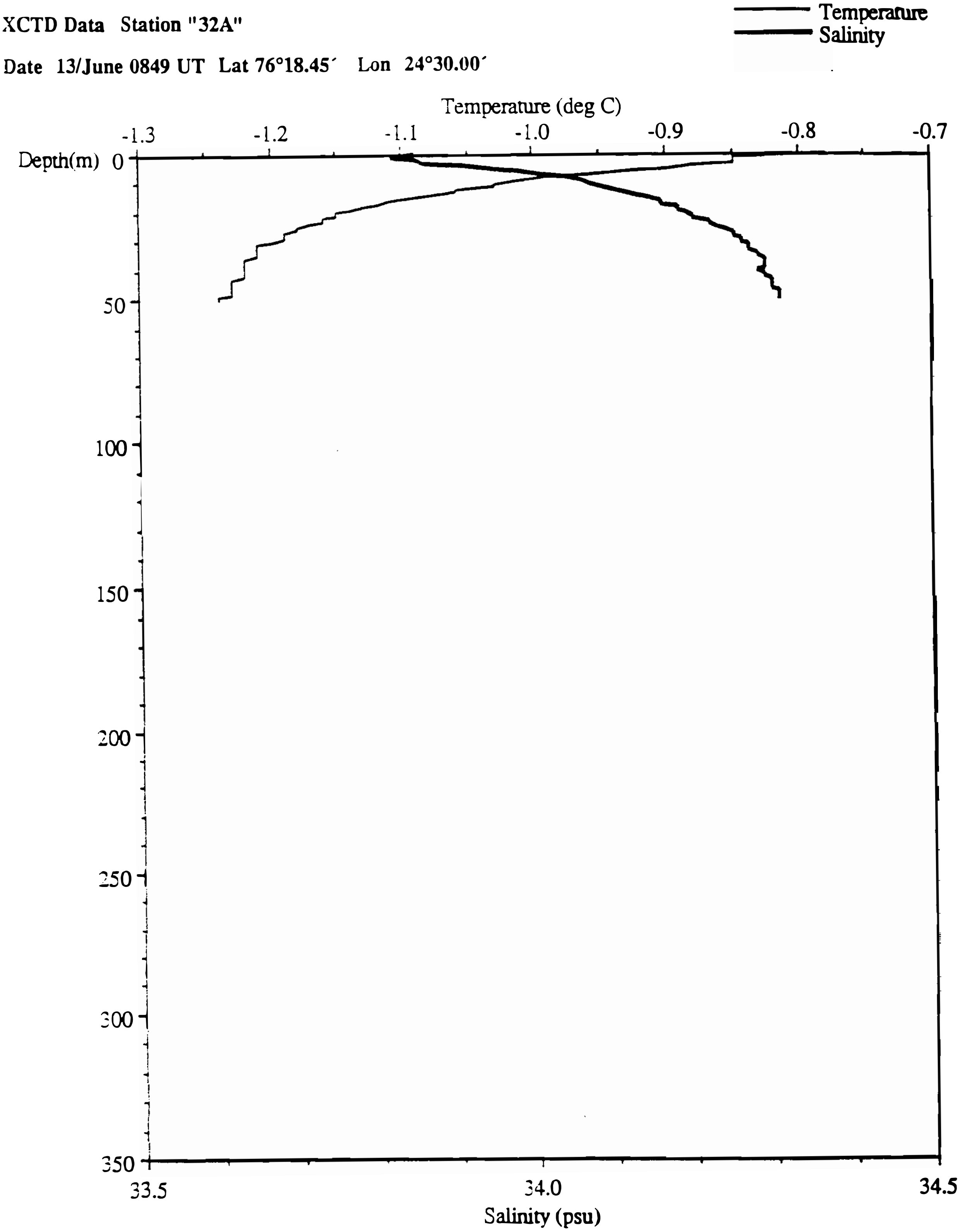
Date 13/June 0633 UT Lat 76°20.60´ Lon 23°33.30´



ICE-BAR 1995

XCTD Data Station "32A"

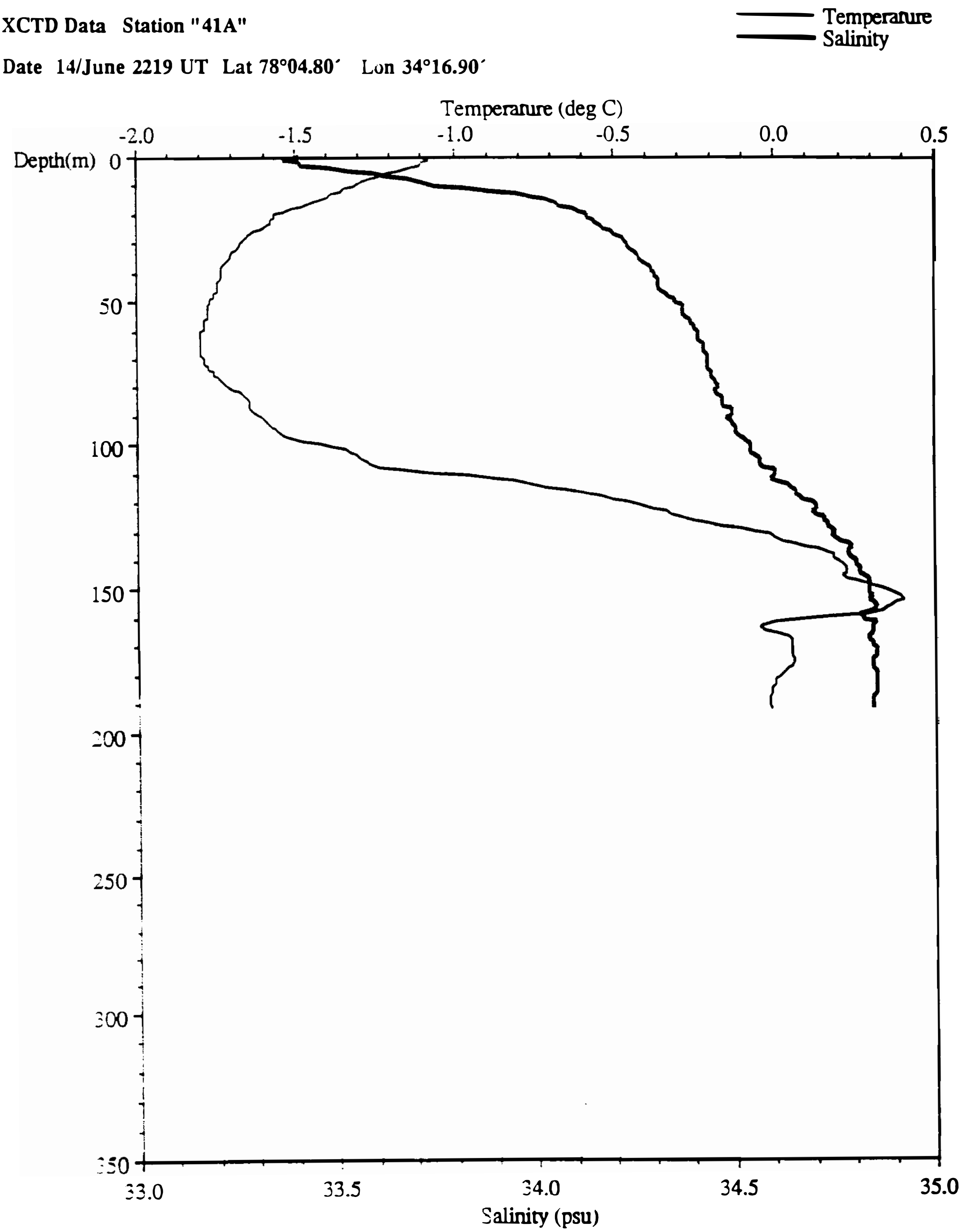
Date 13/June 0849 UT Lat 76°18.45´ Lon 24°30.00´



ICE-BAR 1995

XCTD Data Station "41A"

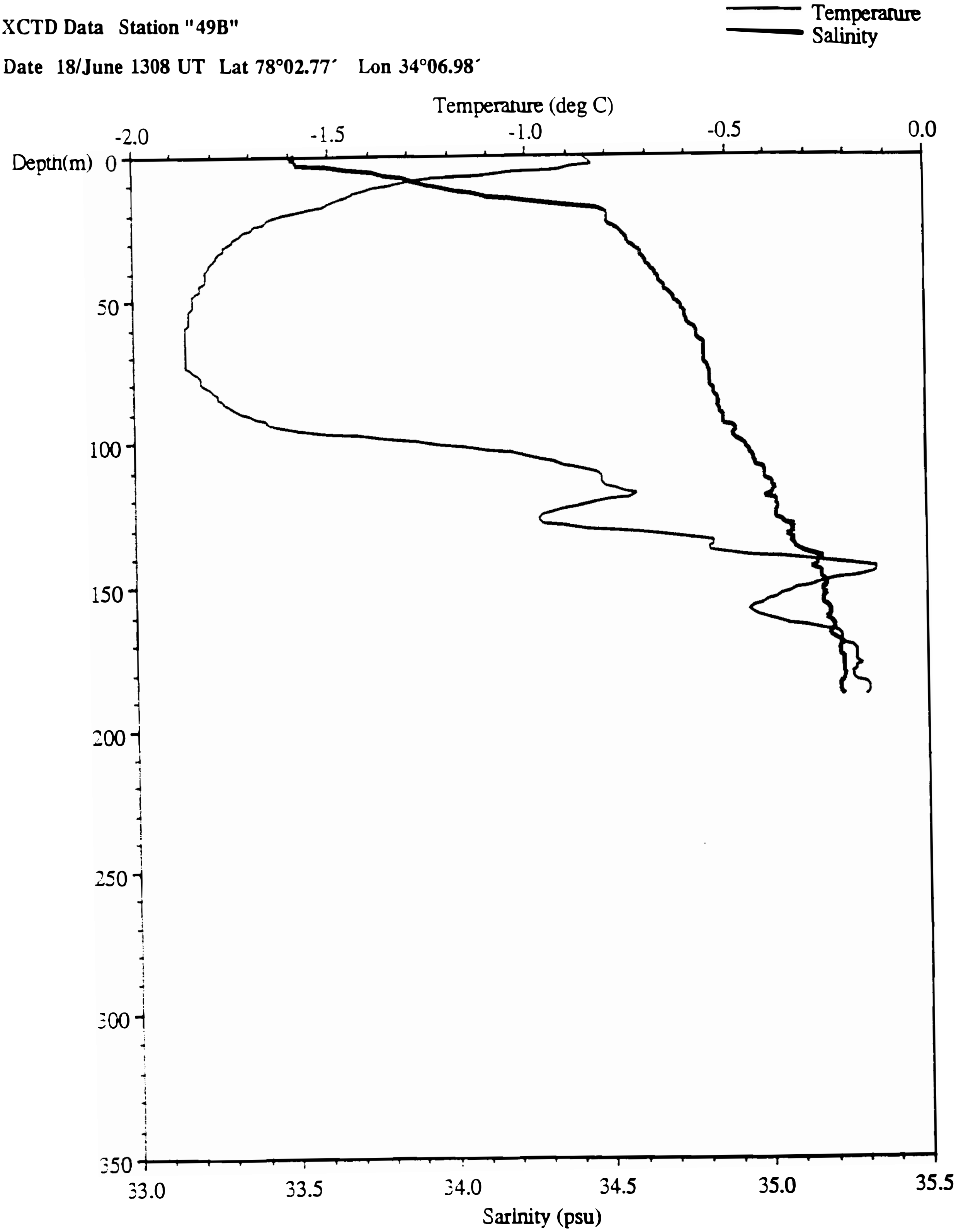
Date 14/June 2219 UT Lat 78°04.80′ Lon 34°16.90′



ICE-BAR 1995

XCTD Data   Station "49B"

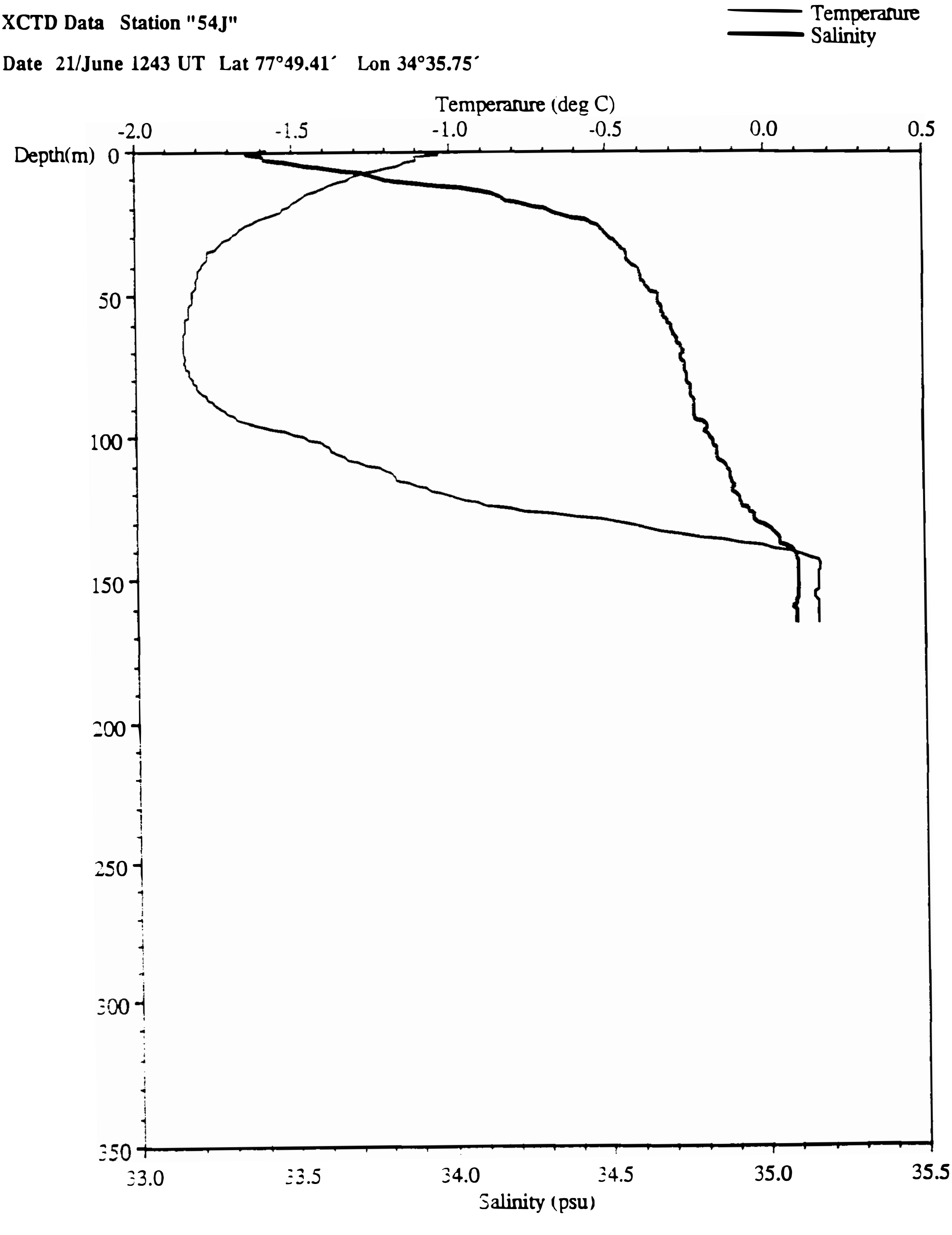
Date 18/June 1308 UT   Lat 78°02.77´   Lon 34°06.98´



ICE-BAR 1995

XCTD Data   Station "54J"

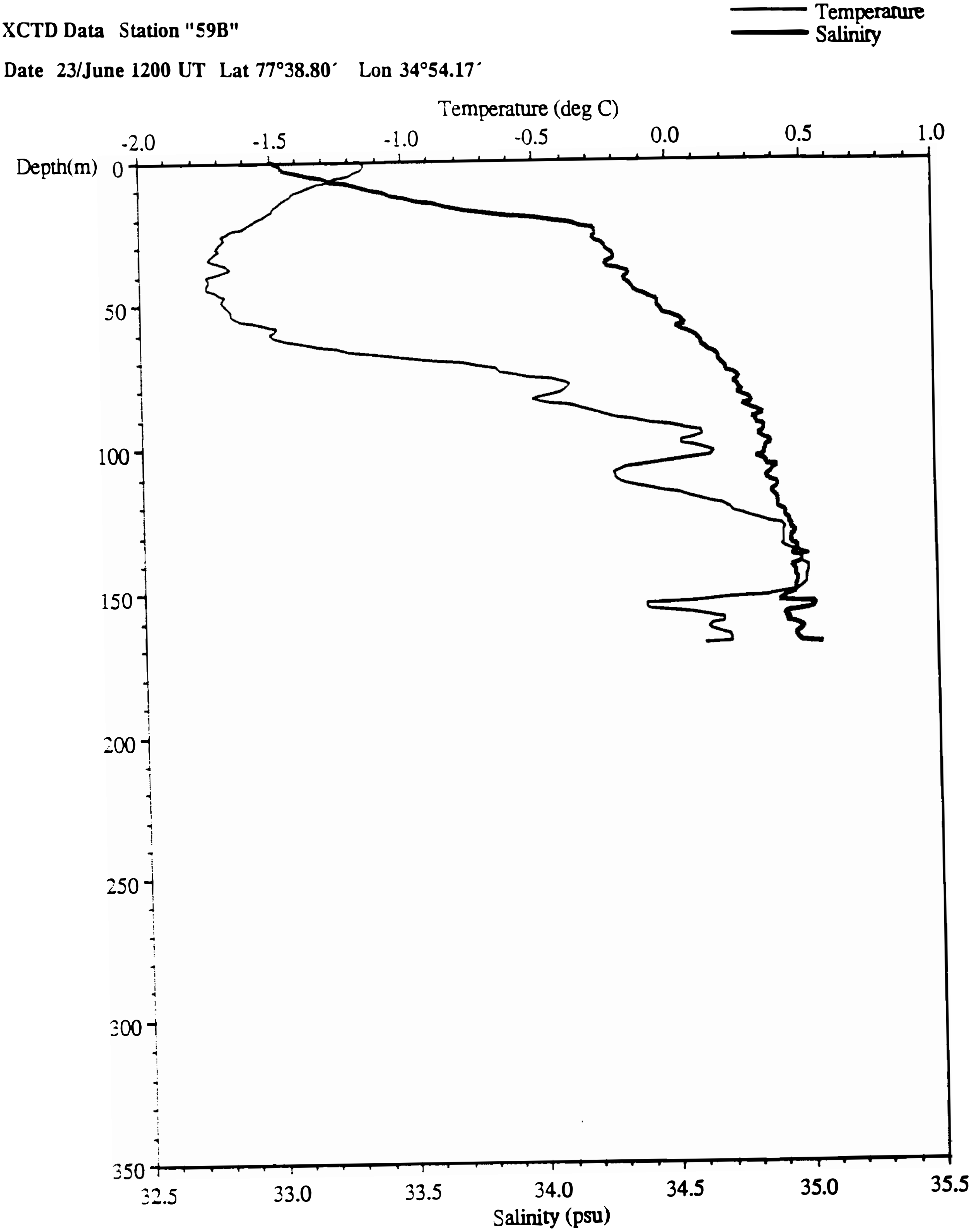
Date 21/June 1243 UT Lat 77°49.41´ Lon 34°35.75´



ICE-BAR 1995

XCTD Data Station "59B"

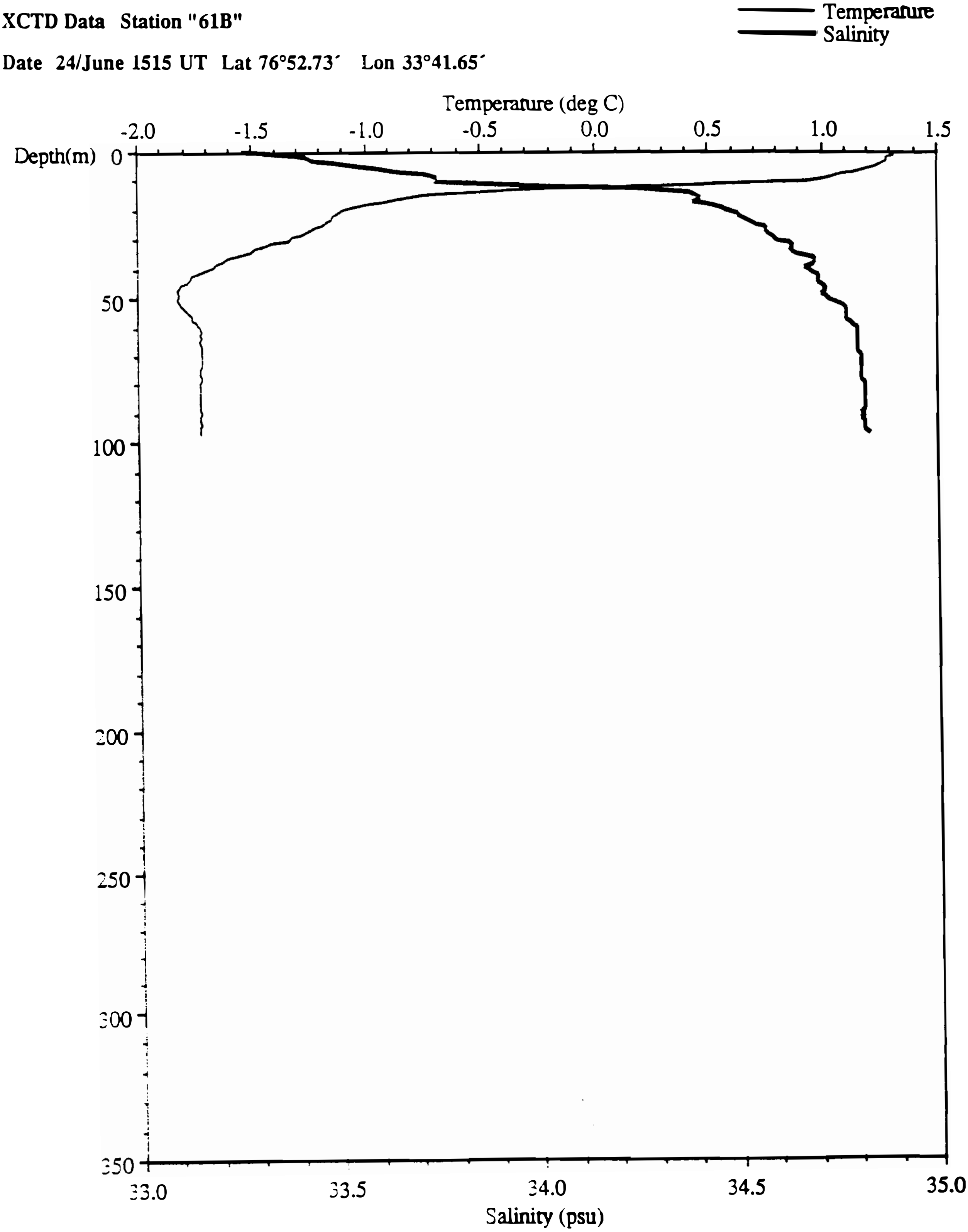
Date 23/June 1200 UT Lat 77°38.80′ Lon 34°54.17′



ICE-BAR 1995

XCTD Data Station "61B"

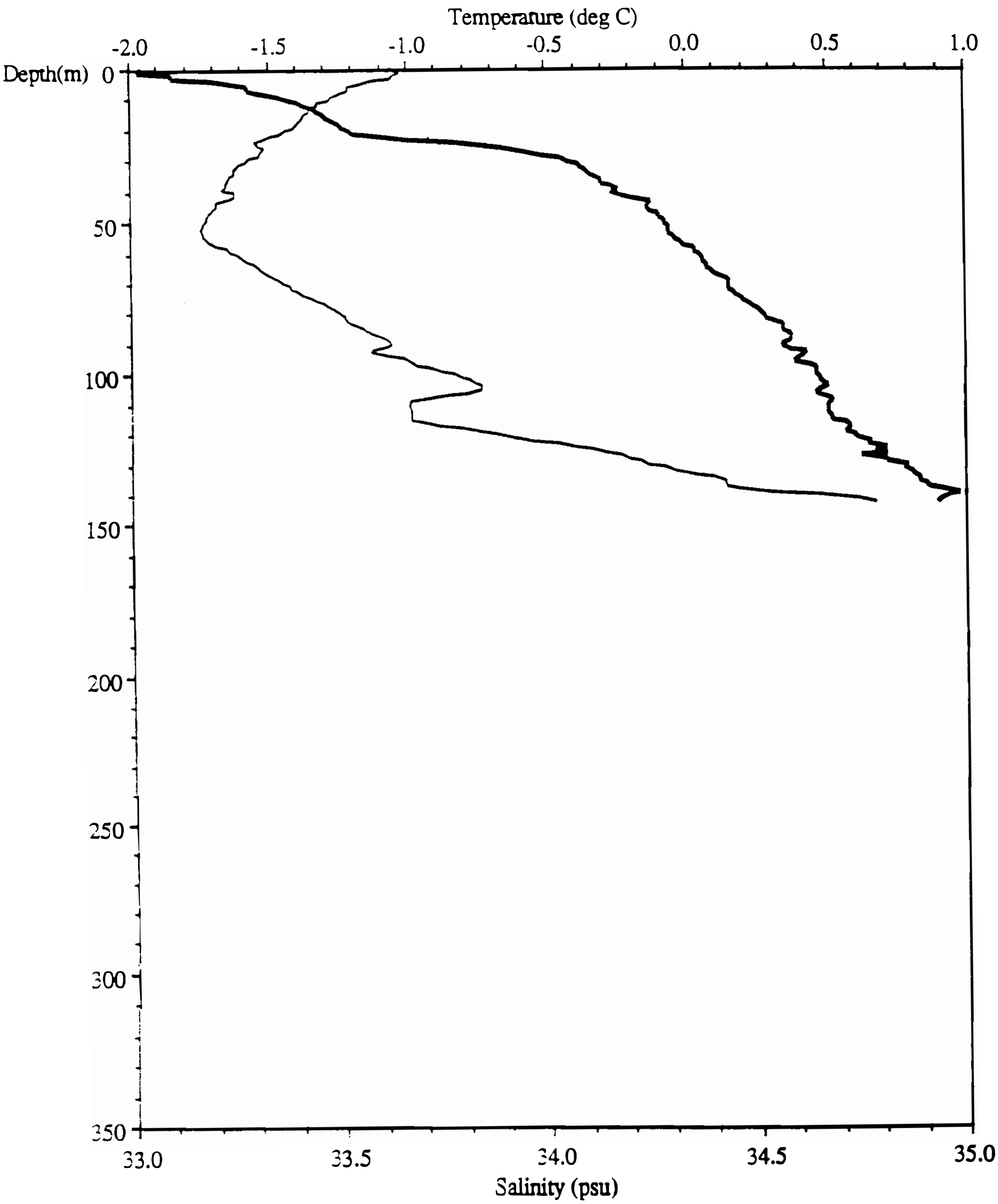
Date 24/June 1515 UT Lat 76°52.73′ Lon 33°41.65′



ICE-BAR 1995

XCTD Data Station "63G"

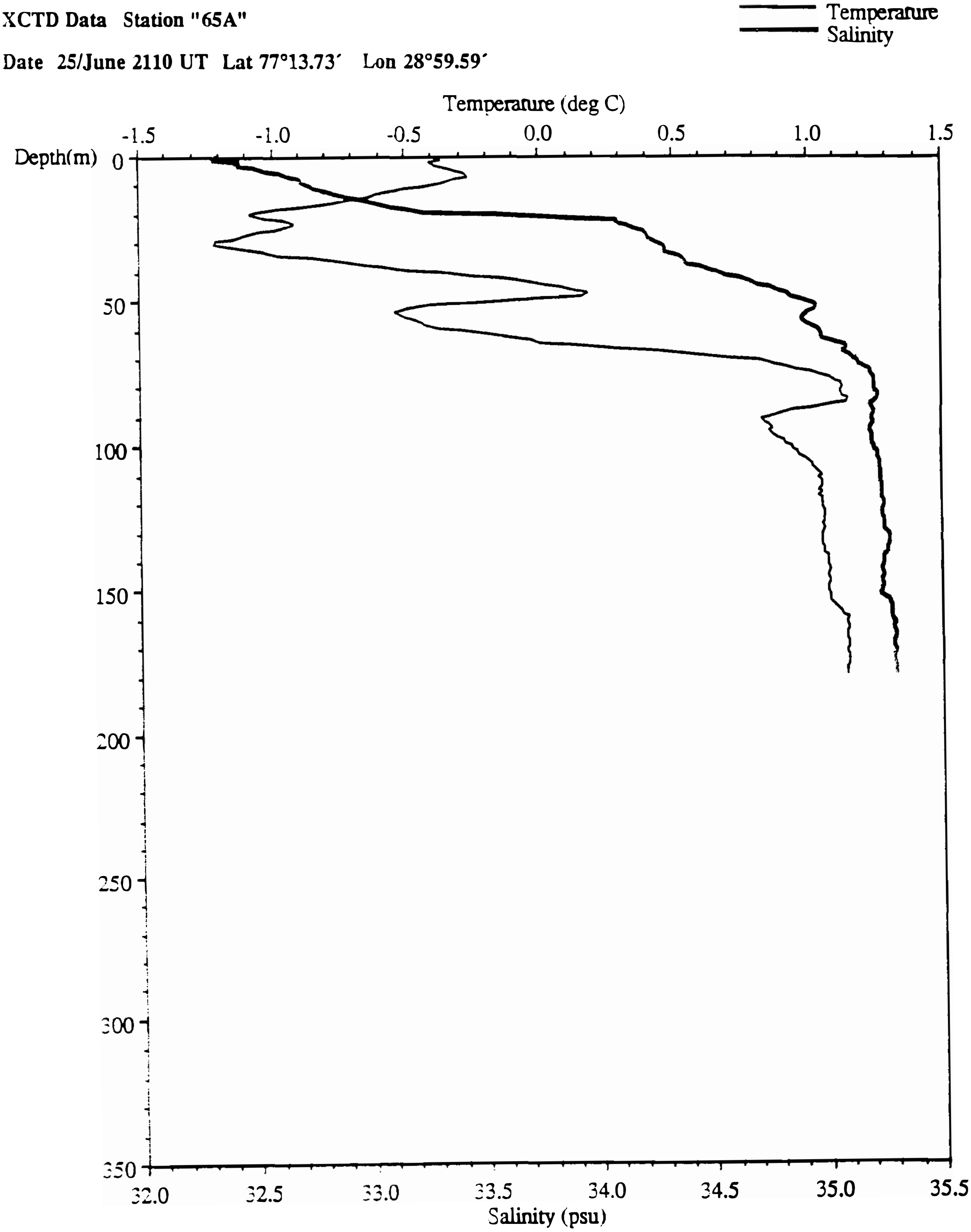
Date 25/June 0632 UT Lat 77°43.70´ Lon 31°59.11´



ICE-BAR 1995

XCTD Data Station "65A"

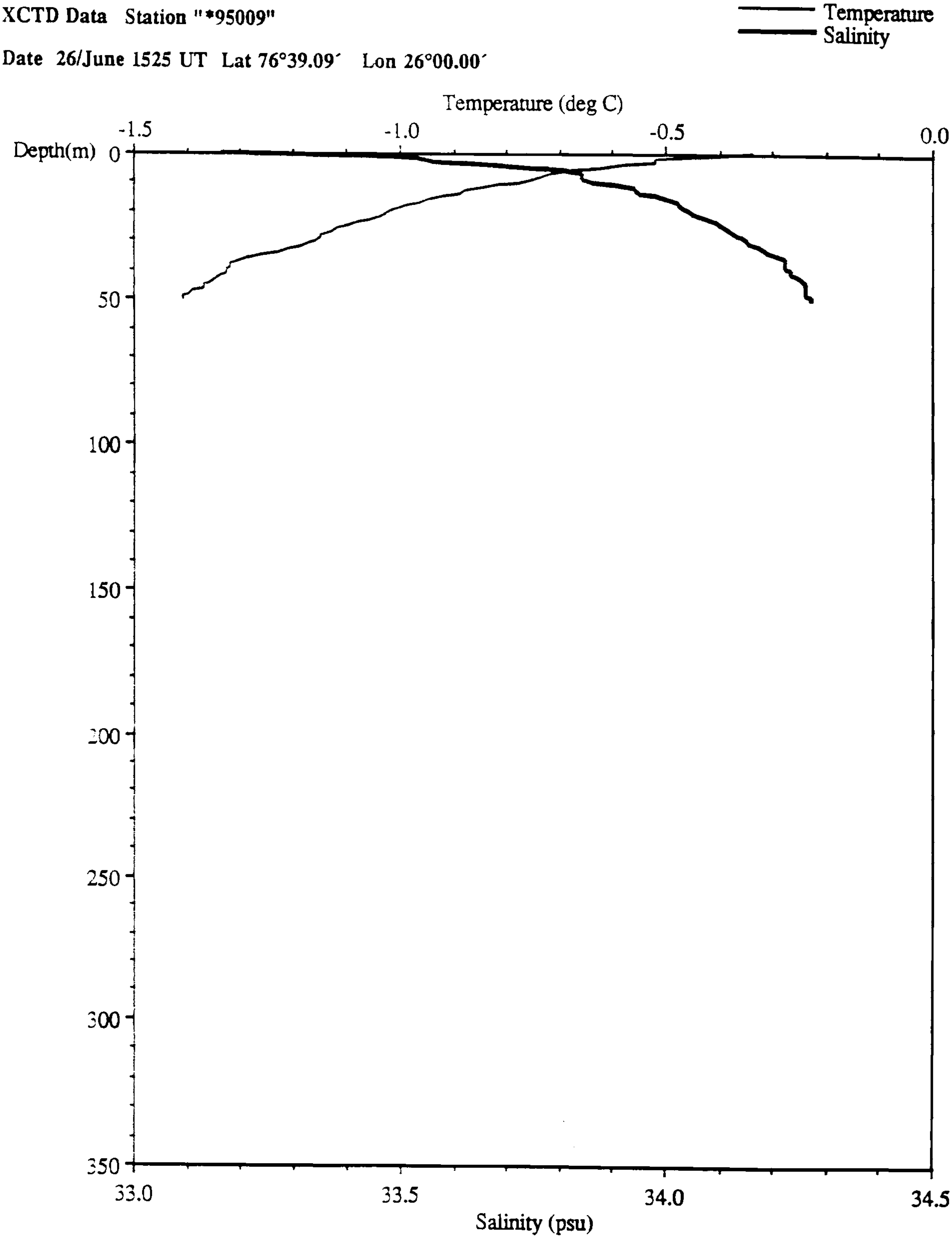
Date 25/June 2110 UT Lat 77°13.73′ Lon 28°59.59′



ICE-BAR 1995

XCTD Data Station "*95009"

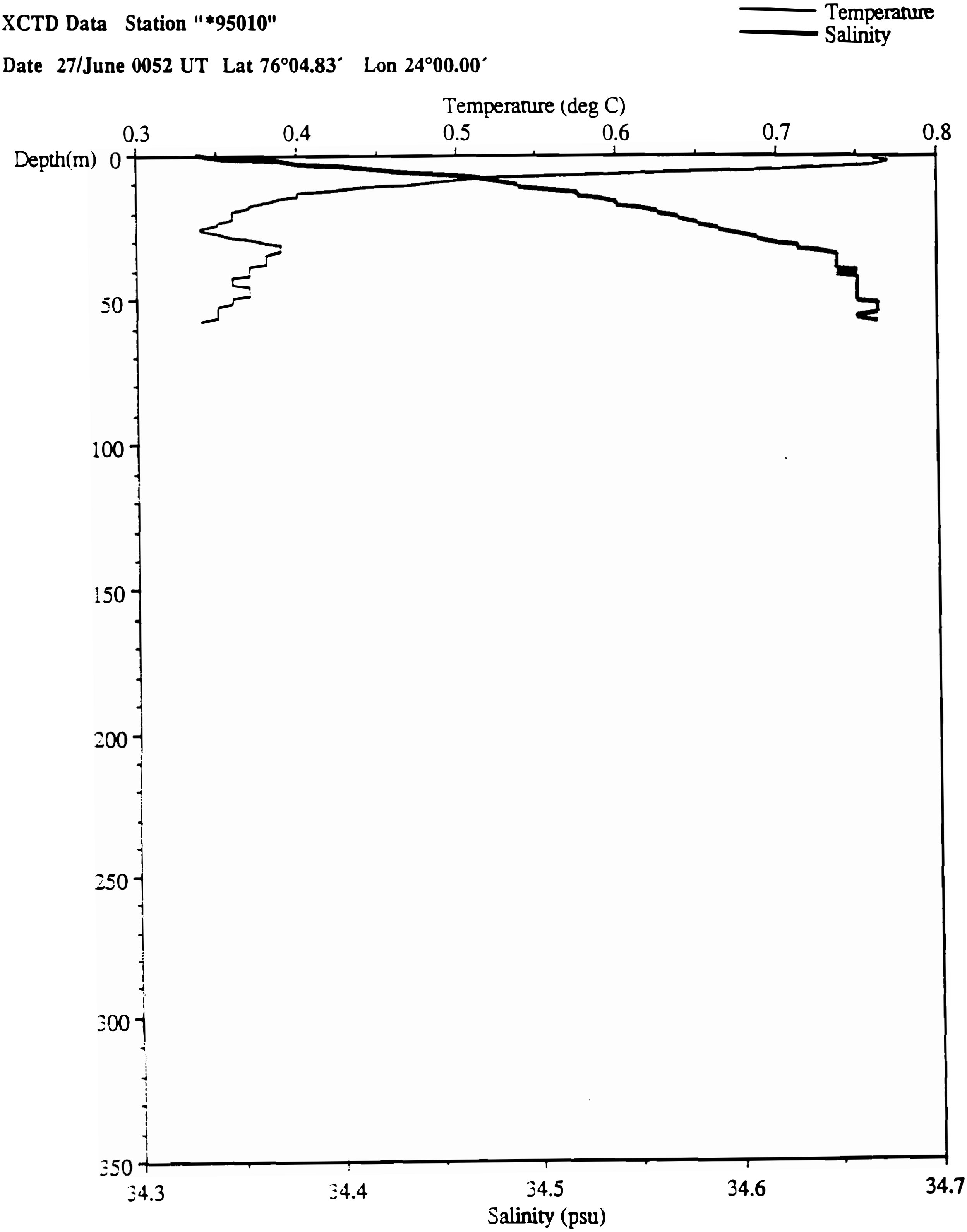
Date 26/June 1525 UT Lat 76°39.09′ Lon 26°00.00′



ICE-BAR 1995

XCTD Data Station "*95010"

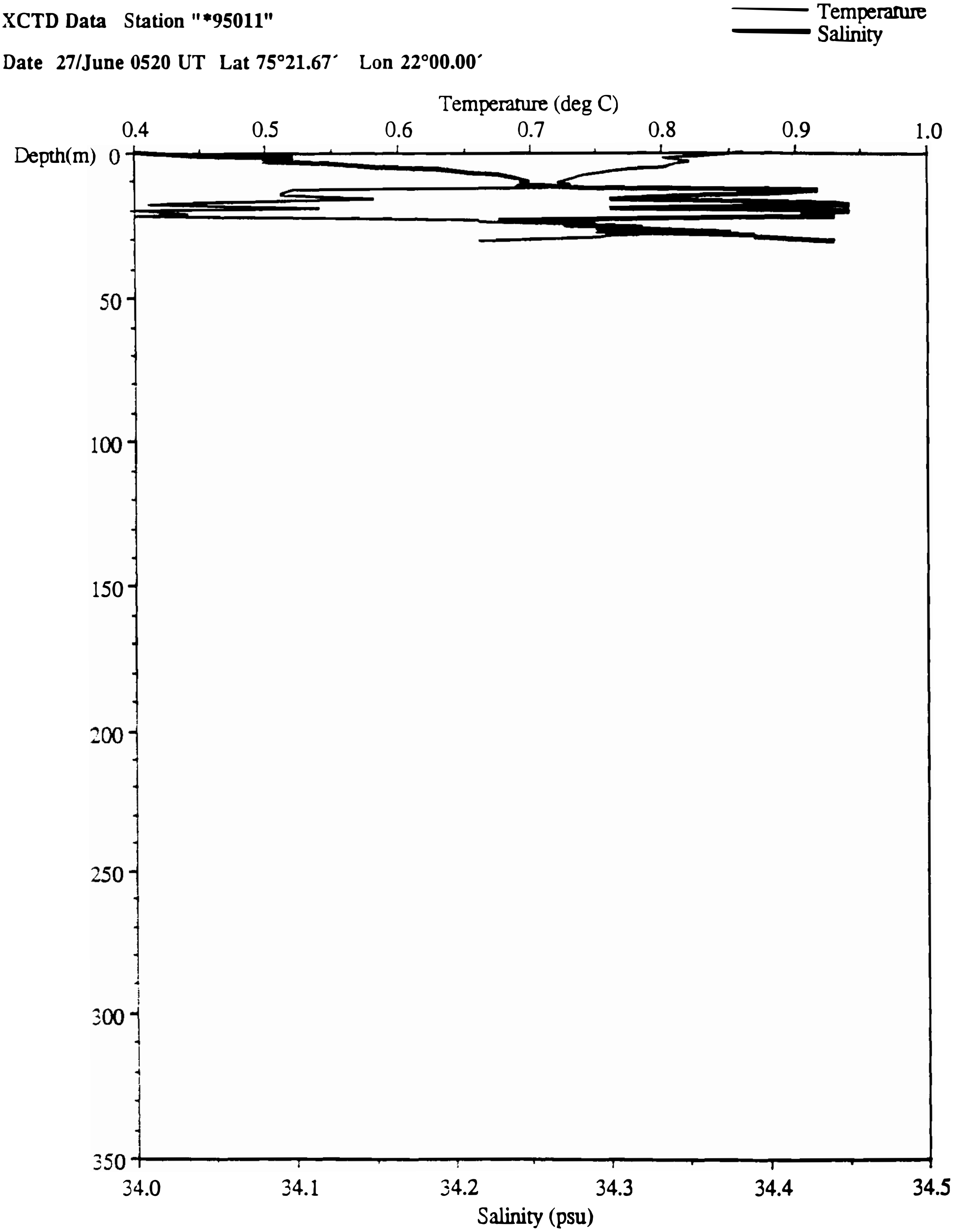
Date 27/June 0052 UT Lat 76°04.83´ Lon 24°00.00´



ICE-BAR 1995

XCTD Data Station "*95011"

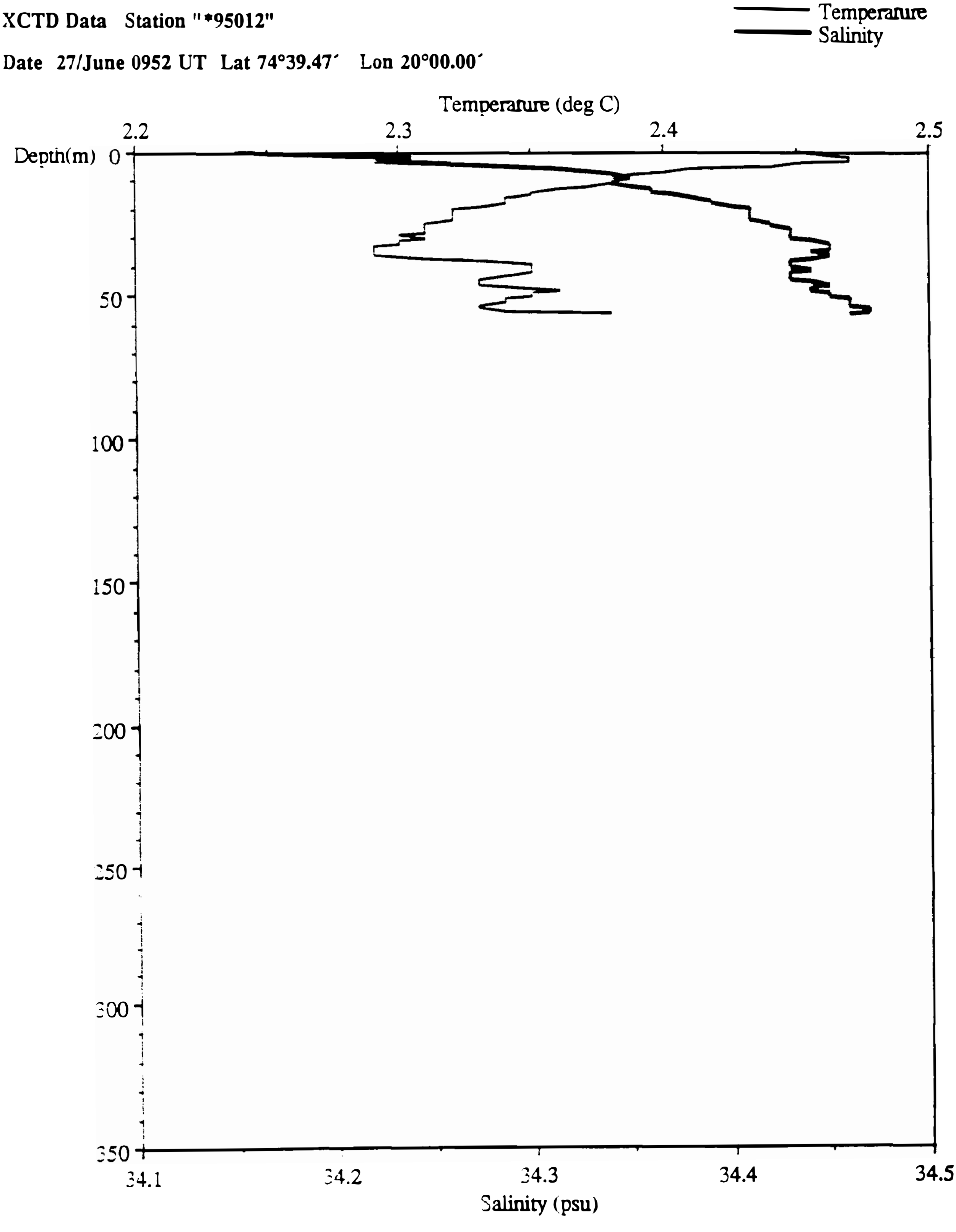
Date 27/June 0520 UT Lat 75°21.67´ Lon 22°00.00´



ICE-BAR 1995

XCTD Data Station "*95012"

Date 27/June 0952 UT Lat 74°39.47´ Lon 20°00.00´



Appendix 5

Physical Oceanography Program

XCTD Data: Tables

ICE-BAR 1995

XCTD Data   Station "22A"

Date 12/JUNE 0930 UT   Lat 76°11.50'   Lon 17°33.50'

Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)
0.0	2.87	30.81	34.11	80.8	3.67	32.16	34.95	161.5	-1.03	28.01	34.80	242.3	-1.87	27.56	35.03
1.0	2.88	30.59	33.84	81.8	3.58	32.15	34.96	162.5	-1.13	27.93	34.80	243.3	-1.88	27.56	35.03
2.0	2.70	30.70	34.16	82.8	3.52	32.11	34.99	163.5	-1.20	27.88	34.82	244.3	-1.88	27.56	35.04
3.0	2.85	31.04	34.10	83.8	3.50	32.09	34.98	164.6	-1.24	27.88	34.81	245.3	-1.89	27.55	35.04
4.0	2.85	30.86	34.20	84.8	3.49	32.08	34.96	165.6	-1.26	27.87	34.81	246.3	-1.89	27.56	35.04
5.0	2.90	30.82	34.20	85.8	3.47	32.04	34.96	166.6	-1.27	27.85	34.81	247.3	-1.89	27.56	35.04
6.1	2.86	30.81	34.15	86.8	3.43	32.02	34.97	167.6	-1.29	27.85	34.80	248.3	-1.89	27.56	35.04
7.1	2.85	30.86	34.16	87.8	3.40	32.04	34.98	168.6	-1.30	27.84	34.81	249.4	-1.89	27.56	35.04
8.1	[illegible]	30.90	34.19	88.8	3.41	32.11	35.00	169.6	-1.32	27.81	34.81	250.4	-1.89	27.56	35.04
9.1	[illegible]	30.89	34.22	89.8	3.47	32.18	35.00	170.6	-1.36	27.76	34.81	251.4	-1.89	27.56	35.04
10.1	[illegible]	31.09	34.29	90.9	3.56	32.32	35.02	171.6	-1.40	27.73	34.81	252.4	-1.89	27.56	35.05
11.1	2.95	31.20	34.33	91.9	3.65	32.36	35.02	172.6	-1.45	27.70	34.82	253.4	-1.89	27.56	35.05
12.1	3.08	31.33	34.37	92.9	3.72	32.40	35.03	173.6	-1.49	27.67	34.82	254.4	-1.89	27.57	35.05
13.1	3.21	31.48	34.39	93.9	3.77	32.45	35.03	174.6	-1.52	27.66	34.82	255.4	-1.89	27.57	35.06
14.1	3.38	31.92	34.50	94.9	3.79	32.46	35.04	175.7	-1.53	27.65	34.82	256.4	-1.89	27.57	35.06
15.1	3.62	32.23	34.61	95.9	3.81	32.45	35.05	176.7	-1.55	27.64	34.82	257.4	-1.89	27.57	35.06
16.2	3.90	32.28	34.62	96.9	3.81	32.47	35.06	177.7	-1.56	27.63	34.81	258.4	-1.89	27.57	35.06
17.2	4.10	32.44	34.62	97.9	3.80	32.45	35.06	178.7	-1.57	27.62	34.82	259.4	-1.89	27.58	35.06
18.2	4.20	32.45	34.61	98.9	3.79	32.44	35.06	179.7	-1.59	27.60	34.82	260.5	-1.89	27.57	35.06
19.2	4.21	32.45	34.66	99.9	3.79	32.44	35.06	180.7	-1.61	27.60	34.83	261.5	-1.89	27.58	35.06
20.2	4.09	32.19	34.69	101.0	3.78	32.44	35.06	181.7	-1.62	27.59	34.83	262.5	-1.89	27.58	35.06
21.2	3.92	32.18	34.76	102.0	3.77	32.43	35.06	182.7	-1.63	27.59	34.83	263.5	-1.89	27.59	35.07
22.2	3.77	32.22	34.83	103.0	3.74	32.32	35.04	183.7	-1.63	27.59	34.83	264.5	-1.89	27.59	35.07
23.2	3.79	32.29	34.84	104.0	3.67	32.26	35.05	184.7	-1.64	27.58	34.83	265.5	-1.89	27.59	35.08
24.2	3.89	32.31	34.79	105.0	3.58	32.21	35.06	185.8	-1.64	27.58	34.83	266.5	-1.90	27.58	35.08
25.2	3.99	32.43	34.76	106.0	3.50	32.12	35.06	186.8	-1.64	27.58	34.82	267.5	-1.90	27.58	35.08
26.2	4.03	32.33	34.73	107.0	3.42	31.94	35.02	187.8	-1.64	27.58	34.82	268.5	-1.90	27.58	35.07
27.3	4.06	32.51	34.79	108.0	3.28	31.82	35.01	188.8	-1.64	27.58	34.82	269.5	-1.90	27.58	35.07
28.3	4.05	32.46	34.80	109.0	3.13	31.71	35.02	189.8	-1.64	27.58	34.82	270.6	-1.90	27.58	35.07
29.3	4.05	32.47	34.85	110.0	2.97	31.52	35.02	190.8	-1.65	27.58	34.82	271.6	-1.90	27.58	35.07
30.3	4.06	32.56	34.86	111.0	2.80	31.25	34.97	191.8	-1.65	27.57	34.83	272.6	-1.90	27.58	35.07
31.3	4.11	32.63	34.88	112.1	2.56	30.98	34.92	192.8	-1.66	27.57	34.83	273.6	-1.90	27.59	35.07
32.3	4.19	32.67	34.88	113.1	2.27	30.71	34.90	193.8	-1.67	27.56	34.84	274.6	-1.90	27.58	35.07
33.3	4.25	32.85	34.92	114.1	2.01	30.57	34.91	194.8	-1.68	27.56	34.84	275.6	-1.90	27.59	35.07
34.3	4.37	32.99	34.94	115.1	1.80	30.42	34.90	195.8	-1.69	27.60	34.86	276.6	-1.90	27.59	35.07
35.3	4.51	33.10	34.96	116.1	1.66	30.36	34.90	196.9	-1.67	27.61	34.86	277.6	-1.90	27.59	35.08
36.3	4.65	33.21	34.95	117.1	1.56	30.29	34.90	197.9	-1.63	27.67	34.87	278.6	-1.90	27.59	35.08
37.4	4.71	33.22	34.98	118.1	1.49	30.18	34.88	198.9	-1.60	27.66	34.86	279.6	-1.90	27.59	35.08
38.4	4.73	33.20	35.00	119.1	1.40	30.08	34.85	199.9	-1.59	27.68	34.88	280.6	-1.90	27.59	35.08
39.4	4.71	33.15	35.00	120.1	1.31	30.06	34.86	200.9	-1.59	27.67	34.88	281.7	-1.90	27.60	35.08
40.4	4.67	33.14	35.01	121.1	1.22	29.96	34.87	201.9	-1.60	27.67	34.89	282.7	-1.90	27.60	35.09
41.4	4.61	33.06	35.01	122.2	1.14	29.39	34.87	202.9	-1.60	27.67	34.89	283.7	-1.90	27.59	35.09
42.4	4.56	33.03	35.01	123.2	1.08	29.89	34.87	203.9	-1.60	27.68	34.89	284.7	-1.91	27.59	35.08
43.4	4.47	32.74	34.95	124.2	1.05	29.92	34.88	204.9	-1.60	27.67	34.89	285.7	-1.90	27.60	35.08
44.4	4.28	32.37	34.88	125.2	1.09	30.01	34.89	205.9	-1.61	27.65	34.89	286.7	-1.91	27.59	35.08
45.4	3.98	32.24	34.89	126.2	1.16	30.09	34.89	207.0	-1.63	27.65	34.90	287.7	-1.91	27.59	35.09
46.4	3.72	32.22	34.96	127.2	1.28	30.22	34.89	208.0	-1.64	27.64	34.90	288.7	-1.91	27.59	35.09
47.4	3.61	32.15	34.99	128.2	1.37	30.24	34.89	209.0	-1.66	27.64	34.91	289.7	-1.91	27.59	35.08
48.5	3.64	32.18	34.93	129.2	1.41	30.20	34.89	210.0	-1.67	27.63	34.92	290.7	-1.90	27.60	35.08
49.5	3.73	32.28	34.86	130.2	1.39	30.19	34.90	211.0	-1.67	27.64	34.92	291.8	-1.90	27.60	35.08
50.5	3.78	32.29	34.87	131.2	1.32	30.02	34.88	212.0	-1.67	27.64	34.92	292.8	-1.90	27.60	35.09
51.5	3.84	32.43	34.90	132.2	1.08	29.58	34.88	213.0	-1.68	27.65	34.93	293.8	-1.91	27.60	35.10
52.5	3.89	32.46	34.91	133.3	0.79	29.56	34.93	214.0	-1.68	27.65	34.94	294.8	-1.91	27.60	35.10
53.5	3.98	32.57	34.93	134.3	0.55	29.48	34.97	215.0	-1.69	27.65	34.96	295.8	-1.91	27.60	35.10
54.5	4.04	32.59	34.92	135.3	0.51	29.43	34.94	216.0	-1.70	27.62	34.95	296.8	-1.91	27.61	35.10
55.5	4.06	32.57	34.94	136.3	0.52	29.38	34.86	217.0	-1.72	27.60	34.95	297.8	-1.91	27.60	35.10
56.5	4.04	32.50	34.93	137.3	0.49	29.35	34.83	218.1	-1.74	27.59	34.96	298.8	-1.91	27.62	35.10
57.5	4.00	32.52	34.96	138.3	0.44	29.35	34.85	219.1	-1.78	27.57	34.97	299.8	-1.91	27.61	35.11
58.6	3.97	32.50	34.96	139.3	0.40	29.27	34.85	220.1	-1.80	27.56	34.98	300.8	-1.91	27.61	35.11
59.6	3.96	[illegible]	34.97	140.3	0.35	29.24	34.86	221.1	-1.82	27.56	34.99	301.8	-1.91	27.61	35.11
60.6	3.95	[illegible]	34.95	141.3	0.26	29.07	34.83	222.1	-1.83	27.54	34.99	302.9	-1.91	27.62	35.11
61.6	3.92	32.40	34.94	142.3	0.16	29.06	34.86	223.1	-1.84	27.53	34.98	303.9	-1.91	27.63	35.12
62.6	3.89	32.42	34.96	143.4	0.08	29.06	34.86	224.1	-1.85	27.54	34.99	304.9	-1.91	27.63	35.12
63.6	3.85	32.40	34.97	144.4	0.06	29.01	34.87	225.1	-1.86	27.54	34.99	305.9	-1.91	27.63	35.12
64.6	3.84	32.39	34.98	145.4	0.03	28.95	34.84	226.1	-1.87	27.54	35.00	306.9	-1.91	27.63	35.12
65.6	3.83	32.39	34.97	146.4	0.00	28.96	34.83	227.1	-1.87	27.53	35.00	307.9	-1.91	27.63	35.12
66.6	3.83	32.42	34.97	147.4	-0.03	28.91	34.83	228.2	-1.87	27.54	[illegible]	308.9	-1.91	27.63	35.12
67.6	3.84	32.43	34.98	148.4	-0.07	28.84	34.84	229.2	-1.87	27.53	35.00	309.9	-1.91	27.63	35.12
68.6	3.86	32.45	[illegible]	149.4	-0.13	28.82	34.84	230.2	-1.87	27.53	35.00	310.9	-1.91	27.63	35.12
69.7	3.88	32.47	[illegible]	150.4	-0.18	28.79	34.84	231.2	-1.87	27.53	35.00	311.9	-1.91	27.62	35.12
70.7	3.90	32.48	[illegible]	151.4	-0.25	28.64	34.83	232.2	-1.87	27.53	35.00	313.0	-1.91	27.62	35.12
71.7	3.90	32.48	34.99	152.4	-0.37	28.51	34.83	233.2	-1.87	27.54	35.00	314.0	-1.91	27.62	35.12
72.7	3.89	32.43	34.99	153.4	-0.51	28.42	34.83	234.2	-1.87	27.54	35.00				
73.7	3.85	32.40	34.99	154.5	-0.65	28.34	34.85	235.2	-1.87	27.54	35.00				
74.7	3.81	32.37	35.00	155.5	-0.70	28.35	34.84	236.2	-1.87	27.55	35.01				
75.7	3.79	32.33	35.01	156.5	-0.74	28.27	34.82	237.2	-1.87	27.54	35.01				
76.7	3.73	32.31	35.00	157.5	-0.78	28.27	34.83	238.2	-1.87	27.55	35.01				
77.7	3.71	32.32	35.00	158.5	-0.82	28.25	34.82	239.3	-1.87	27.56	35.02				
78.7	3.72	32.33	34.99	159.5	-0.86	28.18	34.83	240.3	-1.87	27.56	35.03				
79.8	3.72	32.22	34.96	160.5	-0.93	28.01	34.80	241.3	-1.87	27.56	35.03				

ICE-BAR 1995

XCTD Data   Station "24A"

Date 12/JUNE 1415 UT   Lat 76°27.80' Lon 17°56.00'

Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)
0.0	1.59	27.79	31.70	80.8	-0.24	28.87	34.97	161.5	-1.80	27.62	35.09	242.3	-1.86	27.81	35.35
1.0	1.57	28.07	32.08	81.8	-0.20	28.89	34.97	162.5	-1.80	27.63	35.10	243.3	-1.86	27.80	35.36
2.0	1.33	28.05	32.29	82.8	-0.17	28.90	34.97	163.5	-1.81	27.63	35.10	244.3	-1.85	27.81	35.35
3.0	1.34	28.08	32.30	83.8	-0.17	28.88	34.97	164.6	-1.81	27.64	35.11	245.3	-1.86	27.80	35.35
4.0	1.13	28.01	32.49	84.8	-0.17	28.85	34.95	165.6	-1.81	27.65	35.11	246.3	-1.85	27.81	35.34
5.0	0.96	28.38	32.80	85.8	-0.20	28.83	34.96	166.6	-1.81	27.65	35.12	247.3	-1.85	27.81	35.34
6.1	0.92	28.48	33.02	86.8	-0.26	28.75	34.97	167.6	-1.80	27.65	35.11	248.3	-1.85	27.81	35.34
7.1	0.96	28.45	33.17	87.8	-0.33	28.66	34.96	168.6	-1.79	27.65	35.11				
8.1	0.98	28.47	33.19	88.8	-0.38	28.60	34.91	169.6	-1.79	27.66	35.11				
9.1	0.92	28.62	33.31	89.8	-0.47	28.55	34.93	170.6	-1.80	27.65	35.12				
10.1	0.88	28.70	33.45	90.9	-0.62	28.35	34.95	171.6	-1.81	27.65	35.13				
11.1	0.92	28.86	33.58	91.9	-0.81	28.22	35.00	172.6	-1.81	27.64	35.13				
12.1	1.02	28.95	33.61	92.9	-0.93	28.21	34.99	173.6	-1.81	27.65	35.12				
13.1	1.09	28.95	33.65	93.9	-1.00	28.19	35.00	174.6	-1.81	27.64	35.12				
14.1	1.09	28.75	33.60	94.9	-1.01	28.19	35.00	175.7	-1.81	27.64	35.12				
15.1	0.88	28.71	33.72	95.9	-0.98	28.23	34.98	176.7	-1.81	27.65	35.12				
16.2	0.64	28.57	33.82	96.9	-0.98	28.18	34.97	177.7	-1.81	27.65	35.13				
17.2	0.31	27.90	33.81	97.9	-1.00	28.14	34.97	178.7	-1.81	27.65	35.13				
18.2	-0.08	27.90	33.89	98.9	-1.06	28.09	34.97	179.7	-1.81	27.66	35.13				
19.2	-0.48	27.74	33.97	99.9	-1.14	28.02	34.99	180.7	-1.81	27.67	35.13				
20.2	-0.78	27.58	34.16	101.0	-1.21	27.98	35.00	181.7	-1.80	27.68	35.14				
21.2	-0.87	27.53	34.10	102.0	-1.27	27.96	35.01	182.7	-1.79	27.68	35.14				
22.2	-0.92	27.54	34.06	103.0	-1.30	27.95	35.01	183.7	-1.78	27.68	35.13				
23.2	-0.98	27.55	34.11	104.0	-1.31	27.94	35.01	184.7	-1.79	27.68	35.14				
24.2	-1.03	27.55	34.18	105.0	-1.32	27.92	35.00	185.8	-1.80	27.67	35.15				
25.2	-1.07	27.58	34.24	106.0	-1.35	27.82	34.97	186.8	-1.80	27.68	35.15				
26.2	-1.05	27.72	34.30	107.0	-1.41	27.80	34.98	187.8	-1.81	27.69	35.15				
27.3	-0.97	27.93	34.38	108.0	-1.50	27.70	34.97	188.8	-1.80	27.68	35.15				
28.3	-0.79	28.23	34.47	109.0	-1.59	27.64	35.00	189.8	-1.80	27.68	35.15				
29.3	-0.54	28.55	34.55	110.0	-1.64	27.65	35.00	190.8	-1.79	27.68	35.14				
30.3	-0.26	28.72	34.59	111.0	-1.69	27.62	35.01	191.8	-1.79	27.68	35.13				
31.3	-0.05	28.84	34.62	112.1	-1.69	27.63	35.01	192.8	-1.79	27.69	35.14				
32.3	0.08	29.00	34.66	113.1	-1.70	27.62	35.00	193.8	-1.81	27.71	35.17				
33.3	0.23	29.30	34.75	114.1	-1.70	27.62	35.00	194.8	-1.81	27.70	35.19				
34.3	0.40	29.39	34.79	115.1	-1.70	27.63	35.00	195.8	-1.82	27.70	35.20				
35.3	0.60	29.58	34.82	116.1	-1.70	27.64	35.00	196.9	-1.82	27.71	35.20				
36.3	0.73	29.65	34.83	117.1	-1.69	27.67	35.02	197.9	-1.82	27.71	35.21				
37.4	0.81	29.70	34.88	118.1	-1.68	27.63	35.01	198.9	-1.82	27.71	35.21				
38.4	0.89	29.96	34.95	119.1	-1.69	27.62	35.01	199.9	-1.82	27.72	35.20				
39.4	1.01	29.99	34.96	120.1	-1.71	27.61	35.00	200.9	-1.82	27.72	35.21				
40.4	1.15	30.11	34.98	121.1	-1.74	27.61	35.02	201.9	-1.82	27.71	35.21				
41.4	1.29	30.33	34.97	122.2	-1.73	27.63	35.03	202.9	-1.82	27.73	35.21				
42.4	1.43	30.41	35.00	123.2	-1.73	27.61	35.03	203.9	-1.81	27.73	35.22				
43.4	1.55	30.47	35.02	124.2	-1.72	27.65	35.02	204.9	-1.81	27.74	35.22				
44.4	1.62	30.53	35.03	125.2	-1.72	27.66	35.04	205.9	-1.81	27.73	35.23				
45.4	1.64	30.51	35.04	126.2	-1.69	27.72	35.05	207.0	-1.82	27.75	35.24				
46.4	1.63	30.47	35.05	127.2	-1.65	27.73	35.05	208.0	-1.82	27.75	35.25				
47.4	1.61	30.46	35.05	128.2	-1.61	27.76	35.05	209.0	-1.83	27.75	35.27				
48.5	1.58	30.46	35.05	129.2	-1.60	27.75	35.04	210.0	-1.83	27.76	35.28				
49.5	1.57	30.45	35.06	130.2	-1.59	27.75	35.04	211.0	-1.83	27.76	35.28				
50.5	1.56	30.43	35.05	131.2	-1.60	27.75	35.05	212.0	-1.84	27.75	35.29				
51.5	1.55	30.42	35.05	132.2	-1.60	27.75	35.05	213.0	-1.85	27.76	35.29				
52.5	1.53	30.38	35.05	133.3	-1.61	27.74	35.05	214.0	-1.86	27.76	35.30				
53.5	1.52	30.39	35.04	134.3	-1.61	27.75	35.06	215.0	-1.85	27.75	35.30				
54.5	1.49	30.36	35.04	135.3	-1.61	27.75	35.06	216.0	-1.85	27.75	35.29				
55.5	1.46	30.34	35.06	136.3	-1.62	27.74	35.06	217.0	-1.85	27.75	35.29				
56.5	1.44	30.30	35.05	137.3	-1.62	27.73	35.06	218.1	-1.85	27.75	35.29				
57.5	1.42	30.29	35.04	138.3	-1.63	27.74	35.06	219.1	-1.86	27.76	35.30				
58.6	1.41	30.26	35.02	139.3	-1.63	27.73	35.06	220.1	-1.85	27.76	35.30				
59.6	1.36	30.19	35.02	140.3	-1.65	27.73	35.07	221.1	-1.86	27.76	35.30				
60.6	1.28	30.07	35.01	141.3	-1.65	27.73	35.07	222.1	-1.86	27.76	35.30				
61.6	1.12	29.68	34.95	142.3	-1.65	27.73	35.07	223.1	-1.85	27.76	35.29				
62.6	0.83	29.44	34.95	143.4	-1.65	27.73	35.07	224.1	-1.85	27.76	35.29				
63.6	0.52	29.42	35.02	144.4	-1.65	27.73	35.07	225.1	-1.85	27.76	35.30				
64.6	0.34	29.31	35.05	145.4	-1.65	27.73	35.07	226.1	-1.86	27.76	35.30				
65.6	0.30	29.12	34.96	146.4	-1.66	27.73	35.08	227.1	-1.86	27.76	35.31				
66.6	0.29	29.21	34.87	147.4	-1.67	27.71	35.08	228.2	-1.86	27.77	35.30				
67.6	0.21	29.15	34.90	148.4	-1.67	27.72	35.07	229.2	-1.86	27.76	35.31				
68.6	0.15	29.04	34.92	149.4	-1.67	27.72	35.08	230.2	-1.86	27.76	35.31				
69.7	0.05	28.93	34.92	150.4	-1.68	27.70	35.08	231.2	-1.86	27.77	35.31				
70.7	-0.05	28.88	34.93	151.4	-1.69	27.70	35.08	232.2	-1.86	27.77	35.31				
71.7	-0.19	28.72	34.94	152.4	-1.70	27.69	35.08	233.2	-1.86	27.76	35.31				
72.7	-0.27	28.70	34.93	153.4	-1.72	27.66	35.08	234.2	-1.87	27.77	35.32				
73.7	-0.31	28.76	34.92	154.5	-1.73	27.66	35.07	235.2	-1.87	27.76	35.32				
74.7	-0.31	28.77	34.94	155.5	-1.75	27.66	35.08	236.2	-1.86	27.77	35.31				
75.7	-0.27	28.79	34.94	156.5	-1.77	27.64	35.09	237.2	-1.86	27.78	35.31				
76.7	-0.27	28.73	34.94	157.5	-1.78	27.63	35.09	238.2	-1.86	27.78	35.32				
77.7	-0.27	28.79	34.95	158.5	-1.79	27.63	35.09	239.3	-1.87	27.78	35.33				
78.7	-0.27	28.79	34.96	159.5	-1.80	27.63	35.10	240.3	-1.86	27.80	35.34				
79.8	-0.26	28.82	34.96	160.5	-1.79	27.63	35.09	241.3	-1.87	27.80	35.35				

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XCTD Data Station "24B"

Date 12/JUNE 1523 UT Lat 76°36.90' Lon 18°21.50'

Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)
0.0	0.17	27.37	32.62	80.8	-0.66	28.36	34.93	161.5	-1.62	27.71	34.98				
1.0	0.42	27.71	32.80	81.8	-0.73	28.29	34.91	162.5	-1.63	27.71	35.00				
2.0	0.49	27.73	32.83	82.8	-0.77	28.26	34.87	163.5	-1.62	27.71	34.99				
3.0	0.56	28.09	32.85	83.8	-0.81	28.22	34.86	164.6	-1.62	27.71	35.00				
4.0	0.75	28.49	32.98	84.8	-0.85	28.22	34.87	165.6	-1.62	27.71	34.99				
5.0	1.02	28.88	33.17	85.8	-0.88	28.17	34.86	166.6	-1.62	27.71	35.00				
6.1	1.27	29.34	33.43	86.8	-0.91	28.15	34.87	167.6	-1.62	27.71	35.00				
7.1	1.61	29.77	33.61	87.8	-0.96	28.07	34.86	168.6	-1.62	27.70	34.99				
8.1	1.87	29.75	33.70	88.8	-1.04	28.00	34.87	169.6	-1.62	27.71	34.99				
9.1	1.96	29.71	33.76	89.8	-1.12	27.96	34.87	170.6	-1.62	27.71	34.98				
10.1	1.85	29.80	33.89	90.9	-1.18	27.95	34.89	171.6	-1.63	27.70	34.99				
11.1	1.66	29.71	34.07	91.9	-1.20	27.97	34.90	172.6	-1.63	27.70	34.99				
12.1	1.48	29.70	34.26	92.9	-1.18	28.02	34.90								
13.1	1.33	29.55	34.32	93.9	-1.13	28.04	34.88								
14.1	1.01	28.90	34.33	94.9	-1.10	28.04	34.88								
15.1	0.54	28.51	34.33	95.9	-1.09	28.04	34.88								
16.2	-0.01	28.24	34.38	96.9	-1.12	27.99	34.89								
17.2	-0.41	27.98	34.43	97.9	-1.17	27.96	34.90								
18.2	-0.65	27.98	34.46	98.9	-1.23	27.91	34.92								
19.2	-0.76	28.04	34.49	99.9	-1.28	27.90	34.94								
20.2	-0.72	28.09	34.50	101.0	-1.31	27.87	34.93								
21.2	-0.62	28.16	34.46	102.0	-1.32	27.88	34.92								
22.2	-0.52	28.37	34.49	103.0	-1.33	27.88	34.92								
23.2	-0.31	28.68	34.52	104.0	-1.33	27.88	34.92								
24.2	-0.06	28.85	34.54	105.0	-1.33	27.88	34.93								
25.2	0.18	29.02	34.55	106.0	-1.33	27.85	34.92								
26.2	0.38	29.34	34.61	107.0	-1.34	27.86	34.92								
27.3	0.54	29.39	34.67	108.0	-1.35	27.85	34.92								
28.3	0.68	29.45	34.70	109.0	-1.35	27.86	34.93								
29.3	0.74	29.53	34.71	110.0	-1.37	27.84	34.93								
30.3	0.77	29.63	34.78	111.0	-1.38	27.84	34.94								
31.3	0.83	29.62	34.79	112.1	-1.39	27.84	34.94								
32.3	0.89	29.75	34.81	113.1	-1.40	27.84	34.94								
33.3	0.96	29.76	34.79	114.1	-1.39	27.84	34.94								
34.3	1.03	29.90	34.83	115.1	-1.39	27.84	34.93								
35.3	1.11	29.95	34.83	116.1	-1.38	27.84	34.93								
36.3	1.20	30.09	34.87	117.1	-1.38	27.84	34.93								
37.4	1.29	30.14	34.88	118.1	-1.39	27.84	34.94								
38.4	1.36	30.22	34.91	119.1	-1.40	27.82	34.94								
39.4	1.42	30.22	34.90	120.1	-1.41	27.82	34.94								
40.4	1.40	30.07	34.88	121.1	-1.42	27.81	34.94								
41.4	1.32	30.05	34.90	122.2	-1.43	27.81	34.94								
42.4	1.24	30.03	34.91	123.2	-1.42	27.82	34.93								
43.4	1.20	30.01	34.94	124.2	-1.42	27.82	34.93								
44.4	1.17	29.92	34.90	125.2	-1.42	27.81	34.93								
45.4	1.16	29.99	34.90	126.2	-1.43	27.82	34.94								
46.4	1.14	29.96	34.90	127.2	-1.42	27.83	34.94								
47.4	1.15	30.03	34.94	128.2	-1.43	27.80	34.94								
48.5	1.16	30.00	34.93	129.2	-1.45	27.80	34.95								
49.5	1.17	29.99	34.92	130.2	-1.47	27.78	34.95								
50.5	1.17	29.98	34.91	131.2	-1.49	27.77	34.96								
51.5	1.15	29.96	34.91	132.2	-1.50	27.77	34.96								
52.5	1.13	29.97	34.92	133.3	-1.52	27.74	34.96								
53.5	1.12	29.98	34.94	134.3	-1.54	27.73	34.97								
54.5	1.09	29.91	34.94	135.3	-1.57	27.71	34.98								
55.5	1.07	29.93	34.95	136.3	-1.59	27.69	34.99								
56.5	1.04	29.89	34.94	137.3	-1.60	27.69	34.97								
57.5	1.03	29.89	34.95	138.3	-1.60	27.69	34.96								
58.6	1.01	29.85	34.94	139.3	-1.60	27.69	34.96								
59.6	0.96	29.80	34.95	140.3	-1.61	27.68	34.97								
60.6	0.91	29.76	34.95	141.3	-1.62	27.69	34.97								
61.6	0.85	29.66	34.94	142.3	-1.62	27.69	34.97								
62.	0.79	29.63	34.93	143.4	-1.61	27.69	34.97								
63.6	0.72	29.56	34.93	144.4	-1.61	27.70	34.97								
64.6	0.64	29.51	34.94	145.4	-1.61	27.69	34.97								
65.6	0.58	29.40	34.92	146.4	-1.62	27.69	34.98								
66.6	0.44	29.19	34.91	147.4	-1.62	27.69	34.98								
67.6	0.29	29.15	34.92	148.4	-1.62	27.70	34.98								
68.6	0.13	29.07	34.96	149.4	-1.61	27.70	34.98								
69.7	0.07	29.04	34.95	150.4	-1.61	27.71	34.98								
70.7	0.04	29.00	34.93	151.4	-1.61	27.71	34.98								
71.7	0.03	29.01	34.91	152.4	-1.61	27.70	34.98								
72.7	0.00	28.97	34.91	153.4	-1.61	27.71	34.98								
73.7	0.00	28.96	34.91	154.5	-1.61	27.71	34.98								
74.7	-0.03	28.93	34.90	155.5	-1.61	27.71	34.99								
75.7	-0.05	28.91	34.90	156.5	-1.61	27.71	34.99								
76.7	-0.08	28.86	34.89	157.5	-1.62	27.70	34.98								
77.7	-0.15	28.69	34.86	158.5	-1.62	27.70	34.99								
78.7	-0.31	28.50	34.86	159.5	-1.62	27.70	34.98								
79.8	-0.51	28.46	34.90	160.5	-1.62	27.70	34.98								

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XCTD Data Station "25B"
Date 12/JUNE 2255 UT Lat 76°23.70' Lon 19°00.00'

Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)
0.0	1.71	28.79	32.83	80.8	2.66	31.23	34.89	161.5	-1.63	27.58	34.84	242.3	-1.79	27.60	34.98
1.0	1.78	28.87	32.86	81.8	2.64	31.33	34.90	162.5	-1.64	27.58	34.84	243.3	-1.79	27.60	34.99
2.0	1.76	29.01	33.05	82.8	2.67	31.40	34.91	163.5	-1.64	27.58	34.84	244.3	-1.79	27.60	34.99
3.0	1.75	29.11	33.04	83.8	2.72	31.34	34.90	164.6	-1.65	27.58	34.84	245.3	-1.80	27.60	35.00
4.0	1.73	29.22	33.20	84.8	2.74	31.29	34.86	165.6	-1.65	27.57	34.84	246.3	-1.81	27.60	35.01
5.0	1.75	29.40	33.35	85.8	2.68	31.27	34.87	166.6	-1.65	27.58	34.85	247.3	-1.82	27.60	35.02
6.1	1.78	29.42	33.45	86.8	2.59	31.20	34.91	167.6	-1.65	27.59	34.85	248.3	-1.83	27.60	35.03
7.1	1.79	29.38	33.51	87.8	2.53	31.17	34.93	168.6	-1.65	27.59	34.85	249.4	-1.84	27.59	35.04
8.1	1.76	29.46	33.56	88.8	2.49	31.13	34.91	169.6	-1.64	27.60	34.86	250.4	-1.84	27.60	35.04
9.1	1.73	29.52	33.64	89.8	2.45	31.09	34.91	170.6	-1.64	27.60	34.86	251.4	-1.85	27.61	35.06
10.1	1.66	29.37	33.71	90.9	2.41	31.05	34.90	171.6	-1.64	27.60	34.86	252.4	-1.87	27.61	35.08
11.1	1.60	29.41	33.75	91.9	2.36	30.96	34.89	172.6	-1.64	27.60	34.86	253.4	-1.88	27.60	35.09
12.1	1.43	29.16	33.77	92.9	2.31	30.95	34.89	173.6	-1.64	27.62	34.86	254.4	-1.88	27.60	35.09
13.1	1.26	29.02	33.81	93.9	2.26	30.98	34.90	174.6	-1.63	27.62	34.86				
14.1	1.02	28.88	33.84	94.9	2.25	30.91	34.90	175.7	-1.62	27.63	34.87				
15.1	0.89	28.95	33.89	95.9	2.24	30.88	34.88	176.7	-1.61	27.65	34.87				
16.2	0.88	29.00	33.90	96.9	2.21	30.86	34.86	177.7	-1.60	27.67	34.88				
17.2	0.95	29.09	33.92	97.9	2.17	30.82	34.87	178.7	-1.59	27.67	34.88				
18.2	1.00	29.29	34.01	98.9	2.08	30.58	34.84	179.7	-1.58	27.68	34.88				
19.2	1.11	29.54	34.12	99.9	1.94	30.46	34.83	180.7	-1.57	27.67	34.88				
20.2	1.24	29.45	34.13	101.0	1.73	30.28	34.84	181.7	-1.57	27.67	34.88				
21.2	1.07	28.30	33.89	102.0	1.52	30.14	34.88	182.7	-1.60	27.63	34.88				
22.2	0.48	28.48	34.07	103.0	1.30	29.88	34.87	183.7	-1.62	27.63	34.89				
23.2	-0.11	28.57	34.36	104.0	1.12	29.80	34.87	184.7	-1.65	27.60	34.89				
24.2	-0.04	29.58	34.84	105.0	0.98	29.71	34.84	185.8	-1.67	27.58	34.88				
25.2	0.70	29.97	34.66	106.0	0.88	29.60	34.83	186.8	-1.69	27.57	34.88				
26.2	1.62	30.69	34.54	107.0	0.79	29.46	34.79	187.8	-1.71	27.57	34.88				
27.3	2.30	31.14	34.45	108.0	0.65	29.37	34.79	188.8	-1.72	27.56	34.89				
28.3	2.68	31.33	34.61	109.0	0.52	29.32	34.81	189.8	-1.72	27.57	34.89				
29.3	2.95	31.87	34.79	110.0	0.44	29.26	34.82	190.8	-1.72	27.56	34.89				
30.3	3.20	31.90	34.83	111.0	0.39	29.21	34.80	191.8	-1.72	27.57	34.90				
31.3	3.41	32.02	34.88	112.1	0.35	29.18	34.79	192.8	-1.72	27.57	34.90				
32.3	3.55	32.13	34.84	113.1	0.28	29.05	34.77	193.8	-1.73	27.56	34.90				
33.3	3.60	32.17	34.88	114.1	0.22	29.10	34.79	194.8	-1.73	27.56	34.90				
34.3	3.64	32.17	34.91	115.1	0.17	29.06	34.79	195.8	-1.75	27.55	34.90				
35.3	3.64	32.16	34.93	116.1	0.14	29.02	34.81	196.9	-1.76	27.56	34.92				
36.3	3.60	32.09	34.93	117.1	0.12	29.00	34.79	197.9	-1.77	27.56	34.93				
37.4	3.50	31.82	34.90	118.1	0.09	28.99	34.79	198.9	-1.77	27.56	34.94				
38.4	3.33	31.76	34.91	119.1	0.06	28.95	34.80	199.9	-1.78	27.56	34.94				
39.4	3.19	31.77	34.94	120.1	0.02	28.87	34.78	200.9	-1.78	27.57	34.95				
40.4	3.14	31.81	34.99	121.1	-0.03	28.86	34.79	201.9	-1.78	27.57	34.96				
41.4	3.13	31.85	34.96	122.2	-0.09	28.80	34.79	202.9	-1.78	27.57	34.96				
42.4	3.27	31.91	34.93	123.2	-0.14	28.76	34.80	203.9	-1.78	27.57	34.96				
43.4	3.32	31.93	34.93	124.2	-0.19	28.70	34.78	204.9	-1.78	27.57	34.96				
44.4	3.35	31.95	34.94	125.2	-0.25	28.66	34.79	205.9	-1.78	27.57	34.95				
45.4	3.36	31.95	34.95	126.2	-0.31	28.60	34.79	207.0	-1.78	27.56	34.95				
46.4	3.37	31.98	34.96	127.2	-0.37	28.56	34.80	208.0	-1.78	27.56	34.95				
47.4	3.38	31.99	34.96	128.2	-0.44	28.44	34.78	209.0	-1.79	27.56	34.95				
48.5	3.40	32.01	34.96	129.2	-0.52	28.40	34.78	210.0	-1.79	27.56	34.95				
49.5	3.41	32.01	34.96	130.2	-0.62	28.34	34.79	211.0	-1.79	27.56	34.95				
50.5	3.41	31.96	34.95	131.2	-0.70	28.29	34.82	212.0	-1.79	27.55	34.95				
51.5	3.39	31.96	34.95	132.2	-0.75	28.26	34.81	213.0	-1.79	27.56	34.95				
52.5	3.36	31.94	34.95	133.3	-0.78	28.24	34.80	214.0	-1.79	27.55	34.94				
53.5	3.34	31.95	34.97	134.3	-0.80	28.23	34.79	215.0	-1.79	27.55	34.94				
54.5	3.33	31.93	34.97	135.3	-0.80	28.22	34.77	216.0	-1.79	27.55	34.94				
55.5	3.33	31.93	34.96	136.3	-0.80	28.22	34.76	217.0	-1.79	27.55	34.94				
56.5	3.33	31.96	34.96	137.3	-0.80	28.22	34.76	218.1	-1.79	27.55	34.94				
57.5	3.33	31.94	34.97	138.3	-0.82	28.21	34.78	219.1	-1.79	27.55	34.93				
58.6	3.32	31.92	34.97	139.3	-0.84	28.19	34.79	220.1	-1.79	27.55	34.93				
59.6	3.31	31.91	34.97	140.3	-0.87	28.12	34.78	221.1	-1.79	27.55	34.92				
60.6	3.29	31.90	34.96	141.3	-0.91	28.14	34.80	222.1	-1.79	27.55	34.93				
61.6	3.28	31.87	34.96	142.3	-0.96	28.11	34.81	223.1	-1.79	27.55	34.93				
62.6	3.27	31.85	34.95	143.4	-1.02	28.02	34.83	224.1	-1.79	27.56	34.94				
63.6	3.25	31.86	34.95	144.4	-1.07	27.99	34.82	225.1	-1.79	27.56	34.94				
64.6	3.23	31.82	34.95	145.4	-1.12	27.98	34.82	226.1	-1.79	27.57	34.95				
65.6	3.22	31.83	34.95	146.4	-1.14	27.99	34.83	227.1	-1.79	27.57	34.95				
66.6	3.20	31.81	34.95	147.4	-1.14	28.00	34.83	228.2	-1.79	27.58	34.96				
67.6	3.18	31.77	34.95	148.4	-1.15	27.91	34.81	229.2	-1.79	27.58	34.96				
68.6	3.16	31.74	34.94	149.4	-1.19	27.87	34.80	230.2	-1.79	27.58	34.96				
69.7	3.12	31.68	34.93	150.4	-1.29	27.75	34.80	231.2	-1.79	27.58	34.97				
70.7	3.09	31.68	34.93	151.4	-1.39	27.73	34.84	232.2	-1.79	27.58	34.97				
71.7	3.06	31.67	34.93	152.4	-1.47	27.72	34.85	233.2	-1.79	27.58	34.96				
72.7	3.05	31.67	34.93	153.4	-1.50	27.65	34.84	234.2	-1.79	27.58	34.96				
73.7	3.04	31.64	34.93	154.5	-1.51	27.65	34.82	235.2	-1.79	27.58	34.96				
74.7	3.02	31.62	34.93	155.5	-1.53	27.65	34.81	236.2	-1.79	27.59	34.97				
75.7	2.98	31.51	34.91	156.5	-1.55	27.64	34.83	237.2	-1.79	27.59	34.97				
76.7	2.91	31.42	34.89	157.5	-1.56	27.63	34.83	238.2	-1.79	27.59	34.97				
77.7	2.82	31.38	34.89	158.5	-1.58	27.61	34.83	239.3	-1.79	27.59	34.97				
78.7	2.74	31.36	34.92	159.5	-1.59	27.60	34.83	240.3	-1.79	27.60	34.98				
79.8	2.69	31.31	34.92	160.5	-1.61	27.60	34.84	241.3	-1.79	27.59	34.98				

ICE-BAR 1995

XCTD Data   Station "26A"

Date 12/JUNE 2334 UT   Lat 76°23.98'   Lon 19°29.10'

Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)
0.0	1.32	28.37	32.70
1.0	1.30	28.46	32.84
2.0	1.42	28.73	33.06
3.0	1.45	28.83	32.95
4.0	1.56	28.88	33.02
5.0	1.58	28.88	33.05
6.1	1.51	28.86	33.14
7.1	1.41	28.81	33.21
8.1	1.33	28.76	33.25
9.1	1.26	28.71	33.26
10.1	1.20	28.73	33.32
11.1	1.14	28.73	33.36
12.1	1.07	28.66	33.41
13.1	0.99	28.65	33.44
14.1	0.89	28.55	33.47
15.1	0.77	28.39	33.49
16.2	0.67	28.48	33.52
17.2	0.61	28.53	33.58
18.2	0.45	28.16	33.65
19.2	0.19	28.09	33.76
20.2	-0.12	28.10	33.92
21.2	-0.25	28.09	34.03
22.2	-0.25	28.14	34.06
23.2	-0.22	28.05	34.00
24.2	-0.39	27.71	34.02
25.2	-0.61	27.92	34.18
26.2	-0.71	28.05	34.29
27.3	-0.56	28.17	34.32
28.3	-0.39	28.08	34.20
29.3	-0.38	28.25	34.28
30.3	-0.41	28.29	34.37
31.3	-0.29	28.78	34.54
32.3	0.10	29.23	34.52
33.3	0.52	29.21	34.46
34.3	[illegible]8	29.07	34.41
35.3	[illegible]4	29.06	34.48
36.3	[illegible]2	28.93	34.60
37.3	[illegible]26	28.97	34.63
38.4	0.29	29.13	34.63
39.4	0.49	29.51	34.65
40.4	0.78	29.71	34.66
41.4	1.10	30.02	34.67
42.4	1.36	30.16	34.66
43.4	1.46	29.91	34.64
44.4	1.41	30.03	34.70
45.4	1.31	30.00	34.74
46.4	1.29	30.06	34.83
47.[illegible]	1.41	30.30	34.80
48.[illegible]	1.56	30.38	34.80
49.5	1.70	30.47	34.81
50.5	1.79	30.52	34.82
51.5	1.93	30.59	34.86
52.5	1.88	30.63	34.87
53.5	1.95	30.74	34.89
54.5	2.04	30.82	34.88
55.5	2.13	30.84	34.37
56.5	2.22	30.92	34.85
57.5	2.30	31.11	34.87
58.6	2.39	31.08	34.88
59.6	2.46	31.12	34.88
60.6	2.48	31.11	34.86
61.6	2.46	31.05	34.88
62.6	2.41	30.98	34.87
63.6	2.34	30.95	34.88
64.6	2.29	30.93	34.89
65.6	2.25	30.91	34.89
66.6	2.28	31.02	34.89
67.6	2.34	31.05	34.88
68.6	2.42	31.16	34.89
69.7	2.49	31.18	34.88
70.7	2.54	31.21	34.89
71.7	2.56	31.23	34.90
72.7	2.57	31.24	34.90
73.7	2.57	31.24	34.91
74.7	2.58	31.23	34.91
75.7	2.57	31.23	34.91
76.7	2.57	31.22	34.91
77.7	2.53	31.04	34.87
78.7	2.42	30.94	34.87
79.8	2.28	30.90	34.89

Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)
80.8	2.13	30.75	34.88
81.8	1.97	30.44	34.89
82.8	1.77	30.40	34.91
83.8	1.58	30.30	34.93
84.8	1.54	30.28	34.90
85.8	1.53	30.28	34.86
86.8	1.55	30.40	34.88
87.8	1.59	30.41	34.89
88.8	1.71	30.60	34.90
89.8	1.84	30.71	34.89
90.9	2.00	30.87	34.90
91.9	2.10	30.87	34.90
92.9	2.17	30.90	34.90
93.9	2.19	30.90	34.89
94.9	2.20	30.91	34.90
95.9	2.19	30.90	34.91
96.9	2.18	30.90	34.92
97.9	2.17	30.88	34.92
98.9	2.16	30.88	34.92
99.9	2.17	30.89	34.91
101.0	2.17	30.89	34.90
102.0	2.17	30.89	34.91
103.0	2.16	30.88	34.91
104.0	2.14	30.85	34.92
105.0	2.13	30.84	34.91
106.0	2.11	30.84	34.91
107.0	2.10	30.83	34.91
108.0	2.10	30.83	34.91
109.0	2.10	30.83	34.91
110.0	2.10	30.83	34.91
111.0	2.09	30.82	34.91
112.1	2.09	30.82	34.91
113.1	2.08	30.79	34.90
114.1	2.06	30.77	34.90
115.1	2.04	30.73	34.88
116.1	2.01	30.70	34.88
117.1	1.95	30.68	34.90
118.1	1.87	30.54	34.91
119.1	1.75	30.42	34.93
120.1	1.61	30.30	34.92
121.1	1.47	30.17	34.92
122.2	1.34	30.05	34.91
123.2	1.23	29.99	34.90
124.2	1.12	29.80	34.86
125.2	0.99	29.73	34.87
126.2	0.87	29.66	34.86
127.2	0.78	29.59	34.88
128.2	0.72	29.53	34.85
129.2	0.67	29.50	34.83
130.2	0.61	29.42	34.83
131.2	0.55	29.37	34.83
132.2	0.48	29.34	34.83
133.3	0.44	29.32	34.83
134.3	0.42	29.30	34.82
135.3	0.39	29.23	34.81
136.3	0.35	29.18	34.80
137.3	0.28	29.16	34.81
138.3	0.23	29.10	34.81
139.3	0.17	29.06	34.82
140.3	0.13	29.05	34.82
141.3	0.09	29.00	34.82
142.3	0.07	28.98	34.81
143.4	0.04	29.92	34.79
144.4	-0.02	28.85	34.80
145.4	-0.11	28.75	34.80
146.4	-0.19	28.72	34.80
147.4	-0.27	28.59	34.77
148.4	-0.42	28.40	34.78
149.4	-0.57	28.34	34.79
150.4	-0.70	28.29	34.81
151.4	-0.74	28.26	34.79
152.4	-0.73	28.43	34.82
153.4	-0.66	28.43	34.80
154.5	-0.57	28.56	34.82
155.5	-0.30	29.30	34.91
156.5	0.06	29.29	34.86
157.5	0.42	29.45	34.85
158.5	0.58	29.54	34.77
159.5	0.58	29.54	34.87
160.5	0.56	29.51	34.92

Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)
161.5	0.54	29.49	34.93
162.5	0.52	29.47	34.92
163.5	0.50	29.44	34.92
164.6	0.46	29.40	34.91
165.6	0.41	29.37	34.92
166.6	0.34	29.27	34.93
167.6	0.24	29.20	34.95
168.6	0.16	29.15	34.95
169.6	0.10	29.09	34.94
170.6	0.01	28.94	34.93
171.6	-0.08	28.92	34.95
172.6	-0.17	28.83	34.93
173.6	-0.23	28.79	34.93
174.6	-0.26	28.84	34.93
175.7	-0.28	28.80	34.93
176.7	-0.28	28.77	34.92
177.7	-0.29	28.74	34.90
178.7	-0.36	28.68	34.92
179.7	-0.43	28.63	34.94
180.7	-0.52	28.56	34.95
181.7	-0.58	28.49	34.94
182.7	-0.66	28.45	34.95
183.7	-0.71	28.42	34.95
184.7	-0.76	28.36	34.94
[illegible].8	-0.81	28.30	34.93
[illegible].8	-0.90	28.22	34.94
[illegible].8	-1.00	28.15	34.96
188.8	-1.10	28.09	34.97
189.8	-1.13	28.08	34.95
190.8	-1.11	28.08	34.89
191.8	-1.20	28.00	34.96
192.8	-1.25	28.00	34.98
193.8	-1.37	27.86	35.02
194.8	-1.36	27.89	34.96
195.8	-1.41	27.87	34.96
196.9	-1.42	27.85	34.96
197.9	-1.45	27.81	34.96
198.9	-1.47	27.81	34.96
199.9	-1.53	27.78	34.99
200.9	-1.54	27.77	34.99
201.9	-1.56	27.74	34.97
202.9	-1.59	27.73	34.98
203.9	-1.60	27.73	34.97
204.9	-1.63	27.65	34.97
205.9	-1.68	27.63	34.98
207.0	-1.73	27.62	34.99
208.0	-1.77	27.60	35.02
209.0	-1.79	27.59	35.01
210.0	-1.83	27.57	35.03
211.0	-1.82	27.54	35.00
212.0	-1.83	27.54	34.99
213.0	-1.84	27.55	34.99
214.0	-1.86	27.54	35.01
215.0	-1.87	27.54	35.01
216.0	-1.87	27.54	35.01
217.0	-1.89	27.52	35.02
218.1	-1.89	27.52	35.02
219.1	-1.90	27.52	35.02
220.1	-1.89	27.52	35.01
221.1	-1.88	27.53	35.00
222.1	-1.87	27.55	35.01
223.1	-1.88	27.53	35.02
224.1	-1.88	27.54	35.03
225.1	-1.89	27.54	35.03
226.1	-1.88	27.54	35.03
227.1	-1.89	27.54	35.03
228.2	-1.89	27.55	35.03
229.2	-1.88	27.55	35.03
230.2	-1.89	27.55	35.04
231.2	-1.89	27.55	35.04
232.2	-1.89	27.54	35.04
233.2	-1.89	27.55	35.04
234.2	-1.90	27.56	35.05
235.2	-1.89	27.56	35.05
236.2	-1.90	27.56	35.07
237.2	-1.90	27.56	35.06
238.2	-1.90	27.56	35.07
239.3	-1.90	27.57	35.06
240.3	-1.90	27.57	35.07
241.3	-1.92	27.55	35.08

Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)
242.3	-1.93	27.56	35.09
243.3	-1.93	27.56	35.09
244.3	-1.93	27.56	35.09
245.3	-1.91	27.58	35.08
246.3	-1.92	27.59	35.10
247.3	-1.92	27.58	35.11
248.3	-1.92	27.58	35.11
249.4	-1.91	27.59	35.09
250.4	-1.90	27.59	35.10
251.4	-1.91	27.58	35.11
252.4	-1.93	27.58	35.12
253.4	-1.94	27.57	35.12
254.4	-1.94	27.58	35.12
255.4	-1.94	27.57	35.12
256.4	-1.93	27.58	35.11
257.4	-1.93	27.59	35.12
258.4	-1.92	27.59	35.12
259.4	-1.93	27.60	35.13
260.5	-1.92	27.61	35.13
261.5	-1.93	27.61	35.15
262.5	-1.93	27.61	35.16
263.5	-1.94	27.62	35.17
264.5	-1.93	27.62	35.16
265.5	-1.92	27.63	35.16
266.5	-1.92	27.63	35.16
267.5	-1.92	27.62	35.17

ICE-BAR 1995
XCTD Data Station "27A"
Date 13/JUNE 0114 UT Lat 76°24.30' Lon 20°29.60'

Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)
0.0	0.93	27.74	32.41	80.8	0.51	29.29	34.92	161.5	-1.40	27.89	34.99				
1.0	0.88	27.73	32.40	81.8	0.33	29.05	34.89	162.5	-1.39	27.89	34.98				
2.0	0.81	27.76	32.46	82.8	0.14	29.02	34.91	163.5	-1.39	27.89	34.98				
3.0	0.77	27.56	32.42	83.8	-0.01	28.88	34.91	164.6	-1.40	27.90	34.99				
4.0	0.61	27.64	32.53	84.8	-0.05	29.08	34.97	165.6	-1.41	27.90	35.00				
5.0	0.40	27.56	32.67	85.8	-0.01	29.05	34.94	166.6	-1.41	27.90	35.00				
6.1	0.23	27.58	32.85	86.8	0.07	29.10	34.94	167.6	-1.41	27.90	35.00				
7.1	0.14	27.64	32.95	87.8	0.13	29.09	34.87	168.6	-1.40	27.91	35.00				
8.1	0.14	27.73	33.02	88.8	0.14	29.12	34.89	169.6	-1.41	27.90	35.01				
9.1	0.08	27.27	32.95	89.8	0.12	29.09	34.91	170.6	-1.39	27.91	35.00				
10.1	-0.21	27.36	33.15	90.9	0.09	29.07	34.93	171.6	-1.40	27.91	35.00				
11.1	-0.56	27.39	33.38	91.9	0.05	29.02	34.93	172.6	-1.40	27.91	35.00				
12.1	-0.84	27.26	33.69	92.9	0.01	29.00	34.94	173.6	-1.41	27.90	35.01				
13.1	-0.88	27.26	33.69	93.9	-0.02	28.99	34.94	174.6	-1.40	27.91	35.00				
14.1	-0.88	27.31	33.65	94.9	-0.05	28.91	34.94	175.7	-1.40	27.92	35.01				
15.1	-0.90	27.32	33.69	95.9	-0.09	28.88	34.92	176.7	-1.41	27.92	35.02				
16.2	-0.89	27.42	33.76	96.9	-0.14	28.86	34.92	177.7	-1.41	27.91	35.03				
17.2	-0.85	27.54	33.82	97.9	-0.18	28.86	34.94	178.7	-1.41	27.89	35.01				
18.2	-0.72	27.84	33.90	98.9	-0.21	28.83	34.95	179.7	-1.41	27.90	35.01				
19.2	-0.46	28.20	33.96	99.9	-0.25	28.69	34.92	180.7	-1.42	27.91	35.02				
20.2	-0.24	28.21	34.01	101.0	-0.33	28.61	34.90	181.7	-1.43	27.90	35.02				
21.2	-0.05	28.30	34.00	102.0	-0.42	28.64	34.92	182.7	-1.43	27.89	35.02				
22.2	-0.13	28.00	34.00	103.0	-0.49	28.59	34.95	183.7	-1.43	27.90	35.02				
23.2	-0.34	27.81	34.06	104.0	-0.50	28.58	34.96	184.7	-1.44	27.89	35.02				
24.2	-0.64	27.78	34.17	105.0	-0.49	28.61	34.93	185.8	-1.44	27.88	35.02				
25.2	-0.80	27.81	34.27	106.0	-0.48	28.61	34.93	186.8	-1.44	27.89	35.02				
26.2	-0.81	27.85	34.30	107.0	-0.48	28.61	34.94	187.8	-1.45	27.89	35.02				
27.3	-0.73	27.99	34.30	108.0	-0.52	28.47	34.92	188.8	-1.44	27.89	35.02				
28.3	-0.62	28.07	34.29	109.0	-0.58	28.48	34.94	189.8	-1.44	27.89	35.02				
29.3	-0.52	28.20	34.32	110.0	-0.65	28.43	34.93	190.8	-1.45	27.89	35.02				
30.3	-0.33	28.52	34.35	111.0	-0.70	28.39	34.95	191.8	-1.43	27.90	35.01				
31.3	-0.18	28.47	34.36	112.1	-0.75	28.31	34.94	192.8	-1.43	27.90	35.01				
32.3	-0.03	28.71	34.41	113.1	-0.80	28.32	34.94	193.8	-1.41	27.91	35.00				
33.3	0.03	28.79	34.46	114.1	-0.84	28.30	34.94	194.8	-1.43	27.90	35.02				
34.3	0.14	29.02	34.57	115.1	-0.86	28.27	34.95	195.8	-1.43	27.91	35.02				
35.3	0.24	28.99	34.59	116.1	-0.89	28.22	34.93	196.9	-1.43	27.91	35.02				
36.3	0.32	29.21	34.67	117.1	-0.93	28.20	34.93	197.9	-1.42	27.91	35.01				
37.4	0.38	29.15	34.66	118.1	-0.98	28.15	34.94	198.9	-1.41	27.92	35.01				
38.4	0.45	29.24	34.70	119.1	-1.04	28.11	34.95	199.9	-1.42	27.93	35.02				
39.4	0.51	29.31	34.68	120.1	-1.07	28.11	34.95								
40.4	0.54	29.38	34.73	121.1	-1.09	28.09	34.95								
41.4	0.61	29.49	34.76	122.2	-1.09	28.12	34.95								
42.4	0.72	29.66	34.80	123.2	-1.09	28.11	34.95								
43.4	0.86	29.76	34.80	124.2	-1.09	28.10	34.95								
44.4	1.04	30.06	34.85	125.2	-1.09	28.11	34.94								
45.4	1.27	30.34	34.89	126.2	-1.10	28.11	34.96								
46.4	1.50	30.41	34.90	127.2	-1.10	28.10	34.96								
47.4	1.71	30.74	34.96	128.2	-1.11	28.09	34.96								
48.5	1.90	30.97	35.01	129.2	-1.11	28.09	34.96								
49.5	2.10	31.03	35.04	130.2	-1.12	28.10	34.96								
50.5	2.28	31.13	35.01	131.2	-1.12	28.08	34.96								
51.5	2.38	31.18	34.99	132.2	-1.13	28.08	34.96								
52.5	2.42	31.23	35.02	133.3	-1.14	28.06	34.96								
53.5	2.46	31.27	35.04	134.3	-1.16	28.05	34.97								
54.5	2.50	31.34	35.06	135.3	-1.18	28.03	34.97								
55.5	2.55	31.35	35.05	136.3	-1.20	28.01	34.97								
56.5	2.58	31.36	35.05	137.3	-1.23	27.98	34.96								
57.5	2.60	31.37	35.05	138.3	-1.26	27.97	34.97								
58.6	2.60	31.38	35.06	139.3	-1.30	27.93	34.97								
59.6	2.61	31.35	35.05	140.3	-1.33	27.91	34.98								
60.6	2.59	31.30	35.04	141.3	-1.36	27.90	34.98								
61.6	2.54	31.27	35.04	142.3	-1.38	27.88	34.99								
62.6	2.50	31.26	35.05	143.4	-1.38	27.88	34.98								
63.6	2.46	31.19	35.05	144.4	-1.39	27.89	34.97								
64.6	2.43	31.14	35.04	145.4	-1.38	27.88	34.97								
65.6	2.36	31.03	35.01	146.4	-1.39	27.87	34.97								
66.6	2.25	30.95	35.02	147.4	-1.38	27.88	34.96								
67.6	2.16	30.82	34.99	148.4	-1.39	27.88	34.97								
68.6	2.05	30.73	35.00	149.4	-1.39	27.89	34.97								
69.7	1.94	30.74	35.02	150.4	-1.39	27.88	34.98								
70.7	1.86	30.66	35.04	151.4	-1.39	27.88	34.98								
71.7	1.78	30.51	35.03	152.4	-1.40	27.87	34.97								
72.7	1.69	30.40	35.00	153.4	-1.40	27.88	34.98								
73.7	1.57	30.38	35.00	154.5	-1.41	27.87	34.98								
74.7	1.47	30.22	35.00	155.5	-1.40	27.88	34.98								
75.7	1.32	29.92	34.96	156.5	-1.41	27.88	34.99								
76.7	1.14	29.90	34.96	157.5	-1.40	27.88	34.98								
77.7	0.93	29.66	34.95	158.5	-1.41	27.88	34.98								
78.7	0.77	29.59	34.98	159.5	-1.40	27.88	34.98								
79.8	0.64	29.45	34.94	160.5	-1.40	27.89	34.98								

ICE-BAR 1995

XCTD Data Station "28A"

Date 13/JUNE 0255 UT Lat 76°24.90' Lon 21°29.30'

Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)
0.0	0.15	26.99	32.15	80.8	3.04	31.71	34.99	161.5	-0.59	28.49	34.87				
1.0	0.33	27.18	32.20	81.8	3.03	31.69	34.99	162.5	-0.61	28.46	34.87				
2.0	0.29	27.18	32.25	82.8	3.02	31.68	34.99	163.5	-0.63	28.45	34.88				
3.0	0.28	27.30	32.31	83.8	3.00	31.66	34.99	164.6	-0.67	28.40	34.88				
4.0	0.24	27.31	32.41	84.8	2.99	31.70	35.00	165.6	-0.71	28.37	34.88				
5.0	0.22	27.46	32.56	85.8	2.98	31.65	35.00	166.6	-0.75	28.34	34.88				
6.1	0.25	27.52	32.62	86.8	2.97	31.63	34.99	167.6	-0.79	28.29	34.87				
7.1	0.26	27.49	32.69	87.8	2.96	31.63	34.98	168.6	-0.82	28.27	34.87				
8.1	0.23	27.51	32.73	88.8	2.94	31.60	34.98	169.6	-0.86	28.26	34.88				
9.1	0.17	27.48	32.78	89.8	2.90	31.53	34.98	170.6	-0.89	28.23	34.89				
10.1	0.12	27.44	32.81	90.9	2.85	31.46	34.97	171.6	-0.93	28.18	34.89				
11.1	0.05	27.31	32.80	91.9	2.77	[illegible]41	34.97	172.6	-0.97	28.16	34.88				
12.1	-0.06	27.24	32.81	92.9	2.70	[illegible].30	34.96	173.6	-1.00	28.13	34.88				
13.1	-0.20	27.19	32.86	93.9	2.60	31.20	34.96	174.6	-1.03	28.11	34.88				
14.1	-0.31	27.11	32.89	94.9	2.48	30.97	34.91	175.7	-1.06	28.10	34.88				
15.1	-0.44	27.04	32.94	95.9	2.31	30.88	34.93	176.7	-1.08	28.08	34.89				
16.2	-0.57	27.05	33.02	96.9	2.15	30.79	34.92	177.7	-1.10	28.04	34.88				
17.2	-0.73	27.02	33.15	97.9	2.04	30.70	34.93	178.7	-1.13	28.02	34.88				
18.2	-0.84	27.01	33.26	98.9	1.98	30.69	34.91	179.7	-1.19	27.97	34.89				
19.2	-0.91	27.05	33.34	99.9	1.90	30.58	34.91	180.7	-1.24	27.95	34.91				
20.2	-0.96	27.12	33.44	101.0	1.81	30.51	34.93	181.7	-1.29	27.91	34.91				
21.2	-1.00	27.13	33.53	102.0	1.72	30.47	34.94	182.7	-1.33	27.87	34.91				
22.2	-1.00	27.25	33.62	103.0	1.65	30.36	34.93	183.7	-1.36	27.86	34.91				
23.2	-0.98	27.32	33.69	104.0	1.58	30.32	34.92	184.7	-1.39	27.84	34.91				
24.2	-0.90	27.54	33.79	105.0	1.51	30.30	34.92	185.8	-1.41	27.79	34.90				
25.2	-0.83	27.53	33.83	106.0	1.47	30.22	34.91	186.8	-1.45	27.78	34.91				
26.2	-0.79	27.50	33.87	107.0	1.43	30.22	34.92	187.8	-1.48	27.77	34.92				
27.3	-0.80	27.84	34.02	108.0	1.39	30.14	34.89	188.8	-1.50	27.77	34.93				
28.3	-0.67	27.98	34.07	109.0	1.34	30.14	34.91	189.8	-1.50	27.75	34.92				
29.3	-0.48	28.13	34.14	110.0	1.31	30.10	34.89	190.8	-1.52	27.74	34.92				
30.3	-0.25	28.39	34.13	111.0	1.27	30.05	34.90	191.8	-1.54	27.74	34.93				
31.3	-0.13	28.46	34.20	112.1	1.20	29.94	34.89	192.8	-1.56	27.73	34.95				
32.3	0.00	28.60	34.27	113.1	1.11	29.91	34.91	193.8	-1.58	27.72	34.95				
33.3	0.12	28.70	34.26	114.1	1.02	29.78	34.90	194.8	-1.58	27.73	34.95				
34.3	0.28	29.08	34.35	115.1	0.95	29.75	34.89	195.8	-1.59	27.73	34.96				
35.3	0.61	29.70	34.46	116.1	0.89	29.70	34.87	196.9	-1.59	27.74	34.97				
36.3	1.07	29.96	34.50	117.1	0.82	29.63	34.88	197.9	-1.59	27.72	34.97				
37.4	1.48	30.18	34.52	118.1	0.77	29.61	34.87	198.9	-1.60	27.72	34.98				
38.4	1.76	30.46	34.53	119.1	0.73	29.60	34.87	199.9	-1.61	27.73	34.98				
39.4	1.89	30.58	34.62	120.1	0.72	29.66	34.90	200.9	-1.63	27.72	35.00				
40.4	2.00	30.60	34.67	121.1	0.74	29.61	34.86	201.9	-1.64	27.70	35.00				
41.4	2.06	30.72	34.72	122.2	0.75	29.63	34.87	202.9	-1.65	27.71	35.00				
42.4	2.15	30.82	34.75	123.2	0.75	29.64	34.85	203.9	-1.65	27.71	35.00				
43.4	2.34	31.20	34.79	124.2	0.73	29.62	34.89	204.9	-1.66	27.70	35.01				
44.4	2.66	31.57	34.79	125.2	0.71	29.60	34.89	205.9	-1.66	27.70	35.01				
45.4	2.99	31.77	34.82	126.2	0.70	29.59	34.89	207.0	-1.67	27.70	35.01				
46.4	3.28	31.99	34.83	127.2	0.68	29.58	34.88	208.0	-1.67	27.70	35.01				
47.4	3.36	31.82	34.85	128.2	0.67	29.58	34.89	209.0	-1.67	27.69	35.00				
48.5	3.35	31.93	34.91	129.2	0.66	29.56	34.89	210.0	-1.67	27.70	35.01				
49.5	3.23	31.69	34.92	130.2	0.65	29.56	34.89	211.0	-1.68	27.70	35.01				
50.5	3.12	31.71	34.99	131.2	0.64	29.53	34.89	212.0	-1.68	27.69	35.02				
51.5	3.04	31.65	34.98	132.2	0.61	29.52	34.90	213.0	-1.70	27.68	35.02				
52.5	3.00	31.58	34.96	133.3	0.59	29.49	34.90	214.0	-1.71	27.68	35.02				
53.5	2.96	31.58	34.96	134.3	0.56	29.44	34.89	215.0	-1.71	27.68	35.03				
54.5	2.92	31.53	34.95	135.3	0.52	29.41	34.89	216.0	-1.71	27.68	35.03				
55.5	2.90	31.56	34.96	136.3	0.48	29.38	34.88	217.0	-1.72	27.67	35.03				
56.5	2.92	31.58	34.94	137.3	0.43	29.34	34.89	218.1	-1.73	27.68	35.04				
57.5	2.95	31.62	34.95	138.3	0.38	29.27	34.88	219.1	-1.74	27.68	35.05				
58.6	2.97	31.63	34.95	139.3	0.32	29.25	34.89	220.1	-1.74	27.67	35.05				
59.6	3.00	31.67	34.95	140.3	0.26	29.17	34.88	221.1	-1.74	27.68	35.04				
60.6	3.05	31.79	34.97	141.3	0.19	29.10	34.89	222.1	-1.74	27.68	35.05				
61.6	3.12	31.80	34.97	142.3	0.12	29.06	34.88	223.1	-1.74	27.68	35.05				
62.6	3.16	31.73	34.97	143.4	0.07	29.05	34.89	224.1	-1.74	27.68	35.05				
63.6	3.16	31.73	34.96	144.4	0.05	29.00	34.87	225.1	-1.74	27.68	35.05				
64.6	3.12	31.76	34.99	145.4	0.02	28.90	34.83	226.1	-1.73	27.68	35.05				
65.6	3.10	31.77	35.01	146.4	-0.08	28.81	34.85	227.1	-1.74	27.68	35.05				
66.6	3.10	31.77	35.00	147.4	-0.21	28.77	34.89	228.2	-1.74	27.68	35.05				
67.6	3.12	31.79	34.99	148.4	-0.31	28.71	34.92	229.2	-1.74	27.68	35.05				
68.6	3.12	31.79	34.99	149.4	-0.33	28.69	34.89	230.2	-1.74	27.68	35.04				
69.7	3.12	31.79	34.99	150.4	-0.35	28.68	34.86	231.2	-1.74	27.67	35.05				
70.7	3.11	31.77	35.00	151.4	-0.36	28.66	34.86	232.2	-1.74	27.68	35.05				
71.7	3.10	31.76	35.00	152.4	-0.38	28.65	34.86	233.2	-1.74	27.69	35.05				
72.7	3.09	31.75	35.00	153.4	-0.42	28.58	34.86	234.2	-1.74	27.68	35.05				
73.7	3.08	31.72	34.99	154.5	-0.45	28.58	34.87	235.2	-1.73	27.68	35.04				
74.7	3.06	31.72	34.99	155.5	-0.49	28.56	34.87								
75.7	3.05	31.72	34.99	156.5	-0.50	28.55	34.87								
76.7	3.04	31.71	35.00	157.5	-0.51	28.54	34.87								
77.7	3.04	31.71	34.99	158.5	-0.53	28.54	34.87								
78.7	3.03	31.70	34.99	159.5	-0.55	28.50	34.88								
79.8	3.04	31.71	34.99	160.5	-0.57	28.50	34.87								

ICE-BAR 1995
XCTD Data   Station "29A"
Date 13/JUNE 0447 UT   Lat 76°22.40' Lon 22°30.00'

Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)
0.0	0.91	27.96	32.61
1.0	0.85	28.02	32.75
2.0	0.86	28.08	32.82
3.0	0.84	28.12	32.82
4.0	0.84	28.13	32.88
5.0	0.81	28.13	32.93
6.1	0.74	27.97	32.94
7.1	0.58	27.87	32.99
8.1	0.42	27.84	33.04
9.1	0.27	27.93	33.18
10.1	0.08	27.73	33.33
11.1	-0.18	27.62	33.52
12.1	-0.45	27.53	33.65
13.1	-0.63	27.46	33.72
14.1	-0.72	27.43	33.75
15.1	-0.79	27.39	33.76
16.2	-0.87	27.41	33.82
17.2	-0.93	27.42	33.87
18.2	-0.92	27.54	33.94
19.2	-0.84	27.30	34.06
20.2	-0.67	27.98	34.12
21.2	-0.49	28.23	34.23
22.2	-0.28	28.56	34.29
23.2	-0.09	28.72	34.40
24.2	0.15	29.12	34.51
25.2	0.40	29.38	34.60
26.2	0.71	29.71	34.67
27.3	0.98	29.83	34.69
28.3	1.43	30.78	34.78
29.3	1.82	30.67	34.76
30.3	2.13	30.92	34.87
31.3	2.22	31.10	34.91
32.3	2.28	31.08	35.01
33.3	2.35	31.13	35.01
34.3	2.37	31.16	35.02
35.3	2.43	31.34	35.07
36.3	2.54	31.37	35.04
37.4	2.67	31.57	35.06
38.4	2.79	31.71	35.08
39.4	2.91	31.78	35.12
40.4	3.00	31.76	35.10
41.4	3.00	31.77	35.12
42.4	2.97	31.78	35.16
43.4	2.96	31.77	35.17
44.4	2.97	31.84	35.19
45.4	3.03	31.95	35.19
46.4	3.10	31.95	35.19
47.4	3.15	31.94	35.18
48.5	3.13	31.85	35.16
49.5	3.05	31.79	35.17
50.5	2.96	31.75	35.19
51.5	2.89	31.68	35.20
52.5	2.86	31.68	35.19
53.5	2.85	31.64	35.16
54.5	2.82	31.64	35.17
55.5	2.81	31.62	35.16
56.5	2.80	31.62	35.16
57.5	2.81	31.66	35.16
58.6	2.82	31.70	35.17
59.6	2.84	31.69	35.18
60.6	2.86	31.69	35.17
61.6	2.87	31.67	35.15
62.6	2.84	31.62	35.15
63.6	2.80	31.61	35.17
64.6	2.76	31.58	35.18
65.6	2.75	31.60	35.17
66.6	2.79	31.63	35.14
67.6	2.79	31.50	35.11
68.6	2.73	31.49	35.12
69.7	2.57	31.30	35.16
70.7	2.45	31.25	35.19
71.7	2.36	31.19	35.16
72.7	2.37	31.19	35.10
73.7	2.32	31.14	35.11
74.7	2.29	31.10	35.11
75.7	2.18	30.91	35.11
76.7	2.11	30.91	35.09
77.7	2.02	30.85	35.09
78.7	1.94	30.71	35.10
79.8	1.84	30.71	35.12
80.8	1.74	30.55	35.11
81.8	1.63	30.50	35.14
82.8	1.56	30.45	35.11
83.8	1.48	30.37	35.11
84.8	1.40	30.27	35.11
85.8	1.25	30.18	35.16
86.8	1.13	30.05	35.15
87.8	1.05	30.02	35.14
88.8	1.03	30.01	35.08
89.8	1.00	29.99	35.10
90.9	0.98	29.97	35.09
91.9	0.97	29.97	35.09
92.9	0.96	29.97	35.09
93.9	0.94	29.95	35.11
94.9	0.90	29.94	35.14
95.9	0.89	29.93	35.13
96.9	0.89	29.92	35.12
97.9	0.88	29.91	35.11
98.9	0.87	29.92	35.12
99.9	0.86	29.92	35.13
101.0	0.89	29.94	35.11
102.0	0.89	29.85	35.08
103.0	0.80	29.73	35.10
104.0	0.69	29.70	35.12
105.0	0.58	29.62	35.14
106.0	0.55	29.69	35.15
107.0	0.58	29.73	35.13
108.0	0.62	29.57	35.06
109.0	0.59	29.57	35.05
110.0	0.52	29.58	35.07
111.0	0.44	29.55	35.14
112.1	0.42	29.45	35.11
113.1	0.38	29.45	35.09
114.1	0.34	29.43	35.10
115.1	0.31	29.42	35.12
116.1	0.31	29.43	35.11
117.1	0.31	29.42	35.10
118.1	0.31	29.42	35.11
119.1	0.30	29.43	35.11
120.1	0.31	29.43	35.11
121.1	0.31	29.43	35.11
122.2	0.31	29.43	35.11
123.2	0.31	29.43	35.11
124.2	0.31	29.43	35.11

ICE-BAR 1995
XCTD Data   Station "30A"
Date 13/JUNE 0633 UT   Lat 76°20.60'   Lon 23°33.30'

Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)
0.0	-0.07	27.96	33.67												
1.0	0.09	28.12	33.71												
2.0	0.02	28.09	33.73												
3.0	0.05	28.15	33.74												
4.0	0.00	28.09	33.78												
5.0	-0.08	28.05	33.86												
6.1	-0.18	28.04	33.92												
7.1	-0.24	28.00	33.95												
8.1	-0.24	28.03	33.95												
9.1	-0.23	28.06	33.93												
10.1	-0.28	28.03	34.00												
11.1	-0.34	28.01	34.07												
12.1	-0.40	27.98	34.10												
13.1	-0.39	27.98	34.07												
14.1	-0.43	27.96	34.09												
15.1	-0.46	27.93	34.10												
16.2	-0.46	27.95	34.08												
17.2	-0.65	27.83	34.23												
18.2	-0.66	27.83	34.20												
19.2	-0.71	27.81	34.19												
20.2	-0.52	27.93	34.02												
21.2	-0.56	27.90	34.11												
22.2	-0.58	27.90	34.17												
23.2	-0.61	27.88	34.17												
24.2	-0.61	27.88	34.17												
25.2	-0.63	27.86	34.17												
26.2	-0.65	27.86	34.18												
27.3	-0.67	27.85	34.18												
28.3	-0.68	27.86	34.20												
29.3	-0.69	27.88	34.22												
30.3	-0.70	27.88	34.24												
31.3	-0.69	27.88	34.25												
32.3	-0.70	27.88	34.25												
33.3	-0.69	27.88	34.25												
34.3	-0.70	27.87	34.25												
35.3	-0.70	27.87	34.24												
36.3	-0.70	27.88	34.24												
37.4	-0.70	27.88	34.25												
38.4	-0.70	27.88	34.25												
39.4	-0.70	27.90	34.26												
40.4	-0.69	27.93	34.27												
41.4	-0.68	27.89	34.27												
42.4	-0.67	27.97	34.28												
43.4	-0.65	27.97	34.28												
44.4	-0.63	27.97	34.29												
45.4	-0.61	27.97	34.27												
46.4	-0.58	27.98	34.24												
47.4	-0.61	27.97	34.27												
48.5	-0.63	27.98	34.29												
49.5	-0.64	27.97	34.31												
50.5	-0.61	28.01	34.28												
51.5	-0.55	28.05	34.25												
52.5	-0.62	28.00	34.34												
53.5	-0.59	28.02	34.31												
54.5	-0.59	28.02	34.30												
55.5	-0.33	28.18	34.08												
56.5	-0.37	28.16	34.19												
57.5	-0.37	28.17	34.26												
58.6	-0.56	28.05	34.40												
59.6	-0.55	28.05	34.35												
60.6	-0.60	28.02	34.34												
61.6	-0.62	28.01	34.34												
62.6	-0.62	28.01	34.33												
63.6	-0.62	28.01	34.32												
64.6	-0.62	28.01	34.32												
65.6	-0.62	28.01	34.32												
66.6	-0.62	28.01	34.33												
67.6	-0.62	28.01	34.32												
68.6	-0.63	28.02	34.33												
69.7	-0.63	28.01	34.33												
70.7	-0.63	28.01	34.33												
71.7	-0.63	28.02	34.32												
72.7	-0.63	28.02	34.33												
73.7	-0.62	28.01	34.32												
74.7	-0.62	28.02	34.32												
75.7	-0.62	28.02	34.32												
76.7	-0.62	28.02	34.33												
77.7	-0.62	28.02	34.33												

ICE-BAR 1995
XCTD Data Station "32A"
Date 13/JUNE 0849 UT Lat 76°18.45' Lon 24°30.00'

Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)
0.0	-0.78	27.50	33.85
1.0	-0.85	27.42	33.82
2.0	-0.85	27.45	33.85
3.0	-0.85	27.47	33.86
4.0	-0.88	27.49	33.91
5.0	-0.90	27.47	33.95
6.1	-0.93	27.46	33.98
7.1	-0.96	27.48	34.01
8.1	-0.99	27.47	34.04
9.1	-1.01	27.46	34.06
10.1	-1.03	27.46	34.07
11.1	-1.03	27.47	34.08
12.1	-1.06	27.47	34.10
13.1	-1.06	27.47	34.11
14.1	-1.08	27.46	34.13
15.1	-1.09	27.46	34.14
16.2	-1.11	27.45	34.16
17.2	-1.12	27.46	34.16
18.2	-1.13	27.46	34.18
19.2	-1.14	27.46	34.18
20.2	-1.15	27.45	34.19
21.2	-1.15	27.46	34.20
22.2	-1.16	27.47	34.20
23.2	-1.16	27.46	34.22
24.2	-1.17	27.46	34.22
25.2	-1.18	27.46	34.23
26.2	-1.18	27.47	34.24
27.3	-1.19	27.47	34.25
28.3	-1.19	27.47	34.25
29.3	-1.19	27.47	34.26
30.3	-1.20	27.46	34.26
31.3	-1.21	27.46	34.27
32.3	-1.21	27.47	34.27
33.3	-1.21	27.48	34.27
34.3	-1.21	27.47	34.28
35.3	-1.21	27.48	34.28
36.3	-1.22	27.48	34.29
37.4	-1.22	27.48	34.29
38.4	-1.22	27.47	34.29
39.4	-1.22	27.47	34.29
40.4	-1.22	27.47	34.28
41.4	-1.22	27.48	34.29
42.4	-1.22	27.48	34.29
43.4	-1.23	27.48	34.30
44.4	-1.23	27.47	34.30
45.4	-1.23	27.48	34.30
46.4	-1.23	27.48	34.30
47.4	-1.23	27.49	34.31
48.5	-1.23	27.49	34.31
49.5	-1.24	27.48	34.31
50.5	-1.24	27.48	34.31

Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)

ICE-BAR 1995

XCTD Data Station "41A"

Date 14/JUNE 2219 UT Lat 78°04.80' Lon 34°16.90'

Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)
0.0	-1.11	26.91	33.41	80.8	-1.70	27.22	34.45	161.5	0.00	28.92	34.85				
1.0	-1.08	26.90	33.37	81.8	-1.68	27.25	34.45	162.5	-0.04	28.92	34.84				
2.0	-1.10	[illegible]	33.41	82.8	-1.67	27.27	34.46	163.5	-0.05	28.95	34.84				
3.0	-1.11	[illegible]	33.41	83.8	-1.66	27.27	34.47	164.6	-0.03	28.99	34.84				
4.0	-1.14	[illegible]	33.48	84.8	-1.65	27.27	34.47	165.6	0.00	29.01	34.84				
5.0	-1.18	26.96	33.53	85.8	-1.65	27.27	34.47	166.6	0.04	29.03	34.83				
6.1	-1.21	26.97	33.59	86.8	-1.65	27.28	34.47	167.6	0.05	29.03	34.83				
7.1	-1.24	26.97	33.64	87.8	-1.65	27.31	34.49	168.6	0.05	29.03	34.84				
8.1	-1.27	26.98	33.68	88.8	-1.64	27.31	34.49	169.6	0.05	29.03	34.84				
9.1	-1.30	26.99	33.72	89.8	-1.62	27.32	34.49	170.6	0.05	29.04	34.85				
10.1	-1.32	27.00	33.75	90.9	-1.61	27.33	34.48	171.6	0.05	29.04	34.85				
11.1	-1.35	27.06	33.82	91.9	-1.60	27.34	34.49	172.6	0.05	29.04	34.85				
12.1	-1.36	27.09	33.89	92.9	-1.59	27.35	34.49	173.6	0.05	29.04	34.85				
13.1	-1.39	27.09	33.95	93.9	-1.58	27.36	34.50	174.6	0.06	29.04	34.84				
14.1	-1.40	27.11	33.99	94.9	-1.57	27.38	34.50	175.7	0.06	29.04	34.84				
15.1	-1.42	27.10	34.02	95.9	-1.56	27.39	34.50	176.7	0.05	29.03	34.84				
16.2	-1.45	27.10	34.05	96.9	-1.54	27.42	34.51	177.7	0.04	29.02	34.84				
17.2	-1.48	27.06	34.06	97.9	-1.52	27.45	34.52	178.7	0.03	29.01	34.85				
18.2	-1.51	27.08	34.09	98.9	-1.48	27.52	34.53	179.7	0.02	29.01	34.85				
19.2	-1.54	27.07	34.11	99.9	-1.43	27.55	34.54	180.7	0.01	29.00	34.85				
20.2	-1.57	27.05	34.13	101.0	-1.38	27.59	34.54	181.7	0.00	28.99	34.85				
21.2	-1.57	27.06	34.13	102.0	-1.35	27.60	34.54	182.7	0.00	28.99	34.85				
22.2	-1.58	27.07	34.14	103.0	-1.33	27.62	34.54	183.7	0.00	28.98	34.85				
23.2	-1.58	27.07	34.15	104.0	-1.31	27.63	34.55	184.7	-0.01	28.98	34.85				
24.2	-1.59	27.07	34.16	105.0	-1.30	27.65	34.56	185.8	-0.01	28.97	34.85				
25.2	-1.61	27.05	34.17	106.0	-1.28	27.67	34.56	186.8	-0.01	28.98	34.85				
26.2	-1.63	27.06	34.19	107.0	-1.27	27.68	34.56	187.8	-0.02	28.97	34.84				
27.3	-1.65	27.05	34.20	108.0	-1.2[illegible]	27.73	34.57	188.8	-0.02	28.97	34.84				
28.3	-1.66	27.05	34.22	109.0	-1.18	27.88	34.60	189.8	-0.02	28.98	34.84				
29.3	-1.67	27.05	34.22	110.0	-1.08	27.94	34.60	190.8	-0.02	28.98	34.84				
30.3	-1.68	27.04	34.23	111.0	-0.97	28.02	34.60	191.8	-0.01	28.98	34.84				
31.3	-1.68	27.04	34.23	112.1	-0.88	28.09	34.59								
32.3	-1.69	27.05	34.24	113.1	-0.82	28.13	34.60								
33.3	-1.70	27.05	34.25	114.1	-0.77	28.19	34.63								
34.3	-1.71	27.04	34.26	115.1	-0.72	28.27	34.64								
35.3	-1.71	27.04	34.26	116.1	-0.66	28.29	34.65								
36.3	-1.72	27.04	34.27	117.1	-0.59	28.35	34.65								
37.4	-1.73	27.05	34.28	118.1	-0.55	28.39	34.66								
38.4	-1.74	27.05	34.29	119.1	-0.51	28.45	34.67								
39.4	-1.74	27.05	34.29	120.1	-0.47	28.48	34.69								
40.4	-1.74	27.05	34.30	121.1	-0.42	28.53	34.70								
41.4	-1.74	27.05	34.30	122.2	-0.38	28.56	34.70								
42.4	-1.74	27.06	34.31	123.2	-0.34	28.58	34.69								
43.4	-1.75	27.05	34.31	124.2	-0.32	28.60	34.70								
44.4	-1.75	27.05	34.31	125.2	-0.30	28.66	34.72								
45.4	-1.75	27.05	34.31	126.2	-0.26	28.67	34.72								
46.4	-1.75	27.06	34.32	127.2	-0.22	28.73	34.73								
47.4	-1.76	27.07	34.33	128.2	-0.17	28.80	34.73								
48.5	-1.76	27.07	34.34	129.2	-0.11	28.84	34.74								
49.5	-1.77	27.07	34.35	130.2	-0.06	28.87	34.75								
50.5	-1.77	27.07	34.35	131.2	-0.02	28.89	34.74								
51.5	-1.78	27.08	34.37	132.2	0.00	28.93	34.75								
52.5	-1.78	27.08	34.37	133.3	0.02	28.95	34.76								
53.5	-1.78	27.08	34.37	134.3	0.05	29.01	34.78								
54.5	-1.78	27.08	34.37	135.3	0.09	[illegible].04	34.79								
55.5	-1.78	27.08	34.38	136.3	0.13	29.06	34.78								
56.5	-1.79	27.08	34.39	137.3	0.16	29.08	34.78								
57.5	-1.79	27.09	34.39	138.3	0.18	29.10	34.78								
58.6	-1.79	27.09	34.40	139.3	0.18	29.10	34.79								
59.6	-1.79	27.09	34.40	140.3	0.19	29.13	34.80								
60.6	-1.80	27.09	34.41	141.3	0.21	29.14	34.80								
61.6	-1.80	27.10	34.41	142.3	0.22	29.14	34.81								
62.6	-1.80	27.10	34.41	143.4	0.22	29.14	34.81								
63.6	-1.80	27.10	34.41	144.4	0.22	29.14	34.81								
64.6	-1.80	27.10	34.42	145.4	0.21	29.15	34.82								
65.6	-1.80	27.10	34.42	146.4	0.22	29.17	34.83								
66.6	-1.80	27.10	34.42	147.4	0.25	29.23	34.83								
67.6	-1.80	27.11	34.42	148.4	0.29	29.25	34.83								
68.6	-1.80	27.12	34.43	149.4	0.33	29.27	34.83								
69.7	-1.79	27.11	34.43	150.4	0.35	29.30	34.83								
70.7	-1.79	27.11	34.43	151.4	0.38	29.31	34.83								
71.7	-1.79	27.12	34.43	152.4	0.39	29.32	34.84								
72.7	-1.78	27.14	34.43	153.4	0.40	29.30	34.83								
73.7	-1.78	27.14	34.43	154.5	0.38	29.30	34.84								
74.7	-1.76	27.15	34.44	155.5	0.36	29.29	34.85								
75.7	-1.76	27.16	34.44	156.5	0.35	29.27	34.85								
76.7	-1.75	27.17	34.44	157.5	0.33	29.25	34.84								
77.7	-1.74	27.19	34.45	158.5	0.28	29.06	34.81								
78.7	-1.73	27.20	34.45	159.5	0.18	29.04	34.82								
79.8	-1.72	27.21	34.46	160.5	0.06	28.97	34.82								

ICE-BAR 1995
XCTD Data Station "49B"
Date 18/JUNE 1308 UT Lat 78°02.77' Lon 34°06.98'

Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)
0.0	-0.86	27.19	33.52	80.8	-1.82	27.39	34.82	161.5	-0.38	28.94	35.19				
1.0	-0.86	27.18	33.50	81.8	-1.81	27.40	34.83	162.5	-0.35	29.00	35.20				
2.0	-0.85	27.20	33.52	82.8	-1.80	27.41	34.83	163.5	-0.31	29.01	35.20				
3.0	-0.84	27.25	33.52	83.8	-1.79	27.42	34.83	164.6	-0.26	29.06	35.20				
4.0	-0.89	27.26	33.62	84.8	-1.79	27.44	34.84	165.6	-0.23	29.06	35.19				
5.0	-0.93	27.25	33.68	85.8	-1.78	27.44	34.84	166.6	-0.22	29.05	35.19				
6.1	-1.05	27.14	33.76	86.8	-1.77	27.45	34.85	167.6	-0.22	29.08	35.21				
7.1	-1.13	27.12	33.79	87.8	-1.76	27.46	34.84	168.6	-0.22	29.10	35.22				
8.1	-1.24	27.09	33.85	88.8	-1.75	27.48	34.85	169.6	-0.21	29.10	35.23				
9.1	-1.31	27.08	33.89	89.8	-1.73	27.50	34.85	170.6	-0.19	29.11	35.22				
10.1	-1.35	27.09	33.93	90.9	-1.71	27.52	34.86	171.6	-0.18	29.11	35.22				
11.1	-1.39	27.09	33.97	91.9	-1.69	27.53	34.86	172.6	-0.18	29.12	35.22				
12.1	-1.42	27.11	34.02	92.9	-1.67	27.54	34.86	173.6	-0.18	29.12	35.22				
13.1	-1.44	27.15	34.07	93.9	-1.66	27.57	34.86	174.6	-0.18	29.12	35.23				
14.1	-1.46	27.16	34.12	94.9	-1.64	27.63	34.89	175.7	-0.18	29.12	35.23				
15.1	-1.48	27.22	34.19	95.9	-1.59	27.70	34.90	176.7	-0.17	29.12	35.23				
16.2	-1.50	27.32	34.29	96.9	-1.52	27.76	34.89	177.7	-0.18	29.11	35.23				
17.2	-1.52	27.32	34.39	97.9	-1.43	27.83	34.89	178.7	-0.18	29.12	35.23				
18.2	-1.55	27.30	34.46	98.9	-1.36	27.91	34.90	179.7	-0.19	29.11	35.23				
19.2	-1.59	27.29	34.49	99.9	-1.29	27.95	34.91	180.7	-0.19	29.12	35.24				
20.2	-1.62	27.27	34.50	101.0	-1.23	28.02	34.93	181.7	-0.19	29.12	35.23				
21.2	-1.65	27.25	34.50	102.0	-1.17	28.06	34.93	182.7	-0.18	29.13	35.23				
22.2	-1.66	27.24	34.50	103.0	-1.11	28.13	34.94	183.7	-0.16	29.14	35.22				
23.2	-1.67	27.24	34.50	104.0	-1.05	28.17	34.94	184.7	-0.15	29.14	35.22				
24.2	-1.69	27.23	34.51	105.0	-1.01	28.21	34.95	185.8	-0.15	29.15	35.22				
25.2	-1.70	27.24	34.53	106.0	-0.97	28.22	34.95	186.8	-0.15	29.14	35.22				
26.2	-1.72	27.23	34.54	107.0	-0.94	28.27	34.96	187.8	-0.16	29.14	35.23				
27.3	-1.73	27.23	34.55	108.0	-0.92	28.28	34.96								
28.3	-1.75	27.22	34.56	109.0	-0.89	28.34	34.98								
29.3	-1.75	27.23	34.56	110.0	-0.85	28.36	34.99								
30.3	-1.76	27.22	34.57	111.0	-0.83	28.36	34.99								
31.3	-1.77	27.22	34.58	112.1	-0.82	28.36	34.99								
32.3	-1.77	27.23	34.59	113.1	-0.82	28.36	34.99								
33.3	-1.78	27.22	34.60	114.1	-0.82	28.39	35.01								
34.3	-1.79	27.22	34.60	115.1	-0.81	28.39	35.01								
35.3	-1.79	27.23	34.61	116.1	-0.79	28.45	35.02								
36.3	-1.80	27.23	34.62	117.1	-0.76	28.45	35.01								
37.4	-1.81	27.23	34.62	118.1	-0.73	28.45	35.01								
38.4	-1.81	27.23	34.63	119.1	-0.75	28.39	34.99								
39.4	-1.82	27.23	34.64	120.1	-0.80	28.37	35.02								
40.4	-1.82	27.24	34.65	121.1	-0.85	28.33	35.02								
41.4	-1.82	27.24	34.65	122.2	-0.89	28.29	35.03								
42.4	-1.82	27.24	34.66	123.2	-0.92	28.28	35.03								
43.4	-1.82	27.25	34.66	124.2	-0.95	28.25	35.02								
44.4	-1.83	27.25	34.67	125.2	-0.97	28.25	35.02								
45.4	-1.83	27.25	34.68	126.2	-0.98	28.26	35.02								
46.4	-1.83	27.25	34.68	127.2	-0.98	28.28	35.04								
47.4	-1.84	27.25	34.69	128.2	-0.97	28.32	35.05								
48.5	-1.85	27.26	34.70	129.2	-0.92	28.43	35.08								
49.5	-1.85	27.26	34.71	130.2	-0.86	28.42	35.07								
50.5	-1.85	27.26	34.71	131.2	-0.76	28.61	35.08								
51.5	-1.85	27.27	34.72	132.2	-0.66	28.64	35.06								
52.5	-1.85	27.27	34.73	133.3	-0.58	28.66	35.08								
53.5	-1.86	27.27	34.73	134.3	-0.54	28.69	35.07								
54.5	-1.86	27.28	34.74	135.3	-0.54	28.69	35.08								
55.5	-1.86	27.27	34.74	136.3	-0.55	28.64	35.08								
56.5	-1.86	27.27	34.74	137.3	-0.55	28.74	35.10								
57.5	-1.86	27.28	34.75	138.3	-0.52	28.80	35.11								
58.6	-1.86	27.28	34.75	139.3	-0.45	28.89	35.15								
59.6	-1.87	27.29	34.76	140.3	-0.36	29.01	35.17								
60.6	-1.87	27.29	34.77	141.3	-0.26	29.04	35.15								
61.6	-1.87	27.29	34.78	142.3	-0.17	29.08	35.15								
62.6	-1.87	27.30	34.78	143.4	-0.13	29.10	35.13								
63.6	-1.87	27.30	34.78	144.4	-0.13	29.09	35.16								
64.6	-1.87	27.31	34.79	145.4	-0.14	29.06	35.16								
65.6	-1.87	27.32	34.80	146.4	-0.18	29.01	35.16								
66.6	-1.87	27.31	34.80	147.4	-0.23	29.00	35.17								
67.6	-1.87	27.31	34.80	148.4	-0.27	28.96	35.18								
68.6	-1.87	27.31	34.80	149.4	-0.30	28.93	35.13								
69.7	-1.87	27.31	34.80	150.4	-0.33	28.93	35.17								
70.7	-1.87	27.32	34.80	151.4	-0.35	28.91	35.17								
71.7	-1.87	27.32	34.80	152.4	-0.37	28.89	35.18								
72.7	-1.87	27.32	34.80	153.4	-0.38	28.88	35.17								
73.7	-1.87	27.34	34.81	154.5	-0.40	28.86	35.17								
74.7	-1.86	27.35	34.81	155.5	-0.42	28.84	35.17								
75.7	-1.85	27.36	34.82	156.5	-0.44	28.84	35.18								
76.7	-1.84	27.37	34.82	157.5	-0.45	28.85	35.19								
77.7	-1.83	27.37	34.82	158.5	-0.44	28.87	35.19								
78.7	-1.83	27.37	34.82	159.5	-0.43	28.88	35.19								
79.8	-1.83	27.38	34.82	160.5	-0.40	28.90	35.18								

ICE-BAR 1995

XCTD Data   Station "54J"

Date 21/JUNE 1243 UT   Lat 77°49.41'   Lon 34°35.75'

Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)
0.0	-1.09	26.33	33.42	80.8	-1.32	27.34	34.75	161.5	0.16	29.31	35.09				
1.0	-1.03	26.93	33.35	81.8	-1.81	27.34	34.76	162.5	0.16	29.31	35.09				
2.0	-1.11	26.30	33.40	82.8	-1.81	27.36	34.76	163.5	0.16	29.31	35.09				
3.0	-1.10	26.33	33.41	83.8	-1.80	27.36	34.76	164.6	0.16	29.31	35.09				
4.0	-1.14	26.35	33.47	84.8	-1.79	27.38	34.76	165.6	0.16	29.31	35.09				
5.0	-1.16	26.97	33.53	85.8	-1.78	27.38	34.76								
6.1	-1.19	26.99	33.58	86.8	-1.77	27.40	34.77								
7.1	-1.24	27.01	33.66	87.8	-1.76	27.41	34.77								
8.1	-1.27	27.00	33.72	88.8	-1.75	27.42	34.77								
9.1	-1.31	27.00	33.76	89.8	-1.73	27.43	34.77								
10.1	-1.33	27.04	33.80	90.9	-1.72	27.45	34.77								
11.1	-1.36	27.06	33.86	91.9	-1.71	27.45	34.77								
12.1	-1.39	27.15	33.96	92.9	-1.69	27.47	34.77								
13.1	-1.40	27.15	34.03	93.9	-1.68	27.50	34.78								
14.1	-1.43	27.16	34.10	94.9	-1.66	27.55	34.80								
15.1	-1.45	27.16	34.13	95.9	-1.62	27.58	34.81								
16.2	-1.47	27.17	34.16	96.9	-1.57	27.62	34.81								
17.2	-1.49	27.13	34.18	97.9	-1.53	27.65	34.80								
18.2	-1.50	27.21	34.22	98.9	-1.50	27.69	34.82								
19.2	-1.51	27.23	34.26	99.9	-1.47	27.71	34.82								
20.2	-1.53	27.21	34.30	101.0	-1.45	27.73	34.83								
21.2	-1.54	27.21	34.32	102.0	-1.42	27.75	34.83								
22.2	-1.56	27.23	34.34	103.0	-1.40	27.76	[illegible]								
23.2	-1.59	27.25	34.38	104.0	-1.39	27.77	34.84								
24.2	-1.61	27.25	34.43	105.0	-1.38	27.80	34.84								
25.2	-1.63	27.23	34.45	106.0	-1.36	27.81	34.84								
26.2	-1.65	27.23	34.47	107.0	[illegible]	[illegible]	34.84								
27.3	-1.67	27.23	34.48	108.0	[illegible]	27.86	34.85								
28.3	-1.68	27.23	34.49	109.0	-1.30	27.89	34.86								
29.3	-1.69	27.22	34.50	110.0	-1.27	27.92	34.87								
30.3	-1.70	27.23	34.51	111.0	-1.23	27.95	34.87								
31.3	-1.72	27.22	34.52	112.1	-1.21	27.97	34.88								
32.3	-1.73	27.22	34.53	113.1	-1.19	27.97	34.88								
33.3	-1.74	27.21	34.54	114.1	-1.18	27.99	34.88								
34.3	-1.75	27.21	34.55	115.1	-1.17	28.01	34.89								
35.3	-1.77	27.21	34.56	116.1	-1.14	28.06	34.89								
36.3	-1.77	27.21	34.56	117.1	-1.11	28.07	34.90								
37.4	-1.77	27.21	34.56	118.1	-1.08	28.09	34.89								
38.4	-1.78	27.21	34.57	119.1	-1.06	28.12	34.89								
39.4	-1.79	27.22	34.58	120.1	-1.03	28.15	34.90								
40.4	-1.79	27.22	34.59	121.1	-1.00	28.20	34.91								
41.4	-1.80	27.21	34.60	122.2	-0.96	28.23	34.91								
42.4	-1.80	27.22	34.60	123.2	-0.92	28.25	34.92								
43.4	-1.80	27.22	34.61	124.2	-0.89	28.30	34.92								
44.4	-1.81	27.23	34.61	125.2	-0.83	28.39	34.94								
45.4	-1.81	27.23	34.62	126.2	-0.77	28.43	34.94								
46.4	-1.81	27.23	34.62	127.2	-0.69	28.53	34.96								
47.4	-1.81	27.24	34.63	128.2	-0.61	28.61	34.96								
48.5	-1.32	27.24	34.64	129.2	-0.53	28.65	34.96								
49.5	-1.82	27.25	34.66	130.2	-0.47	28.71	34.97								
50.5	-1.82	27.24	34.66	131.2	-0.43	28.77	34.99								
51.5	-1.82	27.25	34.66	132.2	-0.38	28.81	35.01								
52.5	-1.82	27.25	34.66	133.3	-0.33	28.85	35.02								
53.5	-1.33	27.25	34.67	134.3	-0.28	28.94	35.03								
54.5	-1.83	27.25	34.67	135.3	-0.21	28.99	35.04								
55.5	-1.33	27.25	34.67	136.3	-0.14	29.04	35.04								
56.5	-1.83	27.26	34.68	137.3	-0.08	29.11	35.04								
57.5	-1.83	27.26	34.68	138.3	-0.02	29.16	35.06								
58.6	-1.84	27.26	34.69	139.3	0.02	29.23	35.08								
59.6	-1.84	27.26	34.69	140.3	0.07	29.26	35.08								
60.6	-1.84	27.27	34.70	141.3	0.11	29.28	35.09								
61.6	-1.34	27.26	34.70	142.3	0.14	29.30	35.09								
62.6	-1.34	27.27	34.71	143.4	0.16	29.32	35.10								
63.6	-1.35	27.27	34.71	144.4	0.17	29.31	35.10								
64.6	-1.35	27.28	34.72	145.4	0.17	29.31	35.10								
65.6	-1.35	27.27	34.72	146.4	0.17	29.31	35.10								
66.6	-1.85	27.28	34.72	147.4	0.16	29.30	35.10								
67.6	-1.85	27.29	34.73	148.4	0.16	29.31	35.10								
68.6	-1.35	27.29	34.73	149.4	0.16	29.31	35.10								
69.7	-1.85	27.29	34.74	150.4	0.16	29.31	35.10								
70.7	-1.85	27.28	34.73	151.4	0.16	29.31	35.10								
71.7	-1.84	27.28	34.73	152.4	0.16	29.31	35.10								
72.7	-1.84	27.30	34.73	153.4	0.16	29.31	35.10								
73.7	-1.35	27.30	34.74	154.5	0.15	29.31	35.10								
74.7	-1.34	27.30	34.74	155.5	0.15	29.31	35.10								
75.7	-1.84	27.31	34.74	156.5	0.15	29.31	35.10								
76.7	-1.33	27.32	34.74	157.5	0.16	29.31	35.09								
77.7	-1.83	27.32	34.75	158.5	0.16	29.30	35.09								
78.7	-1.33	27.32	34.75	159.5	0.16	29.30	35.08								
79.8	-1.32	27.33	34.75	160.5	0.16	29.31	35.09								

ICE-BAR 1995
XCTD Data Station "59B"
Date 23/JUNE 1200 UT Lat 77°38.80' Lon 34°54.17'

Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)
0.0	-1.16	26.57	33.00	80.8	-0.41	28.52	34.77	161.5	0.15	29.19	34.96				
1.0	-1.15	26.60	33.03	81.8	-0.44	28.42	34.75	162.5	0.13	29.22	34.99				
2.0	-1.15	26.61	33.04	82.8	-0.50	28.46	34.79	163.5	0.14	29.24	34.99				
3.0	-1.16	26.62	33.05	83.8	-0.52	28.53	34.80	164.6	0.18	29.26	34.97				
4.0	-1.18	26.62	33.09	84.8	-0.46	28.58	34.81	165.6	0.21	29.28	34.96				
5.0	-1.21	26.64	33.14	85.8	-0.38	28.59	34.77	166.6	0.22	29.28	34.97				
6.1	-1.25	26.64	33.19	86.8	-0.33	28.69	34.80	167.6	0.22	29.28	34.98				
7.1	-1.28	26.65	33.23	87.8	-0.30	28.70	34.82	168.6	0.12	29.20	35.06				
8.1	-1.32	26.64	33.28	88.8	-0.25	28.80	34.85								
9.1	-1.36	26.68	33.33	89.8	-0.20	28.75	34.81								
10.1	-1.39	26.67	33.38	90.9	-0.14	28.88	34.82								
11.1	-1.41	26.69	33.42	91.9	-0.08	28.94	34.82								
12.1	-1.43	26.70	33.45	92.9	0.00	29.03	34.85								
13.1	-1.44	26.72	33.50	93.9	0.06	29.06	34.85								
14.1	-1.46	26.76	33.55	94.9	0.11	29.06	34.85								
15.1	-1.47	26.79	33.61	95.9	0.12	29.01	34.83								
16.2	-1.49	26.81	33.66	96.9	0.08	29.00	34.85								
17.2	-1.50	26.87	33.73	97.9	0.04	29.00	34.87								
18.2	-1.51	26.91	33.79	98.9	0.04	29.06	34.88								
19.2	-1.53	26.97	33.89	99.9	0.09	29.07	34.86								
20.2	-1.55	27.01	33.98	101.0	0.14	29.11	34.86								
21.2	-1.57	27.05	34.07	102.0	0.16	29.10	34.85								
22.2	-1.59	27.06	34.13	103.0	0.15	29.07	34.85								
23.2	-1.61	27.06	34.17	104.0	0.10	28.90	34.82								
24.2	-1.65	27.04	34.22	105.0	0.00	28.91	34.86								
25.2	-1.67	27.04	34.22	106.0	-0.10	28.84	34.86								
26.2	-1.69	27.03	34.23	107.0	-0.17	28.79	34.90								
27.3	-1.68	27.04	34.21	108.0	-0.20	28.79	34.88								
28.3	-1.69	27.04	34.23	109.0	-0.22	28.79	34.88								
29.3	-1.70	27.05	34.25	110.0	-0.21	28.79	34.86								
30.3	-1.71	27.05	34.26	111.0	-0.21	28.79	34.86								
31.3	-1.70	27.06	34.26	112.1	-0.19	28.86	34.88								
32.3	-1.72	27.05	34.28	113.1	-0.17	28.90	34.90								
33.3	-1.73	27.05	34.29	114.1	-0.10	28.96	34.90								
34.3	-1.74	27.05	34.30	115.1	-0.03	29.01	34.88								
35.3	-1.73	27.06	34.29	116.1	0.03	29.07	34.88								
36.3	-1.68	27.10	34.26	117.1	0.07	29.09	34.89								
37.4	-1.66	27.12	34.27	118.1	0.10	29.14	34.90								
38.4	-1.68	27.11	34.31	119.1	0.15	29.18	34.90								
39.4	-1.72	27.08	34.35	120.1	0.19	29.20	34.90								
40.4	-1.75	27.06	34.35	121.1	0.22	29.22	34.90								
41.4	-1.74	27.08	34.33	122.2	0.23	29.28	34.93								
42.4	-1.74	27.08	34.33	123.2	0.26	29.28	34.93								
43.4	-1.75	27.09	34.35	124.2	0.30	29.30	34.93								
44.4	-1.75	27.12	34.37	125.2	0.33	29.39	34.94								
45.4	-1.72	27.16	34.37	126.2	0.37	29.39	34.94								
46.4	-1.70	27.19	34.39	127.2	0.41	29.41	34.95								
47.4	-1.68	27.21	34.41	128.2	0.43	29.43	34.95								
48.5	-1.69	27.21	34.44	129.2	0.42	29.42	34.96								
49.5	-1.69	27.22	34.46	130.2	0.42	29.41	34.96								
50.5	-1.68	27.23	34.46	131.2	0.42	29.42	34.95								
51.5	-1.67	27.23	34.46	132.2	0.42	29.40	34.95								
52.5	-1.66	27.26	34.47	133.3	0.42	29.42	34.95								
53.5	-1.66	27.29	34.48	134.3	0.41	29.45	34.97								
54.5	-1.65	27.31	34.51	135.3	0.44	29.49	34.97								
55.5	-1.62	27.40	34.54	136.3	0.47	29.48	34.97								
56.5	-1.57	27.44	34.55	137.3	0.51	29.51	34.95								
57.5	-1.52	27.45	34.56	138.3	0.48	29.49	34.98								
58.6	-1.48	27.42	34.53	139.3	0.48	29.49	34.98								
59.6	-1.50	27.44	34.55	140.3	0.48	29.49	34.98								
60.6	-1.51	27.49	34.57	141.3	0.51	29.52	34.95								
61.6	-1.50	27.52	34.60	142.3	0.51	29.50	34.96								
62.6	-1.45	27.57	34.61	143.4	0.51	29.50	34.96								
63.6	-1.40	27.65	34.62	144.4	0.50	29.50	34.96								
64.6	-1.33	27.71	34.62	145.4	0.50	29.50	34.97								
65.6	-1.26	27.75	34.63	146.4	0.50	29.51	34.97								
66.6	-1.21	27.94	34.65	147.4	0.50	29.51	34.97								
67.6	-1.13	27.94	34.67	148.4	0.49	29.45	34.96								
68.6	-1.02	28.06	34.68	149.4	0.47	29.43	34.96								
69.7	-0.89	28.17	34.68	150.4	0.43	29.43	34.96								
70.7	-0.78	28.23	34.69	151.4	0.35	29.18	34.93								
71.7	-0.71	28.26	34.70	152.4	0.20	29.03	34.92								
72.7	-0.66	28.30	34.71	153.4	0.08	29.08	34.90								
73.7	-0.64	28.32	34.71	154.5	-0.10	28.96	35.03								
74.7	-0.60	28.42	34.74	155.5	-0.10	29.04	35.03								
75.7	-0.54	28.50	34.76	156.5	-0.09	29.05	35.01								
76.7	-0.45	28.55	34.76	157.5	0.07	29.22	34.93								
77.7	-0.39	28.53	34.74	158.5	0.15	29.23	34.92								
78.7	-0.38	28.55	34.75	159.5	0.19	29.21	34.94								
79.8	-0.39	28.53	34.76	160.5	0.19	29.20	34.93								

ICE-BAR 1995

XCTD Data Station "61B"

Date 24/JUNE 1515 UT Lat 76°52.73' Lon 33°41.65'

Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)
0.0	1.29	28.79	33.26	80.8	-1.73	27.46	34.82								
1.0	1.31	28.90	33.39	81.8	-1.73	27.46	34.82								
2.0	1.28	28.90	33.42	82.8	-1.73	27.46	34.82								
3.0	1.28	28.96	33.44	83.8	-1.73	27.45	34.82								
4.0	1.26	28.96	33.49	84.8	-1.73	27.45	34.82								
.0	1.23	28.97	33.55	85.8	-1.73	27.45	34.82								
6.1	1.20	28.98	33.59	86.8	-1.73	27.45	34.82								
7.1	1.14	28.93	33.65	87.8	-1.73	27.45	34.82								
8.1	1.08	29.01	33.72	88.8	-1.73	27.46	34.82								
9.1	1.03	28.92	33.75	89.8	-1.72	27.46	34.81								
10.1	0.93	28.67	33.74	90.9	-1.73	27.46	34.82								
11.1	0.64	28.48	33.83	91.9	-1.73	27.46	34.81								
12.1	0.19	28.27	34.04	92.9	-1.73	27.46	34.82								
13.1	-0.26	28.01	34.26	93.9	-1.72	27.46	34.82								
14.1	-0.57	27.95	34.38	94.9	-1.73	27.46	34.82								
15.1	-0.74	27.86	34.39	95.9	-1.73	27.46	34.82								
16.2	-0.84	27.79	34.41	96.9	-1.73	27.47	34.83								
17.2	-0.92	27.74	34.39												
18.2	- .00	27.71	34.42												
19.2	.07	27.71	34.46												
20.2	10	27.69	34.47												
21.2	.13	27.58	34.50												
22.2	-1.14	27.69	34.50												
23.2	-1.15	27.69	34.52												
24.2	-1.17	27.69	34.53												
25.2	-1.19	27.68	34.55												
26.2	-1.22	27.65	34.57												
27.3	-1.25	27.63	34.57												
28.3	-1.28	27.61	34.58												
29.3	-1.32	27.59	34.59												
30.3	-1.34	27.57	34.60												
31.3	-1.41	27.52	34.63												
32.3	-1.45	27.50	34.64												
33.3	-1.49	27.48	34.63												
34.3	-1.51	27.47	34.64												
35.3	-1.54	27.45	34.65												
36.3	-1.61	27.41	34.69												
37.4	-1.63	27.39	34.69												
38.4	-1.66	27.38	34.69												
.4	-1.67	27.33	34.67												
.4	-1.70	27.33	34.68												
.4	-1.74	27.32	34.69												
.4	-1.76	27.31	34.70												
3.4	-1.77	27.30	34.70												
44.4	-1.79	27.29	34.70												
45.4	-1.81	27.28	34.71												
46.4	-1.82	27.29	34.72												
47.4	-1.83	27.28	34.72												
48.5	-1.82	27.28	34.71												
49.5	-1.82	27.29	34.72												
50.5	-1.83	27.31	34.73												
51.5	-1.82	27.33	34.74												
52.5	-1.81	27.34	34.76												
53.5	-1.80	27.36	34.77												
54.5	-1.79	27.37	34.77												
55.5	-1.77	27.38	34.77												
56.5	-1.76	27.38	34.77												
57.5	-1.76	27.39	34.77												
58.6	-1.75	27.42	34.78												
59.6	-1.74	27.43	34.79												
60.6	-1.73	27.43	34.80												
61.6	-1.72	27.44	34.80												
62.6	-1.73	27.43	34.80												
63.6	-1.72	27.44	34.80												
64.6	-1.73	27.43	34.80												
65.6	-1.73	27.43	34.80												
66.6	-1.72	27.44	34.80												
67.6	-1.72	27.44	34.80												
68.6	-1.72	27.44	34.80												
69.7	-1.72	27.44	34.81												
70.7	-1.[illegible]	27.45	34.81												
71.7	-1.[illegible]	27.45	34.81												
72.7	-1.72	27.45	34.81												
73.7	-1.72	27.45	34.81												
74.7	-1.73	27.45	34.81												
75.7	-1.73	27.45	34.81												
76.7	-1.73	27.45	34.81												
77.7	-1.72	27.45	34.81												
78.7	-1.72	27.45	34.81												
79.8	-1.73	27.45	34.82												

ICE-BAR 1995
XCTD Data   Station "63G"
Date 25/JUNE 0632 UT   Lat 77°43.70'   Lon 31°59.11'

Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)
0.0	-1.06	26.67	33.03	80.8	-1.23	27.67	34.52								
1.0	-1.03	26.69	33.02	81.8	-1.23	27.66	34.52								
2.0	-1.05	26.72	33.10	82.8	-1.22	27.74	34.55								
3.0	-1.06	26.75	33.10	83.8	-1.20	27.72	34.56								
4.0	-1.13	26.73	33.19	84.8	-1.17	27.74	34.56								
5.0	-1.18	26.73	33.25	85.8	-1.16	27.77	34.56								
6.1	-1.22	26.71	33.28	86.8	-1.13	27.83	34.58								
7.1	-1.22	26.73	33.28	87.8	-1.11	27.82	34.58								
8.1	-1.24	26.75	33.30	88.8	-1.08	27.85	34.58								
9.1	-1.27	26.74	33.35	89.8	-1.06	27.84	34.56								
10.1	-1.29	26.74	33.38	90.9	-1.08	27.76	34.56								
11.1	-1.32	26.73	33.40	91.9	-1.13	27.78	34.58								
12.1	-1.33	26.74	33.42	92.9	-1.14	27.90	34.62								
13.1	-1.35	26.74	33.44	93.9	-1.08	27.88	34.61								
14.1	-1.36	26.74	33.45	94.9	-1.02	27.91	34.60								
15.1	-1.37	26.73	33.46	95.9	-0.99	27.96	34.59								
16.2	-1.38	26.74	33.47	96.9	-0.97	28.02	34.63								
17.2	-1.39	26.75	33.49	97.9	-0.92	28.05	34.64								
18.2	-1.40	26.74	33.50	98.9	-0.88	28.08	34.64								
19.2	-1.41	26.73	33.51	99.9	-0.84	28.12	34.64								
20.2	-1.44	26.72	33.52	101.0	-0.81	28.15	34.65								
21.2	-1.46	26.72	33.53	102.0	-0.78	28.16	34.65								
22.2	-1.50	26.72	33.58	103.0	-0.76	28.20	34.66								
23.2	-1.53	26.83	33.66	104.0	-0.74	28.20	34.67								
24.2	-1.55	26.88	33.76	105.0	-0.74	28.10	34.65								
25.2	-1.54	26.95	33.85	106.0	-0.79	28.07	34.64								
26.2	-1.52	26.96	33.89	107.0	-0.87	28.02	34.65								
27.3	-1.53	26.99	33.94	108.0	-0.95	27.98	34.68								
28.3	-1.54	27.00	33.99	109.0	-0.99	27.97	34.68								
29.3	-1.57	27.00	34.03	110.0	-1.00	27.98	34.67								
30.3	-1.59	26.98	34.05	111.0	-1.00	27.98	34.67								
31.3	-1.61	26.99	34.07	112.1	-0.99	27.98	34.67								
32.3	-1.62	26.98	34.08	113.1	-0.99	27.98	34.67								
33.3	-1.63	26.99	34.09	114.1	-0.99	27.99	34.68								
34.3	-1.63	27.00	34.10	115.1	-0.99	28.00	34.68								
35.3	-1.64	27.00	34.11	116.1	-0.95	28.13	34.71								
36.3	-1.65	27.00	34.13	117.1	-0.89	28.18	34.72								
37.4	-1.66	27.00	34.13	118.1	-0.81	28.22	34.72								
38.4	-1.66	27.02	34.15	119.1	-0.74	28.28	34.71								
39.4	-1.67	27.04	34.17	120.1	-0.69	28.35	34.73								
40.4	-1.63	27.06	34.15	121.1	-0.63	28.40	34.74								
41.4	-1.63	27.07	34.18	122.2	-0.55	28.54	34.77								
42.4	-1.64	27.07	34.20	123.2	-0.46	28.57	34.76								
43.4	-1.69	27.04	34.25	124.2	-0.40	28.65	34.81								
44.4	-1.69	27.04	34.24	125.2	-0.34	28.65	34.78								
45.4	-1.70	27.05	34.24	126.2	-0.29	28.75	34.81								
46.4	-1.71	27.04	34.25	127.2	-0.24	28.66	34.75								
47.4	-1.72	27.06	34.27	128.2	-0.21	28.85	34.81								
48.5	-1.73	27.05	34.27	129.2	-0.17	28.84	34.81								
49.5	-1.73	27.05	34.28	130.2	-0.14	28.88	34.86								
50.5	-1.74	27.05	34.28	131.2	-0.08	28.96	34.85								
51.5	-1.74	7.04	34.29	132.2	-0.04	29.01	34.87								
52.5	-1.75	7.05	34.29	133.3	0.03	29.11	34.88								
53.5	-1.74	27.06	34.29	134.3	0.09	29.13	34.89								
54.5	-1.74	27.07	34.30	135.3	0.13	29.12	34.89								
55.5	-1.73	27.08	34.31	136.3	0.13	29.13	34.90								
56.5	-1.72	27.12	34.32	137.3	0.14	29.19	34.91								
57.5	-1.69	27.16	34.33	138.3	0.18	29.29	34.94								
58.6	-1.66	27.20	34.35	139.3	0.30	29.54	34.98								
59.6	-1.64	27.19	34.35	140.3	0.46	29.55	34.96								
60.6	-1.62	27.22	34.36	141.3	0.61	29.63	34.94								
61.6	-1.60	27.25	34.37	142.3	0.67	29.67	34.93								
62.6	-1.58	27.27	34.37												
63.6	-1.56	27.28	34.38												
64.6	-1.54	27.30	34.38												
65.6	-1.53	27.32	34.39												
66.6	-1.51	27.35	34.40												
67.6	-1.50	27.37	34.41												
68.6	-1.47	27.41	34.43												
69.7	-1.45	27.42	34.43												
70.7	-1.43	27.43	34.43												
71.7	-1.42	27.45	34.43												
72.7	-1.40	27.48	34.44												
73.7	-1.38	27.49	34.45												
74.7	-1.36	27.53	34.46												
75.7	-1.33	27.56	34.47												
76.7	-1.31	27.59	34.48												
77.7	-1.29	27.60	34.49												
78.7	-1.27	27.64	34.50												
79.8	-1.25	27.66	34.51												

ICE-BAR 1995
XCTD Data Station "65A"
Date 25/JUNE 2110 UT Lat 77°13.73' Lon 28°59.59'

Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)
0.0	-0.41	26.67	32.34	80.8	1.12	30.19	35.21	161.5	1.14	30.32	35.30				
1.0	-0.37	26.70	32.32	81.8	1.12	30.20	35.22	162.5	1.15	30.32	35.29				
2.0	-0.41	26.76	32.44	82.8	1.13	30.25	35.22	163.5	1.15	30.33	35.29				
3.0	-0.39	26.82	32.42	83.8	1.15	30.23	35.22	164.6	1.14	30.32	35.30				
4.0	-0.36	26.93	32.50	84.8	1.14	30.17	35.21	165.6	1.14	30.32	35.30				
5.0	-0.31	27.00	32.55	85.8	1.09	30.09	35.19	166.6	1.14	30.32	35.30				
6.1	-0.28	27.04	32.61	86.8	1.02	30.05	35.20	167.6	1.15	30.33	35.29				
7.1	-0.27	27.03	32.65	87.8	0.95	30.02	35.21	168.6	1.15	30.32	35.29				
8.1	-0.32	27.02	32.70	88.8	0.90	29.94	35.21	169.6	1.15	30.33	35.29				
9.1	-0.36	26.96	32.71	89.8	0.86	29.93	35.20	170.6	1.14	30.33	35.30				
10.1	-0.43	26.95	32.75	90.9	0.83	29.94	35.20	171.6	1.14	30.33	35.30				
11.1	-0.50	26.87	32.76	91.9	0.84	29.99	35.21	172.6	1.15	30.33	35.29				
12.1	-0.57	26.93	32.82	92.9	0.86	29.95	35.20	173.6	1.15	30.33	35.29				
13.1	-0.61	26.91	32.85	93.9	0.87	29.97	35.19	174.6	1.15	30.34	35.29				
14.1	-0.65	26.91	32.91	94.9	0.86	29.97	35.19	175.7	1.15	30.33	35.30				
15.1	-0.71	26.90	32.96	95.9	0.87	30.00	35.20	176.7	1.14	30.33	35.30				
16.2	-0.79	26.87	33.03	96.9	0.89	30.01	35.20	177.7	1.14	30.33	35.30				
17.2	-0.90	26.81	33.10	97.9	0.91	30.03	35.20	178.7	1.14	30.33	35.30				
18.2	-0.99	26.83	33.17	98.9	0.92	30.04	35.20	179.7	1.14	30.34	35.30				
19.2	-1.07	26.86	33.25	99.9	0.94	30.07	35.21								
20.2	-1.09	27.46	33.57	101.0	0.95	30.07	35.21								
21.2	-1.04	27.56	33.85	102.0	0.96	30.08	35.22								
22.2	-0.96	27.56	34.08	103.0	0.97	30.10	35.22								
23.2	-0.92	27.60	34.09	104.0	0.98	30.12	35.22								
24.2	-0.94	27.59	34.13	105.0	1.00	30.14	35.23								
25.2	-0.99	27.55	34.17	106.0	1.02	30.13	35.23								
26.2	-1.05	27.50	34.20	107.0	1.02	30.15	35.23								
27.3	-1.11	27.49	34.22	108.0	1.03	30.16	35.23								
28.3	-1.15	27.46	34.23	109.0	1.04	30.17	35.24								
29.3	-1.21	27.37	34.24	110.0	1.05	30.16	35.23								
30.3	-1.22	27.56	34.28	111.0	1.04	30.17	35.24								
31.3	-1.18	27.59	34.29	112.1	1.05	30.17	35.23								
32.3	-1.09	27.63	34.30	113.1	1.05	30.17	35.24								
33.3	-1.04	27.66	34.29	114.1	1.05	30.18	35.24								
34.3	-0.98	27.86	34.35	115.1	1.04	30.16	35.24								
35.3	-0.86	27.97	34.37	116.1	1.05	30.17	35.24								
36.3	-0.75	27.96	34.38	117.1	1.04	30.17	35.24								
37.4	-0.67	28.09	34.39	118.1	1.05	30.17	35.24								
38.4	-0.60	28.27	34.45	119.1	1.05	30.19	35.25								
39.4	-0.49	28.32	34.49	120.1	1.05	30.18	35.25								
40.4	-0.37	28.48	34.52	121.1	1.05	30.19	35.25								
41.4	-0.26	28.65	34.56	122.2	1.06	30.19	35.24								
42.4	-0.15	28.73	34.62	123.2	1.06	30.19	35.24								
43.4	-0.05	28.85	34.67	124.2	1.06	30.20	35.24								
44.4	0.02	28.92	34.70	125.2	1.06	30.19	35.25								
45.4	0.07	29.01	34.76	126.2	1.06	30.19	35.25								
46.4	0.13	29.11	34.80	127.2	1.05	30.19	35.25								
47.4	0.18	29.09	34.83	128.2	1.06	30.19	35.25								
48.5	0.15	28.99	34.85	129.2	1.06	30.20	35.25								
49.5	0.00	[illegible]	34.88	130.2	1.05	30.20	35.26								
50.5	-0.21	[illegible]	34.93	131.2	1.05	30.21	35.27								
51.5	-0.40	28.54	34.95	132.2	1.05	30.21	35.27								
52.5	-0.49	28.51	34.95	133.3	1.05	30.21	35.27								
53.5	-0.54	28.51	34.92	134.3	1.05	30.21	35.27								
54.5	-0.53	28.55	34.91	135.3	1.06	30.21	35.26								
55.5	-0.50	28.57	34.90	136.3	1.06	30.21	35.26								
56.5	-0.47	[illegible]	34.90	137.3	1.06	30.21	35.26								
57.5	-0.44	28.63	34.91	138.3	1.07	30.22	35.25								
58.6	-0.43	28.65	34.93	139.3	1.07	30.22	35.25								
59.6	-0.38	28.78	34.96	140.3	1.07	30.21	35.25								
60.6	-0.30	28.86	34.97	141.3	1.07	30.21	35.25								
61.6	-0.19	28.97	34.98	142.3	1.08	30.21	35.24								
62.6	-0.11	28.99	34.98	143.4	1.08	30.22	35.24								
63.6	-0.04	29.08	35.00	144.4	1.07	30.21	35.25								
64.6	0.00	29.23	35.06	145.4	1.07	30.21	35.25								
65.6	0.13	29.38	35.08	146.4	1.08	30.21	35.24								
66.6	0.23	29.47	35.08	147.4	1.08	30.22	35.24								
67.6	0.44	29.61	35.07	148.4	1.07	30.21	35.25								
68.6	0.57	29.80	35.10	149.4	.07	30.20	35.24								
69.7	0.70	29.86	35.12	150.4	.07	30.21	35.24								
70.7	0.32	29.92	35.13	151.4	.08	30.23	35.23								
71.7	0.87	29.97	35.14	152.4	1.08	30.24	35.25								
72.7	0.91	30.03	35.16	153.4	1.08	30.26	35.27								
73.7	0.96	30.11	35.19	154.5	1.09	30.27	35.27								
74.7	1.01	30.12	35.19	155.5	1.10	30.28	35.28								
75.7	1.05	30.15	35.20	156.5	1.11	30.29	35.28								
76.7	1.08	30.20	35.21	157.5	1.12	30.30	35.28								
77.7	1.10	30.20	35.21	158.5	1.13	30.31	35.28								
78.7	1.12	30.21	35.21	159.5	1.15	30.32	35.28								
79.8	1.13	30.20	35.21	160.5	1.14	30.32	35.29								

ICE-BAR 1995
XCTD Data Station "•95009"
Date 26/JUNE 1525 UT Lat 76°39.09' Lon 26°00.00'

Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)
0.0	-0.34	27.34	33.16												
1.0	-0.45	27.50	33.48												
2.0	-0.52	27.48	33.53												
3.0	-0.52	27.52	33.56												
4.0	-0.58	27.55	33.64												
5.0	-0.63	27.55	33.74												
6.1	-0.68	27.55	33.80												
7.1	-0.72	27.54	33.84												
8.1	-0.73	27.52	33.84												
9.1	-0.75	27.51	33.84												
10.1	-0.78	27.52	33.86												
11.1	-0.82	27.50	33.90												
12.1	-0.86	27.49	33.94												
13.1	-0.88	27.49	33.94												
14.1	-0.89	27.49	33.95												
15.1	-0.92	27.48	33.98												
16.2	-0.95	27.48	34.00												
17.2	-0.97	27.46	34.02												
18.2	-0.99	27.45	34.02												
19.2	-1.01	27.45	34.03												
20.2	-1.02	27.45	34.04												
21.2	-1.03	27.46	34.05												
22.2	-1.04	27.45	34.06												
23.2	-1.06	27.43	34.08												
24.2	-1.08	27.43	34.09												
25.2	-1.10	27.42	34.10												
26.2	-1.12	27.42	34.11												
27.3	-1.13	27.42	34.12												
28.3	-1.15	27.42	34.13												
29.3	-1.15	27.42	34.14												
30.3	-1.16	27.41	34.15												
31.3	-1.17	27.41	34.15												
32.3	-1.19	27.41	34.17												
33.3	-1.21	27.39	34.18												
34.3	-1.23	27.37	34.19												
35.3	-1.26	27.36	34.20												
36.3	-1.29	27.35	34.22												
37.4	-1.31	27.34	34.22												
38.4	-1.32	27.35	34.22												
39.4	-1.32	27.34	34.22												
40.4	-1.33	27.35	34.23												
41.4	-1.33	27.34	34.23												
42.4	-1.34	27.34	34.24												
43.4	-1.35	27.34	34.25												
44.4	-1.36	27.34	34.26												
45.4	-1.37	27.33	34.26												
46.4	-1.37	27.32	34.26												
47.4	-1.39	27.31	34.26												
48.5	-1.40	27.31	34.26												
49.5	-1.41	27.30	34.27												
50.5	-1.41	27.31	34.27												

ICE-BAR 1995

XCTD Data   Station "-95010"

Date 27/JUNE 0052 UT   Lat 76°04.83' Lon 24°00.00'

Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)
0.0	0.76	29.17	34.33												
1.0	0.76	29.17	34.34												
2.0	0.77	29.21	34.37												
3.0	0.[illegible]	29.22	34.38												
4.0	0.[illegible]	29.20	34.40												
5.0	0.[illegible]	29.12	34.42												
6.1	0.64	29.10	34.43												
7.1	0.57	29.08	34.46												
8.1	0.52	29.06	34.47												
9.1	0.49	29.03	34.48												
10.1	0.47	29.02	34.49												
11.1	0.44	29.01	34.49												
12.1	0.42	29.01	34.51												
13.1	0.40	29.01	34.52												
14.1	0.40	29.01	34.52												
15.1	0.39	29.01	34.53												
16.2	0.38	29.01	34.54												
17.2	0.37	29.00	34.54												
18.2	0.37	29.01	34.55												
19.2	0.36	29.01	34.56												
20.2	0.36	29.02	34.56												
21.2	0.36	29.02	34.57												
22.2	0.36	29.03	34.57												
23.2	0.35	29.01	34.58												
24.2	0.35	29.02	34.58												
25.2	0.34	29.02	34.59												
26.2	0.34	29.03	34.59												
27.3	0.35	29.05	34.60												
28.3	0.36	29.06	34.61												
29.3	0.37	29.08	34.61												
30.3	0.38	29.09	34.62												
31.3	0.39	29.11	34.63												
32.3	0.39	29.09	34.63												
33.3	0.39	29.10	34.64												
34.3	0.38	29.11	34.65												
35.3	0.38	29.10	34.65												
36.3	0.38	29.10	34.65												
37.4	0.38	29.11	34.65												
38.4	0.37	29.10	34.65												
39.4	0.37	29.09	34.65												
40.4	0.37	29.10	34.66												
41.4	0.37	29.10	34.65												
42.4	0.36	29.10	34.66												
43.4	0.36	29.10	34.66												
44.4	0.36	29.11	34.66												
45.4	0.37	29.11	34.66												
46.4	0.37	29.11	34.66												
47.4	0.37	29.11	34.66												
48.5	0.37	29.10	34.66												
49.5	0.36	29.10	34.66												
50.5	0.36	29.10	34.66												
51.5	0.36	29.10	34.67												
52.5	0.35	29.10	34.67												
53.5	0.35	29.10	34.67												
54.5	0.35	29.10	34.67												
55.5	0.35	29.09	34.66												
56.5	0.35	29.10	34.66												
[illegible].5	0.34	29.09	34.67												

ICE-BAR 1995

XCTD Data Station "-95011"

Date 27/JUNE 0520 UT Lat 75°21.67' Lon 22°00.00'

Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)
0.0	0.86	28.99	34.00												
1.0	0.83	29.01	34.04												
2.0	0.80	29.02	34.10												
3.0	0.82	29.05	34.08												
4.0	0.81	29.08	34.12												
5.0	0.80	29.07	34.15												
6.1	0.77	29.07	34.19												
7.1	0.75	29.07	34.21												
8.1	0.74	29.07	34.23												
9.1	0.73	29.07	34.24												
10.1	0.72	29.09	34.25												
11.1	0.73	29.08	34.24												
12.1	0.71	29.09	34.28												
13.1	0.52	28.97	34.43												
14.1	0.51	28.97	34.40												
15.1	0.51	28.98	34.35												
16.2	0.58	29.03	34.30												
17.2	0.44	28.95	34.44												
18.2	0.41	28.93	34.45												
19.2	0.54	29.02	34.30												
20.2	0.40	28.94	34.45												
21.2	0.44	28.97	34.42												
22.2	0.40	28.95	34.44												
23.2	0.66	29.12	34.23												
24.2	0.66	29.13	34.29												
25.2	0.78	29.21	34.27												
26.2	0.77	29.21	34.32												
27.3	0.85	29.27	34.29												
28.3	0.76	29.20	34.39												
29.3	0.75	29.20	34.39												
30.3	0.66	29.14	34.44												

ICE-BAR 1995
XCTD Data Station "•95012"
Date 27/JUNE 0952 UT Lat 74°39.47' Lon 28°00.00'

Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)	Depth (m)	Temp (degC)	Cond (mmho)	Sali (psu)
0.0	2.45	30.48	34.15												
1.0	2.46	30.53	34.20												
2.0	2.47	30.57	34.24												
3.0	2.47	30.56	34.22												
4.0	2.45	30.57	34.25												
5.0	2.44	30.60	34.29												
6.1	2.41	30.56	34.31												
7.1	2.40	30.58	34.33												
8.1	2.39	30.58	34.34												
9.1	2.38	30.58	34.35												
10.1	2.38	30.57	34.34												
11.1	2.38	30.56	34.34												
12.1	2.37	30.58	34.35												
13.1	2.36	30.57	34.36												
14.1	2.35	30.56	34.36												
15.1	2.35	30.58	34.37												
16.2	2.34	30.59	34.38												
17.2	2.34	30.57	34.39												
18.2	2.34	30.58	34.39												
19.2	2.33	30.58	34.40												
20.2	2.32	30.59	34.41												
21.2	2.32	30.58	34.41												
22.2	2.32	30.58	34.41												
23.2	2.32	30.59	34.41												
24.2	2.32	30.58	34.41												
25.2	2.31	30.58	34.42												
26.2	2.31	30.60	34.42												
27.3	2.31	30.60	34.43												
28.3	2.31	30.59	34.43												
29.3	2.30	30.59	34.43												
30.3	2.31	30.60	34.43												
31.3	2.30	30.60	34.44												
32.3	2.30	30.60	34.45												
33.3	2.29	30.58	34.45												
34.3	2.29	30.59	34.45												
35.3	2.29	30.59	34.44												
36.3	2.29	30.60	34.45												
37.4	2.31	30.62	34.44												
38.4	2.33	30.63	34.43												
39.4	2.35	30.64	34.43												
40.4	2.35	30.64	34.43												
41.4	2.35	30.64	34.44												
42.4	2.35	30.63	34.43												
43.4	2.34	30.62	34.43												
44.4	2.33	30.62	34.43												
45.4	2.33	30.62	34.44												
46.4	2.33	30.66	34.45												
47.4	2.34	30.65	34.44												
48.5	2.36	30.65	34.44												
49.5	2.35	30.67	34.45												
50.5	2.35	30.65	34.45												
51.5	2.34	30.64	34.46												
52.5	2.34	30.66	34.46												
53.5	2.33	30.65	34.46												
54.5	2.33	30.64	34.47												
55.5	2.34	30.70	34.47												
56.5	2.38	30.71	34.46												

Appendix 6

Physical Oceanography Program

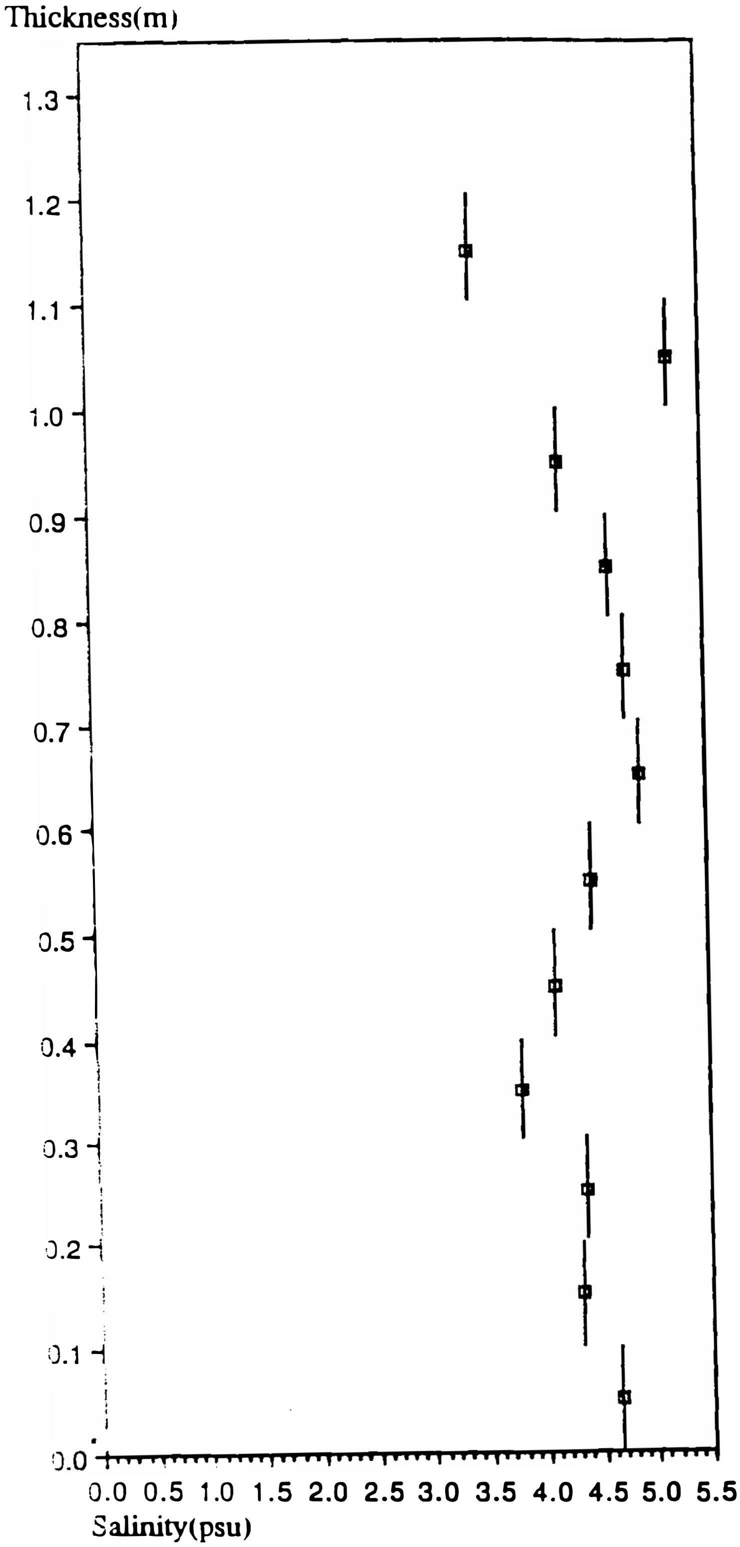
Sea-ice core sampling data

ICE-BAR 1995

SEA-ICE CORE Sampling Data Station"41A"

Date 15/June 1200 UT Lat 78°04.80′ Lon 34°16.90′

Thickness(m)	Salinity(psu)
0.0~0.10	4.65
0.10~0.20	4.32
0.20~0.30	4.36
0.30~0.40	3.79
0.40~0.50	4.11
0.50~0.60	4.43
0.60~0.72	4.90
0.72~0.80	4.78
0.80~0.90	4.63
0.90~1.00	4.20
1.00~1.10	5.22
1.10~1.18	3.43
1.18~1.32	------

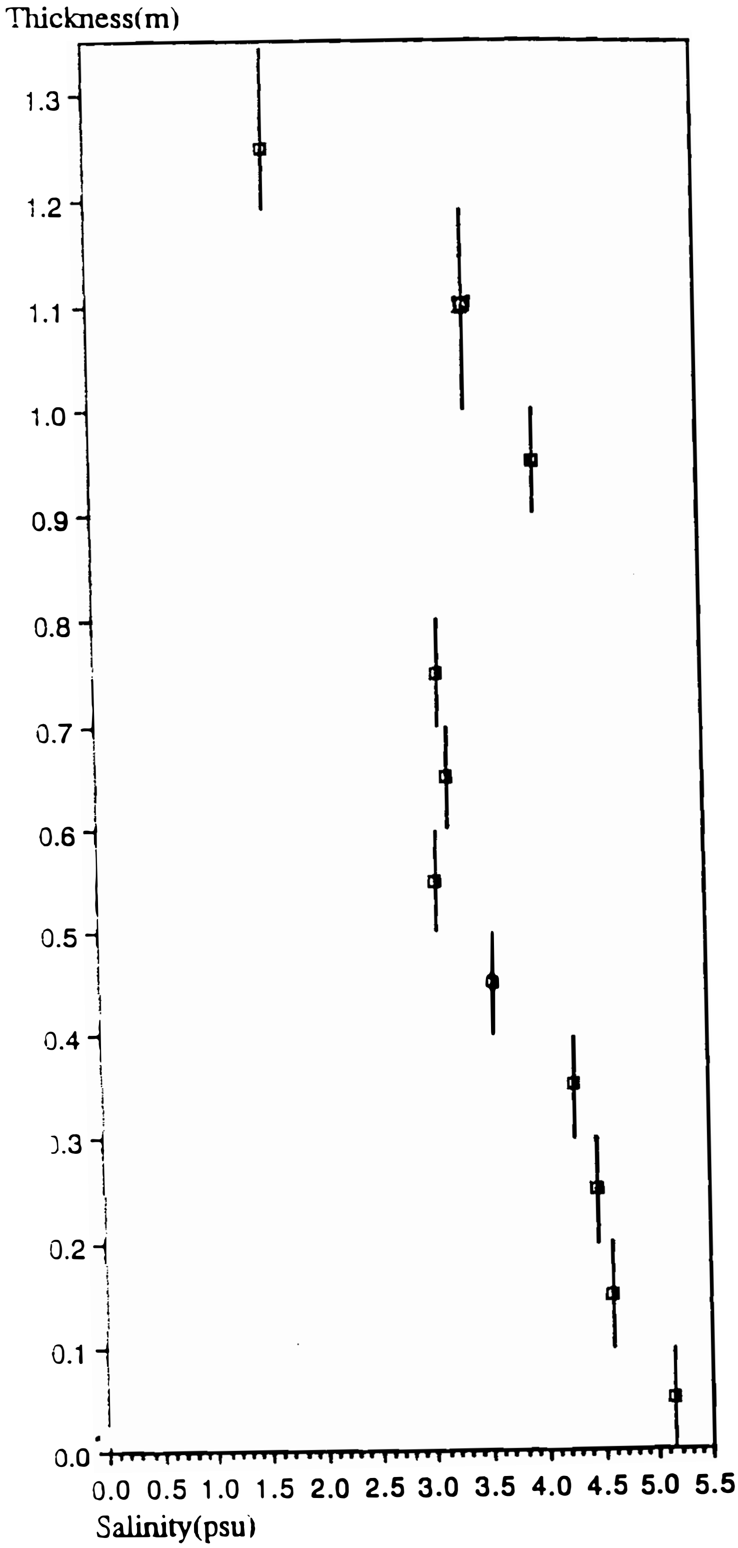


ICE-BAR 1995

SEA-ICE CORE Sampling Data Station"52F"

Date 19/June 1818 UT Lat 77°39.60′ Lon 34°16.90′

Thickness(m)	Salinity(psu)
0.0*~0.10	5.14
0.10~0.20	4.58
0.20~0.30	4.46
0.30~0.40	4.28
0.40~0.50	3.56
0.50~0.60	3.06
0.60~0.70	3.18
0.70~0.80	3.12
0.80~0.90	------
0.90~1.00	4.00
1.00~1.19	3.40
1.19~1.34	1.62



ICE-BAR 1995

SEA-ICE CORE Sampling Data Station"59C"

Date 23/June 1254 UT Lat 77°39.20′ Lon 34°56.40′

Thickness(m)	Salinity(psu)
0.0*~0.10	4.58
0.10~0.20	4.32
0.20~0.30	4.44
0.30~0.40	4.57
0.40~0.50	4.00
0.50~0.60	2.59
0.60~0.70	1.70
0.70~0.79	0.89