Northwest Atlantic Fisheries Organization

Serial No. N1352

NAFO SCR Doc. 87/63

SCIENTIFIC COUNCIL MEETING - JUNE 1987

Marine Environmental Data Service Report for 1986/87

by

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A. Introduction

This year has been a productive year in the number of stations which have reached MEDS. As well, more data has been processed from all sources this year than last. There has been almost twice as much data received via the Global Telecommunications System and increases from other sources as well. The numbers of historical stations received and processed has also shown a substantial increase.

This year the report has added a display of the drifting buoy data held at MEDS and which were collected in the NAFO area. The table reporting these data has also been expanded to include that collected by personnel at the Bedford Institute. A new section listing the current meter moorings which were in operation has also been included. A compilation of the amount of data in MEDS files along each of the NAFO standard sections is included. The table is intended to give an idea of the data availability. More detailed analyses are required for those wishing to know the exact amount of data. Finally, a more comprehensive review of environmental conditions has been made. The review has been based on three different sources. While it was not possible to examine the details of all of the analyses, the comparison of the different results highlighted at least one item of note. That was, that conclusions of the typicalness of environmental conditions depends upon what basis was used for the evaluation.

It may be of interest to NAFO participants to know of MEDS monthly publication, called its Monthly Monitor. The publication is broken into 3 regions, one being the Canadian east coast, and shows the monthly acquisitions of data collected in real time that have reached MEDS. Shortly, it will be expanded to show drifting buoy tracks as well. Those interested in receiving this, need only contact MEDS or MEDS' NAFO representative. There is no charge for this publication.

B. 1986 Data Not Yet Received by MEDS

Table 1 lists the data that have been collected in the NAFO area in 1986, about which MEDS knows and which have not yet reached us. There are about 1300 stations. This represents a reduction from last year by about 50%. While it may be that data is reaching us in a more timely way, it may also be that we do not know of all the data collections that have taken place. Since the methods to find out which cruises have occurred are the same as employed last year, we infer that data are reaching MEDS more quickly.

C. 1986 Data Received and Processed

This year there has been a decrease in the numbers of stations received and processed by MEDS from the NAFO area over that reported for last year. However, much of the data listed last year which was unprocessed has now

been inserted into our data bases. This is reflected in the tables to follow. Nearly all of the data listed in table 2 has been processed. The major exceptions are the data derived from the Canadian navy.

Table 3 records the data received via the GTS. There were a substantial number received this way (some of which is duplicated in table 2). In comparison to last year, there was almost twice as much received this year. Figures 1 and 2 show the locations of all BATHY and TESAC data received at MEDS during 1986.

The figures of Appendix A display vertical sections of temperature and salinity for all standard sections which have been processed. The most popular section this past year appears to have been Seal Island. There are a total of 6 sections represented.

D. Drifting Buoy Data Received in 1986

Table 4 lists the drifting buoys that were operating in the NAFO area in 1986 and which reported either over the GTS or were collected by scientists at the Bedford Institute. The GTS buoys have 5 digit numbers while those from the Bedford institute have 4 digit numbers. Buoys which show no associated oceanographic observations were used to get position information only. Figure 3 shows the complete tracks of all of the buoys which reported over the GTS in 1986.

E. Current Meter Moorings in 1986

This year a new section has been added to indicate the current meter moorings that have been made in the NAFO area this year. The information appears in table 5. The ID is that used by the Bedford Institute, the primary archive of these data. The depth is given in metres. The last two columns indicate the mean current speeds, in m/sec, to the East and to the North over the entire record.

F. Historical Data Acquisitions

Table 6 lists the historical data received and/or processed at MEDS during 1986. There has been a significant increase in the processing done this. One reason is that the CTD processing system is finally in production and working smoothly. A number of the cruises represented in the table represent CTD cruises from past years. The second is that we have not had staff changes such as characterized other years. These factors have combined to show a very productive year. Overall this year, we have received and/or processed about 13,000 stations from past years and collected in the NAFO area. This represents almost a 700% increase over last year. The contents of table 6 were compared to the table presented last year of data collected in 1985 but which had not reached MEDS. There is no overlap between the two tables. Not all of the data listed in table 6 have been fully processed this year. The major exception is the data from the Federal Republic of Germany. While a tape of data was received we are still sorting out the format and writing software to deal with it. Other exceptions are data from the Canadian navy and a few other cruises. Overall, a substantial fraction of the cruises listed have been fully or partially processed.

We have also acquired the complete holdings of the US NODC for the Canadian area which includes the NAFO area. These will start through our processing system this year. The results of this work will be reflected next year in the table listing MEDS historical data acquisitions. The task is complicated by having to distinquish between data which we already hold and new information. It is hoped that the major portion of these data will be processed by next year. We anticipate that there will be substantial increases to our XBT/MBT and CTD files as a result.

G. Cumulative Summary of Data Available Along Standard NAFO Sections

This year a presentation, table 7, is made of the numbers of observations in every NAFO standard section. These represent all of MEDS holdings up to April, 1987. The list of sections on which this table is based is given by Anon, 1978. While some countries have their own set of standard sections, these are not represented here. The table attempts to portray how often the section was occupied, but not having examined every cruise, these numbers should be used as a guide only. The information was

compiled by extracting the data from a polygonal area surrounding the section with boundaries of one half degree of latitude or longitude on both sides. The data in each were then examined to determine the number of separate years in which observations were collected as well as earliest and latest observations, and numbers collected by month. Section occupations are a little more difficult to specify. With bulk data retrievals, cruises are not kept together. So, it is necessary to specify the time between stations which permits including both as part of a section occupation. This was done by examining numbers of stations occupied in each month in each year. Section occupations was inferred by the number of stations sampled. While this is undoubtedly not correct, it should yield an adequate indication of the number of times a section hase been occupied. Those interested in specific data holdings should contact the MEDS.

Overall, there are a number of sections along which it would appear possible to investigate the long term properties of the water column. The prime candidate would be the Halifax section although there are a number of others that also look to be likely candidates.

H. Review of Environmental Conditions

The review below is based on three sources. The first is sea surface temperature and temperature anomaly maps received from the National Weather Service in the United States. The second is the monthly State of the Ocean reports issued by Bedford Institute of Oceanography (BIO), which is itself based on maps supplied by NOAA/NESS in the United States, and independent observations made by BIO staff. The third is an analysis made of surface and subsurface conditions as described by Keeley in the June, 1985 MEDS report to NAFO and another report to NAFO this year. Keeley's analyses are the only ones to indicate subsurface conditions and salinity anomalies. The subsurface tends to reflect that at the surface but there are changes in areal extent of cold or warm anomalies as one progresses to deeper depths. As noted previously by Keeley, fresher than normal salinities appear to be associated with cooler temperature anomalies and this is again indicated in the analyses presented this year.

Overall, it was noticed that all of these sources show some disagreements between each other. This is undoubtedly a result of the differing analysis techniques. What is presented below is an attempt to combine all of the information. Readers wishing more details should consult each of these sources separately.

Subareas 0 and 1:

The year began with cold sea surface temperature anomalies in these regions. These moderated to near normal values by the beginning of May although the northern areas still experienced surface temperatures below normal. By August, surface temperatures had again fallen below normal for a short time, to then become warmer than normal into November. After November, sea surface temperatures were colder than normal. Minimum cold anomalies were noted in March, while maximum warm values occurred in late August and into September. Sea surface temperatures north of Davis Strait were colder than normal through the entire year.

Subareas 2 and 3:

In these areas, the sea surface temperature started near or slightly colder than normal. Surface temperatures in the region of the Flemish Cap and Station 27 were cooler than normal into February. By March, temperatures in subarea 2 had become warmer or near normal. Into March and April, temperatures in subarea 3 were still below normal but warming to seasonal values although surface temperatures in the Flemish Cap region still were much below normal. Into May, warmer temperatures appeared close to Newfoundland. By June, near normal to warm anomalies had returned to most of these areas and these conditions generally persisted into early August. In the Grand Banks region, temperatures were slightly below normal for part of July. Normal to slightly warmer surface temperatures appeared to persist generally into October. The South East Shoal region reported cool anomalies in September. Into October and after, cold anomalies began once more to dominate the areas. These colder than normal conditions persisted until the end of 1986.

Ice conditions on the Labrador coast were near normal at the beginning of 1986. By March, the ice was farther east and south east compared to its normal position. The ice retreated to more usual locations by April and was mostly gone by the expected dates in May.

Early in 1986, there were 2 eddies that appeared to be forming in the area near the tail of the Grand Banks. These were later reabsorbed into the Gulf Stream. In May, another eddy appeared and was joined in June by two others. These three persisted into August drifting slowly to the west. In August, none of these eddies showed appreciable movement. These circumstances continued in October at which time 2 of the eddies had disappeared. By the end of the year, the last remaining eddy had drifted west into subarea 4.

Subarea 4:

Information sources disagree on whether surface temperatures at the start of 1986 were below or above normal values. The US anomaly charts indicate below normal conditions while reports from BIO indicate the opposite. In either case, values are not greatly different from mean temperatures. BIO reports indicate that the surface temperatures in the Gulf of Maine were warmer than average in February, supported by Keeley, but cooling to near normal values by March. US maps show near normal conditions everywhere by March as well. Into April and May, temperatures at the surface tended to be warmer than normal in the Gulf of Maine while close to or slightly above the long term average throughout the rest of the subarea. Into the summer months, temperatures were a little above normal in the Cape Sable and Gulf of Maine regions of this subarea. There is disagreement here by Keeley who shows normal to below normal temperatures at this time of year. Progressing into the autumn and early winter, surface temperatures returned to normal or below normal values. The cooling trend first appeared in the southern part of the subarea and spread to the north. BIO reports and US maps disagree again at the end of 1986 as to whether the year finished warmer or colder than normal.

At the beginning of 1986 ice conditions were heavier than normal in the Gulf of St. Lawrence. The edge of the ice in Cabot Strait was close to its historical maximum position. Into February, the ice edge retreated to a more normal postion. Ice conditions throughout the subarea were generally near normal in February, March and April. Some exceptions were more than usual open water in the Gulf of St. Lawrence in March and more ice than normal in the Strait of Belle Isle in April. Ice disappeared from this subarea in the usual time in May.

During January four eddies were present and these were largely stationary. During February, the eddies drifted slowly west and south. Two of them were reabsorbed into the Gulf Stream in March. In the same month, two eddies were spawned by the Gulf Stream. There were still four eddies present in April but two were drifting south into subareas 5 and 6 where they were to be found in May. In June there were 4 eddies and this reduced to three by July. During this time there was little movement of the eddies. By September, one of the eddies had joined the Gulf Stream once more. Two eddies were created into November and 1 disappeared. Finally, by December, there were still three eddies present in this subarea.

Subareas 5 and 6:

In these areas, the year began with the tendency towards warmer than normal surface temperatures although values were close to normal. Going into May, US maps indicate cooling surface temperatures, while BIO reports do not. BIO reports indicate near normal with a tendency to be above normal surface temperatures in July and gradually cooling to normal values by the end of the year. Keeley's maps indicate normal to below normal temperatures. US maps show conditions starting near normal but cooling to below normal values by the end of the year. This disagreement could be the result of a difference in absolute value of the climatology against which surface temperatures are judged.

Two rings reported in subarea 4 in March, moved down into these subareas by April. These persisted in May showing decreases in size. They were still present into June. By July there were three rings in these subareas and none were moving quickly. By the early winter, one of these had been reabsorbed into the Gulf Stream while a new one formed in December.

I. References

Anonymous, 1978, List of ICNAF Standard Oceanographic Sections and Stations, International Commission for the Northwest Atlantic Fisheries, Selected Papers No. 3, p109-117.

Keeley, J.R., 1987, Temperature and salinity anomalies of the Northwest Atlantic in 1986, submitted to NAFO, June, 1987.

Table 1: Data collected in the NAFO area in 1986 but not yet received at MEDS. Total = 1353 stations

Ship Name	Cruise Period	NAFO Subarea	Standard Section	Number	Reference
		Canada			
Needler	14-27 Jan			33	NAFO
Needler	8-17 Jul			19	Other
Needler	23-28 Jul			8	Other
Hudson	7-26 Aug	0,1,2		70	ROSCOP
Dawson	12-22 Sep	3O		50	ROSCOP
Hudson	27 Sep - 5 Oct	2G		165	ROSCOP
Hudson	8-21 Oct			76	ROSCOP
		Denmark			
A.Jensen	6-12 Apr	1DEF	Frederik.	5	NAFO
			C.Desolat.	5	
			C.Farewell	5	
			Fylla	5	
A.Jensen	Apr-Jun	1		27	NAFO
A.Jensen	18-29 Jun	1BCD	Fylla	1	NAFO
			Egedesmin.	6	
			Holsteinb.	5	
			L.Hellefis.	5	
A.Jensen	Jul-Sep	1		49	NAFO
A.Jensen	29 Dec	1D	Fylla	5	NAFO
		FRANCE			
Cryos	Jan-Mar	3Ps		104	NAFO
		USA			
Oceanus	Jul-Sep	5Y		10	NAFO
Delaware II	7 Jan - 12 Feb	4,5,6		174	NAFO
Delaware II	6 May - 7 Jun	4,5,6		164	NAFO
Delaware II	25 Aug- 24 Sep	4,5,6		156	NAFO
Delaware II	3 Nov - 12 Dec	4,5,6		161	NAFO
Albatross IV	28-30 Apr	5		5	NAFO
Albatross IV	14-20 Nov	5		42	NAFO

Codes: ROSCOP = Information has been extracted from ROSCOP forms.
NAFO = Information has been extracted from NAFO inventory forms.
C.... = Information has been extracted from CAMDI at MEDS.
Other = Personal communications.

Table 2: Data collected in the NAFO area in 1986 and received by MEDS.
Total = 4535 stations

Ship Name	Cruise Period	NAFO Subarea	Data Type BT	Bot	CTD	Cruise Number
		Canada				
W.Templeman	12-20 Jan	2J	12	2		180586001
Ottawa	16 Jan - 13 Mar	6E	73			181886004
Nipigon	20 Jan - 12 Mar	4W,6E	74			181886003
Skeena	21 Jan - 25 Feb	4X,6E	31			181886005
Iroquois	21 Jan - 12 Mar	4W,6E	78			181886002
Huron	21 Jan - 13 Mar	4W,6E	80			181886001
W.Templeman	23 Jan - 3 Feb	3L	92	3		180586026
W.Templeman	6-15 Feb	3LM	58	4		180586027
Gadus	8-18 Feb	2HJ,3KL	88	2		180586002
Shamook	10-23 Feb	3L	25	6		180586015
Gadus	21 Feb	3L	121	2		180586003
W.Templeman	23 Feb	3N	71	1		180586028
Needler(59)	4-11 Mar	4W,5Ze	19	84		180386001
W.Templeman	5-24 Mar	3LPs	157	4		180586029
Gadus	11-23 Mar	3LOPs	98			180586004
Needler(60)	18-25 Mar	4W,5Ze	15	80		180386002
Gadus	27 Mar - 8 Apr	3L	3	2		180586005
Shamook	2-24 Apr	3L	3	28		180586016
W.Templeman	2-9 Apr	3L	80			180586030
W.Templeman	17 Apr - 4 May	3LNO	208	4		180586031
W.Templeman	7-25 May	3L	213	2		180586032
W.Templeman	29 May - 12 Jun	3L	180	2		180586033
Gadus	2 Jun	3L	44	1		180586006
Gadus	5-23 Jun	3KL	179	6		180586007
Shamook	11-12 Jun	3L	6			180586017
Marinus	11 Jun - 2 Jul	3L	149			180586022
Gadus	25 Jun - 6 Jul	3LNO	55	16		180586008
Gadus	8-27 Jul	3L	54	2		180586009
Gadus	29 Jul	3L	141	1		180586010
W.Templeman	1-18 Aug	2J,3KLNO	56	95		180586034
Shamook	3-19 Aug	2J	8	8		180586018
Marinus	5-13 Aug	3L	29			180586023
Gadus	14 Aug - 14 Sep	0AB,2GH	229			180586011
W.Templeman	23 Aug - 8 Sep	3LN	116	4		180586035
Marinus	9-11 Sep	3K	23			180586021
W.Templeman	12-21 Sep	2HJ,3KL	25			180586036
Dawson	13-19 Sep	3NO	63			180586039
Shamook	30 Sep	3L	14	1		180586019
Gadus	10-23 Oct	2HJ,3KL	17	12		180586012
Marinus	12-16 Oct	3K	6			180586024
W.Templeman	14 Oct - 7 Nov	2HJ,3KL	11			180586037
Gadus	2-12 Nov	2J,3KL	55	12		180586013
Shamook	5 Nov	3L	45	1		180586020
Needler	13 Nov - 1 Dec	3LNO	115			180586038
Gadus	27 Nov	3L	79	1		180586014
		USSR				
Boguslav	5 Apr - 11 May	3LMN,6H	9	142		90BW86001
N.Kononov	16 Apr - 3 Jul	CG-3		3		90KV86034
		CG-4		5		
		SW Grand Bank		8		
		7-A		8		
		3		299		
Artemida	14-29 Jun	3LMNO		34		90AZ86325
Vitbbsk	31 Aug - 27 Nov	2J,3KLMNO,6GH	77	170		90BC86006
Klintsy	13 Oct - 18 Nov	0B,2GHJ,3K	63	33		90BB86001

Table 3: IGOSS data received during 1986.
Total = 4856 stations.

Ship Name	Country	Call Sign	Cruise Period	Message Type BATHY	Message Type TESAC	NAFO Subarea
Dawson	Canada	CGBV	10-17 Oct		98	3LN
			15-21 Nov		26	3Pn,4RST
Hudson	Canada	CGDG	21 Apr - 12 May	9	51	3LMN,6H
		CGDG	18 May - 15 Jun	16		3LOPs,4VsW
		CGDG	26 Jul - 23 Aug	34	62	0AB,1A-f,2GHJ 3KL
		CGDG	8-16 Nov	3		4WVs
W. Templeman	Canada	CGDV	12 Jan - 27 Feb	241		2J,3KL
		CGDV	2-9 Apr	77		3NO
		CGDV	17 Apr - 4 May	206		3LNO
		CGDV	1 Jun - 6 Jul	224		3KLNO
		CGDV	1 Aug - 23 Sep	428		0AB,1CD,2JH, 3KLNO
		CGDV	10 Oct - 7 Nov	28		2J,3KLO
A.Needler	Canada	CG2683	8-24 Jul	20		4WX
		CG2683	1-2 Oct	7		4VnVs
		CG2683	15-21 Oct	10		4X
		CG2683	29 Oct - 5 Nov	64		5Ze
Hannover	FRG	DFPU	22-24 Jan	20		1F,2J
		DFPU	30-31 Dec	8		1F,2HJ
Monsoon	USSR	EREA	5 Feb - 2 Apr	97	97	3MN,6HG
		EREA	25 Jun - 17 Jul	47	48	3KLMN,6H
Volna	USSR	EREB	17 Jul - 9 Aug	17	76	3MN,6H
		EREB	18 Aug - 10 Oct		146	3MNO4VsWX,6EFGH
G.Ushakov	USSR	ERET	27 Jan - 21 Mar	145	134	3MN,6GH
		ERET	7-31 Dec	67	1	3MN,6H
E.Krenkel	USSR	EREU	17 Apr - 2 May	36	4	3LMN
		EREU	26 Oct - 16 Nov	76	14	3MNO,6H
		EREU	23 Nov - 19 Dec	92	5	3MNO,4Vs6GH
Artemida	USSR	EWVT	14-23 Jun		28	3LNO
?	?	EXIT	8-10 Jul	7		6AB
Cryos	France	FNBA	19-29 Jan	40		3Pn,4R
		FNBA	11-25 Feb	71		3PnPs
		FNBA	1-11 Mar	35		3Ps
Delaware 2	USA	KNBD	7-22 May	36		5ZeZw,6ABC
		KNBD	27 May - 5 Jun	11		5YZeZw
		KNBD	18-26 Jun	29		6ABC
		KNBD	7-17 Jul	48		5ZeZw,6AB
		KNBD	21 Jul - 7 Aug	31		4X,5ZeZw,6A
		KNBD	13-20 Aug	31		5ZeZw
		KNBD				
Texas Clipper	USA	KVWA	21-22 Jun	12		3NO,4Vs,6F
		KVWA	30-31 Aug	4		6H
?	Norway	LAID	21 Jul	4		6B
USNS Sealift	USA	NIKA	14-17 Mar	6		3MN,4WVs
		NIKA	9-11 Aug	5		3MN,4Vs,6E
Marshfield	USA	NIZX	13-16 Jan	6		3MN,4Vs,6DEF
Northwind	USA	NRFJ	17-29 Jun	16		0B,2GHJ,4R,6ABC
		NRFJ	8-27 Jul	12		0A,1A
		NRFJ	25-31 Aug	19		3NO,4VsWX,6CD
Oleander	Neth.	PJYG	7 Mar	18		6AB
		PJYG	4 Apr	16		6AB
		PJYG	2 May	16		6AB
		PJYG	5-11 Jun	24		6ABD
		PJYG	4 Jul	6		6AB
		PJYG	8-9 Aug	19		6ABCD
		PJYG	18-19 Sep	12		6AB
		PJYG	10 Oct	19		6ABD
		PJYG	15-16 Oct	18		6AB
		PJYG	7 Nov	9		6AB
		PJYG	12-13 Nov	21		6AB
		PJYG	10-11 Dec	14		6AB

Table 3 continued: IGOSS data received during 1986.

Bakkafoss	Iceland	TFXQ	8-9 Jun	11		1F,2J,3KL
		TFXQ	29-30 Sep	8		1F,2J
		TFXQ	24-25 Dec	10		3KL
Boguslav	USSR	UFLR	6 Apr-14 May	9	131	3LMN,4Vs,6GH
Palekh	USSR	UJLN	1-17 Nov	3	40	2J,3K
Prof. Vize	USSR	UPUI	24 Jun-1 Jul	23		1F,3KM
		UPUI	23-26 Jul	11		6GH
N.Kononov	USSR	USOP	1-6 Jan		4	2HJ,3K
		USOP	15 Apr- 3 Jul	1	320	3KLMNO
Klintsi	USSR	UTRZ	13 Oct-9 Nov	19	13	0B,2GHJ,3K
		UTRZ	17-22 Nov	8		2HJ
		UTRZ	29 Nov-11 Dec	25		3LO
Passat	USSR	U2GH	14 May-22 Jun	115	11	3MN,6H
C. Roger	Canada	VCBT	9-19 Jan	10		2J,3KL
		VCBT	6-18 Feb	11		3KL
		VCBT	6-29 Mar	22		3KLN
		VCBT	3-21 Apr	24		3LN
		VCBT	9 Jul- 3 Aug	25		3LNO
		VCBT	19-27 Sep	12		3NO
		VCBT	16-31 Oct	9		3LNO
		VCBT	4-24 Nov	8		2HJ,3KLN
G.Atlantica	Canada	VC9450	2-27 Nov	96		2J,3KL
		VC9450	1-13 Feb	54		2J,3L
L.Hammond	Canada	VC9616	22-24 Jun	17		5Ze
C. North	Canada	VODV	26 Nov-11 Dec	7		3KL
Aircraft	USA	VXN-8	30 Jan	6		4W
		VXN-8	15 Apr	12		4X,6E
		VXN-8	17 Apr	15		6ABC
		VXN-8	19 Apr	15		4Vs
		VXN-8	22 Apr	18		4Vs
		VXN-8	24 Apr	21		4W,6E
		VXN-8	29 Apr- 3 May	43		6DEFGH
Albatross IV	USA	WMVF	13-20 Feb	3		5Ze
		WMVF	25 Feb-16 Mar	28		5ZeZw,6ABC
		WMVF	27 Mar- 3 Apr	24		5ZeZw,6A
		WMVF	8 Apr- 1 May	44		4X,5YZe
		WMVF	10 Jun- 1 Jul	15		5Ze
		WMVF	29 Jul-12 Aug	58		5Zw,6ABC
		WMVF	19-29 Aug	35		5ZeZw
		WMVF	14-17 Sep	4		6BC
		WMVF	22 Oct- 5 Nov	38		4X,5YZeZw
?	USA	WQ7334	3 Feb- 2 Mar	20		6ABC
Researcher	USA	WTER	26 Jun- 9 Jul	13		6ABC

Table 4: Data collected by drifting buoys in 1986.

Buoy Number	Period	Nafo Subarea	SST	AP	WS	WD	TC
44506	26 Mar - 31 Jul	3KLM	X	X			
44507	16 Apr - 23 May	3LN	X				
44509	30 May - 27 Jun	3LN	X				
44510	2 May - 30 Jun	3LMN	X				
44511	21 May - 14 Jul	3MN	X				
44512	12 Jun - 26 Aug	3KLM	X				
44611	1-31 Jan	1F	X	X	X	X	
44621	1 Jan - 20 Mar	0B,1CDEF	X	X			
64521	1-31 Sep	1F	X				
65511	7-23 Jan	1F	X	X			
65516	1 Jan - 31 Jul	1EF	X	X			
	9 Aug - 25 Sep	2GH	X	X			
5414	Jan	0A,1A					
5443	Jan	0A,1A					
5421	Jan - Aug	3M					
5429	1 Jan - 30 Apr	3NO					
2395	25 Jan - Feb	2H					
2398	25 Jan - Feb	2H					
2397	26 Jan - 31 Mar	2HJ,3K					
2396	Feb	2H					
2399	Feb	2H					
2407	10 Feb - 7 Mar	2HJ,3KL					
	1 Apr - 31 Jul						
2361	10 Feb - 7 Mar	2HJ,3KLM					
	1 Apr - 31 Jul						
2394	11 Feb - 31 Mar	2H					
2481	26 Feb - 21 Apr	3LPs	X	X			
	1 May - 31 Aug						
2482	23 Apr - 31 Oct	3LO	X	X			
2417	21 Nov - 31 Dec	4T					X
2517	16 Nov - 31 Dec	4R					X
2521	18 Nov - 31 Dec	4S					X
2522	17 Nov - 31 Dec	4S					X

Codes: SST = Sea surface temperature
AP = Air pressure
WS = Wind speed
WD = Wind direction
TC = Thermistor chain

Table 5. Current meter moorings in 1986.

ID	N Lat	W Long	Depth	Period	Area	East Mean	North Mean
LC0886-2	44.66	63.12	19	25 Jan - 1 Feb	4W	-0.020	-0.007
LC0886-3	44.66	63.12	19	1 Feb - 29 May	4W	-0.002	-0.004
LC0886-5	44.64	63.12	29	4 Feb - 7 Jul	4W	-0.016	-0.002
LC0886-6	44.62	63.12	36	25 Feb - 23 Mar	4W	0.002	0.009
LC0886-4	44.64	63.12	29	4 Mar - 29 May	4W	-0.005	0.002
LC0886-20	44.24	50.07	20	18 Apr - 3 Aug	3N	-0.022	0.022
LC0886-21	44.24	50.07	45	18 Apr - 17 Oct	3N	-0.017	0.017
LC0886-18	47.40	51.80	181	20 Apr - 10 Oct	3L	0.012	-0.032
LC0886-9	46.86	48.72	20	21 Apr - 13 Oct	3L	-0.002	-0.002
LC0886-10	46.86	48.72	30	21 Apr - 13 Oct	3L	-0.010	0.006
LC0886-11	46.86	48.72	60	21 Apr - 23 May	3L	-0.010	0.014
LC0886-12	46.68	48.63	20	21 Apr - 13 Oct	3L	-0.001	-0.007
LC0886-13	46.68	48.63	30	21 Apr - 13 Oct	3L	-0.008	0.001
LC0886-14	46.68	48.63	60	21 Apr - 3 May	3L	0.006	-0.009
LC0886-15	46.89	48.59	24	22 Apr - 13 Oct	3L	0.000	-0.007
LC0886-16	46.89	48.59	24	22 Apr - 13 Oct	3L	-0.005	-0.004
LC0886-17	46.89	48.59	24	22 Apr - 13 Oct	3L	0.008	-0.008
LC0886-19	46.44	47.26	400	24 Apr - 14 Oct	3L	0.004	-0.077
LC0886-7	43.19	65.72	1	27-30 May	4X	-0.070	-0.014
LC0886-8	43.19	65.72	4	27-30 May	4X	-0.075	-0.163

Table 6: Historical data received in MEDS in 1986.
Total = 13078 stations.

Ship Name	Cruise period	NAFO Subarea	Number	Reference
		Canada		
? ? ?	2 Feb - 3 Mar/'69	4W	42	181069006
? ? ?	2-10 Jul/'69	4WX	26	181069035
? ? ?	14 Aug/'69	4W	11	181069046
? ? ?	25 Feb - 7 Mar/'70	4W	58	181070007
? ? ?	26-28 Mar/'70	4W	29	181070011
? ? ?	8-22 Apr/'70	4W	73	181070030
? ? ?	31 Oct - 2 Nov/'70	4TVn	20	181070036
? ? ?	14-15 Apr/'71	4W	44	181071013
? ? ?	30 Apr - 2 May/'74	4W	11	181074011
? ? ?	7 Aug/'74	4W	11	181074029
? ? ?	25-29 Aug/'75	4W	12	181075021
? ? ?	6-10 Sep/'75	4W	10	181075026
? ? ?	1-6 Mar/'76	4W	18	181076003
? ? ?	14-18 Jun/'76	4VsW	28	181076017
? ? ?	25-30 Jun/'76	3Ps,4VnVs	57	181076021
? ? ?	16-19 Aug/'76	4W	12	181076024
Dawson	13-20 Dec/'76	4W	25	181076038
? ? ?	9-12 Mar/'77	4W	38	181077001
Dawson	29 Mar - 6 Apr/'77	4WX	35	181077003
Hudson	15-31 Oct/'77	0B,2GHJ	125	181077029
Maxwell	8-12 Nov/'77	4RST	12	181077033
Dawson	14-20 Nov/'77	4W	58	181077026
Hudson	26 Jan - 11 Apr/'78	2GHJ,3KLM	155	181078002
Dawson	11 Oct - 8 Nov/'78	4VsWX	589	181078031
Dawson	17-22 Nov/'78	4RSTVn	38	181078034
Dawson	2- 5 May/'79	4X	36	181079007
A.T.Cameron	17 May - 4 Jun/'79	3L	97	180579032
Dawson	8-19 Jul/'79	3KLM	86	181079016
Dawson	6-10 Aug/'79	4WX	55	181079022
Dawson	11 Sep - 2 Oct/'79	3MN,6H	41	181079025
A.T.Cameron	24 Sep - 9 Oct/'79	3KL	64	180579033
Dawson	29-30 Sep/'79	4T	30	181079026
Zagreb-7	6 Oct/'79	3L	1	180579031
Dawson	15-21 Nov/'79	4W	51	181079031
Hudson	6- 9 Jan/'80	3LM	11	181080002
Dawson	26 Mar - 2 Apr/'80	4WX	80	181080006
Dawson	9-19 Apr/'80	4RSTVnW	27	181080007
Dawson	9-13 Jun/'80	4X	60	181080018
Dawson	25 Jun - 2 Jul/'80	3LMNOPs	84	181080019
Hudson	17-22 Jul/'80	2J	48	181080026
Dawson	26-29 Jul/'80	3K	107	181080021
Hudson	1-10 Sep/'80	0A	45	181080028
Dawson	6-18 Sep/'80	3MNO,4Vs,6FGH	15	181080029
Dawson	17-21 Oct/'80	3K	34	181080033
Dawson	25-27 Oct/'80	3LOPs	47	181080034
Hudson	28-31 Oct/'80	2J	20	181080037
Dawson	17-18 Nov/'80	4W	74	181080039
Dawson	5-11 Mar/'81	4X,5Ze	27	181081004
Dawson	4-14 Apr/'81	3LNO	44	181081008
Baffin	11 Apr - 9 May/'81	3MN,6H	47	181081007
Pandora	16-20 Apr/'81	4X	75	181081010
Pandora II	26-29 Apr/'81	3KL	41	181081011
Dawson	5-7 May/'81	4W	7	181081014
Baffin	5-6 Aug/'81	2J	14	181081035
Dawson	23-29 Oct/'81	4WX	24	181081040
Dawson	13-22 Nov/'81	4X	72	181081042
Dawson	28 Nov - 2 Dec/'81	4RST	24	181081043
Dawson	23-26 Mar/'82	4W	16	181082005
Gadus	2-21 Apr/'82	3L	46	180582018
Shamook	2-20 Apr/'82	3L	15	180582024
Dawson	11-15 Apr/'82	4T	95	181082007
Dawson	16-20 Apr/'82	4T	24	181082008
Marinus	5-10 May/'82	3L	16	180582028

Table 6 continued : Historical data received in MEDS in 1986.

Ship Name	Cruise period	NAFO Subarea	Number	Reference
? ? ?	24-26 May/'82	3K	7	181082025
Gadus	25 May - 13 Jun/'82	3LMNOPs,4Vs	202	180582019
Shamook	30 Aug - 9 Sep/'82	3L	13	180582026
Gadus	1-7 Sep/'82	3L	7	180582020
Dawson	8-13 Sep/'82	4T	135	181082032
Gadus	9-28 Sep/'82	3L	2	180582021
Dawson	24 Sep - 6 Oct/'82	4WX	11	181082033
Gadus	30 Sep - 26 Oct/'82	3L	2	180582022
Dawson	27 Oct - 1 Nov/'82	4X,5Ze,6DE	57	181082035
Gadus	29 Oct - 17 Nov/'82	3L	2	180582023
ATC-333	4-17 Nov/'82	3L	66	180582016
Shamook	4-17 Nov/'82	3L	11	180582027
? ? ?	4-22 Nov/'82	2J,3KLM	38	181082038
Dawson	10-17 Nov/'82	4RSTVn	39	181082042
ATC-334	23 Nov - 6 Dec/'82	3L	57	180582017
Dawson	2-8 Dec/'82	4W	28	181082043
Marinus	19 Jan - 17 Feb/'83	3L	54	180583013
Gadus	2-19 Feb/'83	3LM	163	180583001
Gadus	19-28 Mar/'83	3KL	84	180583002
Dawson	6-12 Apr/'83	4X	29	181083001
Dawson	13-16 Apr/'83	4X	111	181083003
Gadus	26 Apr - 10 May/'83	3L	2	180583003
Shamook	5-11 May/'83	3L	13	180583027
Gadus	12-25 May/'83	3KL	98	180583004
Marinus	25 May - 7 Jun/'83	3L	8	180583014
Gadus	27 May - 12 Jun/'83	3OPs,4Vs	158	180583005
Gadus	14 Jun - 4 Jul/'83	3L	2	180583006
L.Hammond	18 Jun - 1 Jul/'83	3LNO	118	180583031
Dawson	22 Jun - 2 Jul/'83	3K	46	181083018
W.Templeman	8-12 Jul/'83	3K	4	180583016
W.Templeman	21-31 Jul/'83	3K	4	180583017
Gadus	29 Jul - 10 Aug/'83	2HJ,3KLMN	92	180583025
Hudson	1-6 Aug/'83	2J,3K	36	181083021
W.Templeman	6 Aug/'83	2J	1	180583018
Marinus	12-19 Aug/'83	2J	12	180583030
Dawson	20-22 Aug/'83	4W	30	181083024
Shamook	6-25 Sep/'83	3K	9	180583028
Gadus	12 Sep/'83	3L	1	180583011
W.Templeman	25 Sep - 1 Oct/'83	2J	2	180583019
? ? ?	27 Sep/'83	4X	29	181083902
Gadus	28 Sep/'83	3L	1	180583007
Gadus	2-25 Oct/'83	3L	38	180583008
Hudson	7-25 Oct/'83	2GHJ	76	181083030
W.Templeman	13-18 Oct/'83	2J,3K	4	180583020
Dawson	24-28 Oct/'83	4W	9	181083032
W.Templeman	1 Nov/'83	2J	1	180583021
Gadus	4-9 Nov/'83	2J	4	180583009
Dawson	7-10 Nov/'83	4X	15	181083034
Gadus	12-21 Nov/'83	2J,3K	4	180583010
W.Templeman	15 Nov/'83	2J	1	180583022
W.Templeman	21-25 Nov/'83	3N	2	180583023
Shamook	23 Nov - 8 Dec/'83	3L	6	180583029
Dawson	2-7 Dec/'83	4RSTVn	35	181083038
W.Templeman	23-30 Jan/'84	2J	2	180584020
Dawson	25 Jan - 3 Feb/'84	4RST	99	181084001
Gadus	1-20 Feb/'84	3LM	48	180584001
Gadus	22 Feb - 9 Mar/'84	3L,6FG	51	180584037
E.E.Prince	28 Feb - 13 Mar/'84	4X	138	180384001
Dawson	29 Mar - 3 Apr/'84	4Vs	30	181084007
W.Templeman	17 Apr/'84	2J	1	180584022
Gadus	24 Apr - 14 May/'84	3L	2	180584002
Gadus	16-23 May/'84	3L	2	180584003
Dawson	23-28 May/'84	4X	33	181084008
Gadus	25 May - 13 Jun/'84	3L	2	180584004
Dawson	9-19 Jun/'84	3L	42	181084023
Gadus	15 Jun - 3 Jul/'84	3L	2	180584005

Table 6 continued : Historical data received in MEDS in 1986.

Ship Name	Cruise period	NAFO Subarea	Number	Reference
Shamook	12-14 Jun/'84	2J	3	180584013
E.E.Prince	17-27 Jun/'84	3NOPs	78	180584036
W.Templeman	21 Jun/'84	3L	1	180584023
N.Boat	25 Jun - 26 Jul/'84	3L	28	180584035
Hudson	25 Jun - 3 Jul/'84	2HJ,3K	36	181084026
Gadus	5-30 Jul/'84	3L	2	180584006
W.Templeman	12-17 Jul/'84	3LNO	49	180584024
W.Templeman	26 Jul - 1 Aug/'84	3L	5	180584025
L.Hammond	26 Jul - 6 Aug/'84	2HJ,3KLMN	81	180584030
Gadus	2-22 Aug/'84	2J	2	180584007
C.Elizabeth	5-22 Aug/'84	2J	7	180584034
Dawson	6-11 Aug/'84	0A	35	181084031
Marinus	10-19 Aug/'84	2J	14	180584018
W.Templeman	11-21 Aug/'84	3L	2	180584026
Dawson	19-20 Aug/'84	4Vs	30	181084034
W.Templeman	27 Aug - 4 Sep/'84	3L	4	180584027
Shamook	7 Sep/'84	2J	1	180584014
Gadus	14-26 Sep/'84	2J	3	180584008
Baffin	26 Sep - 3 Oct/'84	0A	17	181084039
Gadus	28 Sep - 24 Oct/'84	2J	2	180584009
Hudson	29 Sep - 2 Oct/'84	2J	26	181084038
Shamook	4-11 Oct/'84	2J	18	180584015
Gadus	26 Oct/'84	3L	1	180584010
W.Templeman	4-27 Nov/'84	3KL	3	180584028
Gadus	10-21 Nov/'84	2J,3KL	2	180584011
Gadus	23 Nov - 6 Dec/'84	2J	2	180584012
W.Templeman	30 Nov - 5 Dec/'84	2J	2	180584029
W.Templeman	13-15 Dec/'84	3L	7	180584038
W.Templeman	10-21 Jan/'85	3L	4	180585004
W.Templeman	24 Jan - 4 Feb/'85	3L	2	180585005
Gadus	31 Jan - 17 Feb/'85	3LM	46	180585001
Gadus	20 Feb - 13 Mar/'85	3OPs,4Vs	7	180585002
W.Templeman	4-5 Mar/'85	3L	3	180585007
W.Templeman	8-26 Mar/'85	3L	118	180585008
W.Templeman	28 Mar - 2 Apr/'85	3LM	9	180585009
Gadus	4-16 Apr/'85	3L	8	180585010
A.Needler	11-26 Apr/'85	3NOPs	147	180585038
W.Templeman	17-29 Apr/'85	3L	92	180585025
W.Templeman	1-13 May/'85	3LNO	83	180585026
Gadus	10-28 May/'85	3L	32	180585011
W.Templeman	15-27 May/'85	3L	94	180585027
W.Templeman	30 May - 17 Jun/'85	3L	132	180585028
Gadus	31 May - 17 Jun/'85	3L	152	180585012
Shamook	12-15 Jun/'85	3L	13	180585020
Gadus	19 Jun - 8 Jul/'85	3L	47	180585013
Needler(48)	4-11 Jul/'85	4WX	76	180385003
Gadus	11-28 Jul/'85	3L	39	180585014
Shamook	14 Jul - 5 Aug/'85	3K	94	180585021
Needler(49)	16-25 Jul/'85	4WVs	77	180385004
W.Templeman	26-27 Jul/'85	3L	11	180585029
W.Templeman	31 Jul - 12 Aug/'85	3L	84	180585030
C.Elizabeth	1-18 Aug/'85	2J	8	180585040
A.Needler	2-16 Aug/'85	2HJ,3KL	58	180585039
Marinus	7-17 Aug/'85	3L	24	180585023
A.Needler	12-16 Aug/'85	2HJ,3KLMN	57	180585039
Gadus	21 Aug/'85	3L	186	180585015
W.Templeman	17-26 Aug/'85	3L	70	180585031
W.Templeman	30 Aug - 16 Sep/'85	3L	80	180585032
Gadus	12-22 Sep/'85	3L	5	180585016
Gadus	24 Sep - 20 Oct/'85	3L	32	180585017
Marinus	6-15 Oct/'85	4R	38	180585024
Needler(53)	8-14 Oct/'85	4WVs	68	180385005
E.E.Prince	22 Oct - 13 Nov/'85	4X	243	180385006
W.Templeman	2-7 Oct/'85	3L	6	180585033
W.Templeman	9-21 Oct/'85	3L	88	180585034
W.Templeman	23 Oct - 2 Nov/'85	3L	85	180585035

Table 6 continued : Historical data received in MEDS in 1986.

Ship Name	Cruise period	NAFO Subarea	Number	Reference
Gadus	23 Oct- 4 Nov/'85	2J,3K	105	180585042
Gadus	7-11 Nov/'85	2J,3K	123	180585018
W.Templeman	9-18 Nov/'85	3L	64	180585036
Shamook	6-14 Nov/'85	3L	22	180585022
Gadus	20 Nov- 3 Dec/'85	3KL	104	180585019
W.Templeman	21 Nov- 2 Dec/'85	3L	6	180585037
	Denmark			
???	2 Jun/'47-30 Aug/'54	0,1,2	430	269947001
???	17 Apr/'57-18 Dec/'59	0AB,1ABCDEF	116	269957001
A.Jensen	17-27 Jun/'84	1ABCDE	154	26AJ84308
	Fed. Rep. Germany			
GA	15 Jul - 22 Sep/'59		390	06GA59001
??	19-23 Nov/'61		32	069961001
??	1-30 Aug/'65		116	069965001
W.Herwig	5 Jan - 15 Feb/'66		88	06HW66013
W.Herwig	4 Oct - 12 Nov/'67		116	06HW67021
W.Herwig	15 Jul - 25 Aug/'68		132	06HW68024
W.Herwig	11 Jan - 20 Feb/'69		108	06HW69027
W.Herwig	20 Feb - 15 Apr/'69		64	06HW69028
W.Herwig	29 Sep - 27 Nov/'69		148	06HW69031
W.Herwig	16 Feb - 30 Mar/'70		54	06HW70032
W.Herwig	1 Jun - 15 Aug/'70		232	06HW70034
W.Herwig	18 Oct - 18 Dec/'71		157	06HW71039
W.Herwig	1 Mar - 6 Apr/'72		39	06HW72042
DA	17 Oct - 17 Dec/'72		219	06DA72165
DA	29 Nov - 11 Dec/'74		97	06DA74178
W.Herwig	29 Jul - 15 Aug/'75		55	06HW75064
	Fed. Rep. Germany			
??	12 Jun - 23 Aug/'76		52	069976001
DA	27 Sep - 30 Oct/'77		35	06DA77202
FI	31 Aug - 12 Oct/'78		18	06FI78055
DA	14 Sep - 24 Oct/'78		222	06DA78208
HF	12 Feb - 26 Apr/'79		2	06HF79160
W.Herwig	18 Apr - 23 May/'79		13	06WH79078
W.Herwig	16 Sep - 29 Oct/'82		2	06WH82099
DA	12 Oct - 21 Nov/'83		15	06DA83247
DA	15 Oct - 23 Nov/'85		21	06DA85262
	USSR			
Krasiy K2	31 Oct/'83-13 Jan/'84	3KLMNO	74	90KK83004
Poisk	9 Nov - 9 Dec/'83	2J,3KLMNO	48	90PK83046
Genichesk	31 Mar - 30 Jun/'85	2HJ,3KLMNO	321	90CC85002
Boguslav	13 Apr - 7 Jun/'85	2HJ,3KLMNO,6GH	406	90BW85001
Kononov	28 Sep/'85-28 Jan/'86	0B,2GHJ,3KLMNO	197	90KV85033
Poisk	22 Oct - 10 Dec/'85	2HJ,3KLMNO	82	90PK85054

Table 7. Observations along NAFO Standard Sections.

The Earliest Date and Latest Date are the earliest and most recent dates of occupation of the section. Years is the number of individual years in which there are observations. Total # is the total number of stations. The four columns under the heading % Occupied try to give an idea of how many of the stations have been sampled when the section has been occupied. Four percentage ranges have been chosen, 0-25, 25-50, 50-75 and 75-100. For example, along the Cape Farewell section, there have been 29 section occupations in which between 1 and 25 % of the stations have been occupied, while there have also been 43 times when between 75 and 100 % of the stations have been sampled. These figures have not been quoted for the Halifax section nor for the 71 West section. In the case of the Halifax section, it is because there is such a large amount of data over the years. In the case of the 71 West section, there are a few months in a few years in which a great deal of data were collected, and these would dominate the figures rather than be spread more uniformly over the years. Finally, under the heading Months, is indicated the number of stations sampled in each month.

Section Name	Earliest Date	Latest Date	Years	Total #	% Occupied 25	50	75	100	Numbers of Stations by Month Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cape Farewell	Aug 1924	Mar 1986	42	428	29	24	12	43	0	8	15	15	22	17	180	92	39	33	3	4
Cape Desolation	Aug 1924	Mar 1986	32	153	24	11	11	14	0	4	13	38	5	11	26	24	20	7	3	2
Frederikshab	Aug 1924	Aug 1986	38	366	22	29	22	30	4	7	30	55	50	18	113	57	17	4	11	0
Fylla Bank	Aug 1924	Oct 1986	43	870	103	63	15	27	22	21	19	122	53	127	160	152	96	34	50	14
L. Hellefiskebanke	Aug 1924	Dec 1986	28	265	33	20	2	15	0	0	2	7	1	33	46	58	89	8	16	5
Holsteinborg	Aug 1924	Sep 1986	32	352	22	28	21	28	0	0	1	9	4	29	94	50	99	40	20	6
Egedesminde	Sep 1948	Jul 1986	23	144	18	12	4	16	0	0	0	0	4	17	55	18	42	3	5	0
Cumberland	Jul 1952	Oct 1986	19	202	16	9	3	17	0	0	0	0	1	5	12	65	53	17	45	4
Ryans Bay	Mar 1921	Nov 1986	35	267	29	11	10	17	2	0	5	5	1	9	58	69	55	14	29	20
Beachy Island	Jul 1931	Aug 1986	37	242	43	17	8	12	2	0	4	4	3	13	50	50	55	35	19	7
Seal Island	Jul 1928	Apr 1987	52	1966	40	64	51	161	3	21	41	11	67	88	439	600	99	234	334	29
White Bay	Aug 1928	Apr 1987	39	1439	94	28	18	64	29	52	162	26	167	243	72	246	81	131	136	94
Bonavista (NW)	Sep 1923	Apr 1987	48	2519	100	59	28	155	41	30	142	145	323	350	590	478	147	111	123	39
Bonavista (SW)	Sep 1923	Apr 1987	49	2575	119	74	34	159	56	75	101	195	463	434	439	322	186	166	123	15
Bonavista (SE)	Jun 1931	Mar 1987	44	803	58	24	39	35	8	8	17	67	146	176	198	87	25	39	31	1
Flemish Cap	Jul 1910	Apr 1987	54	7498	146	95	52	216	555	629	421	934	1314	931	1298	502	249	331	251	73
Coast Guard-3	Jun 1931	Apr 1987	53	2781	140	48	43	130	120	132	149	576	649	437	163	179	100	90	126	60
Coast Guard-4	Jun 1910	Apr 1987	54	2433	99	75	57	75	59	62	137	418	596	323	166	269	76	122	144	61
SW Grand Banks	Jul 1910	Apr 1987	53	2027	136	45	26	51	24	62	103	276	363	417	189	333	72	81	77	30
Laurentian	Jun 1915	Mar 1987	49	2918	117	63	46	134	80	143	377	144	211	370	469	370	194	286	174	100
Banquereau	May 1915	Nov 1986	45	3020	114	63	40	202	78	135	276	104	245	316	480	331	281	370	307	97
Halifax	May 1915	Apr 1987	56	22003					1246	1726	1728	1756	2283	1562	2250	2442	2513	1667	1518	1222
La Have-Baccaro	Jul 1914	Oct 1986	52	3787	139	68	85	267	137	225	393	264	392	369	581	425	337	307	298	59
Cape Sable	Jul 1914	Apr 1987	54	3319	127	81	60	107	114	231	453	264	362	243	452	304	271	347	240	38
NE Channel +CG-5	Jul 1914	Apr 1987	50	2203	136	90	53	104	42	124	204	213	247	204	289	237	168	258	159	58
67 West	Aug 1912	Apr 1987	58	2799	152	88	36	165	109	178	217	225	358	240	166	203	279	355	312	157
69 West	Aug 1912	Apr 1987	58	2848	160	90	37	166	109	182	219	234	360	248	171	205	281	355	328	156
71 West	Aug 1913	Apr 1987	54	3241					65	259	198	90	220	119	374	622	211	796	200	89

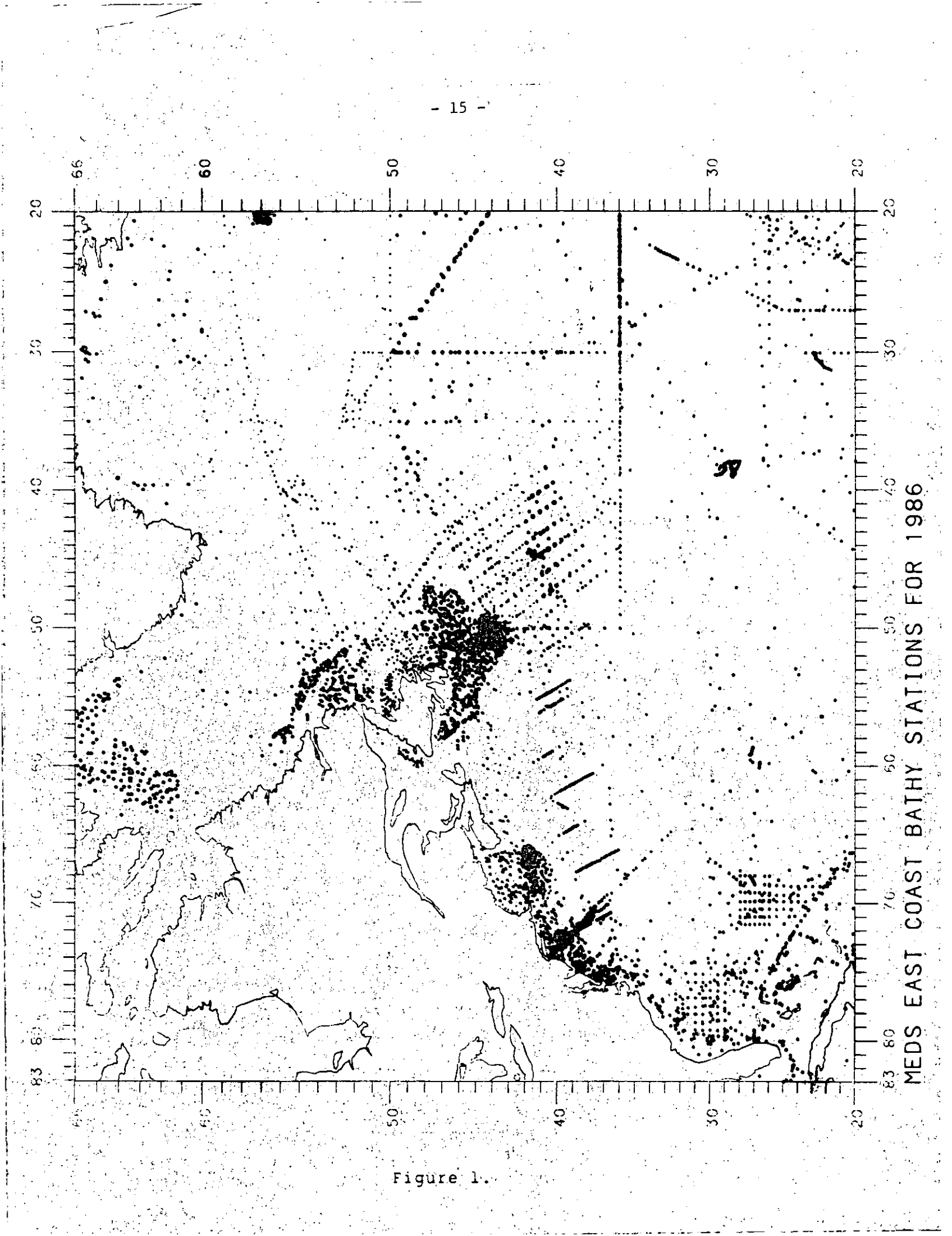


Figure 1.

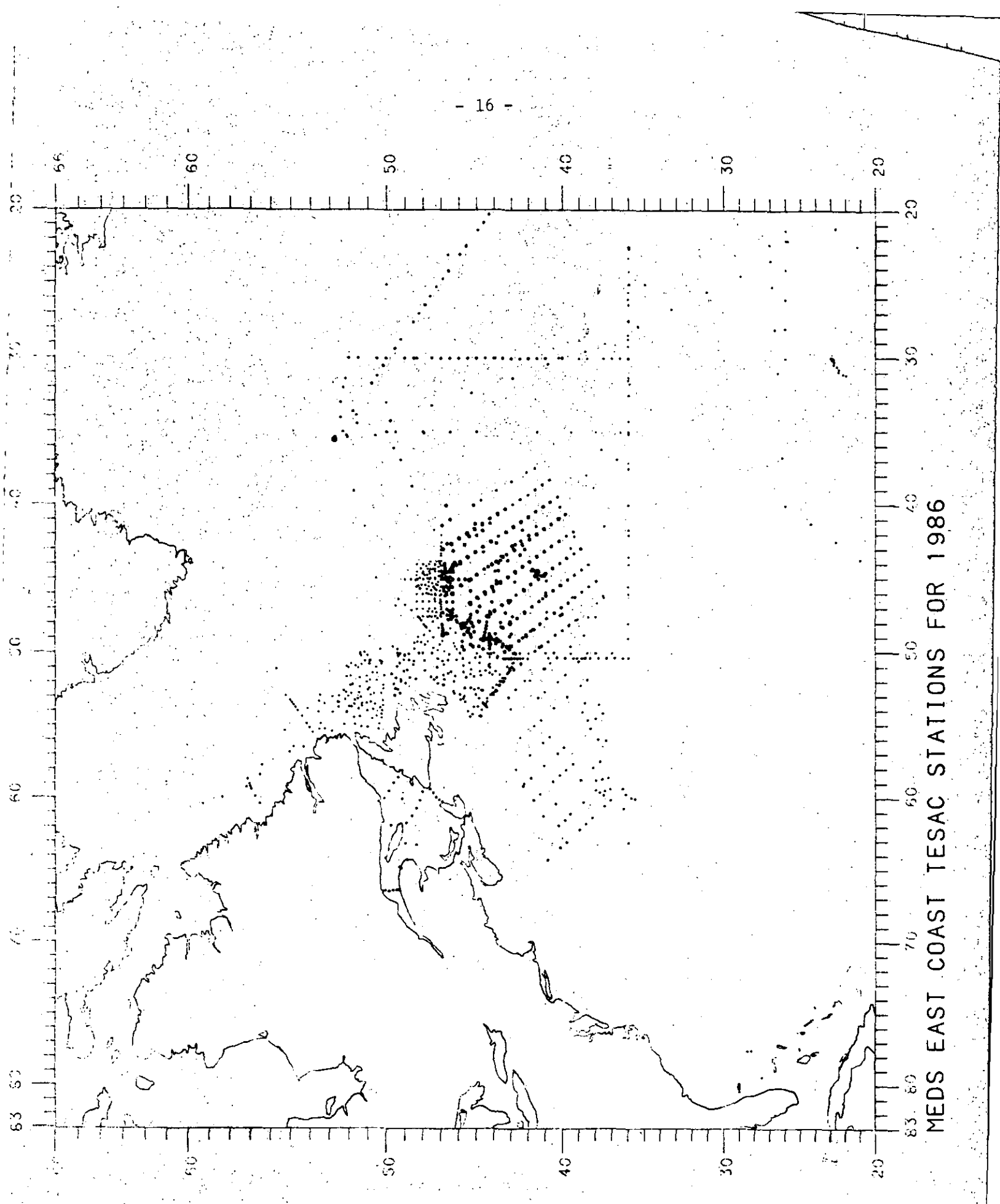


Figure 2.

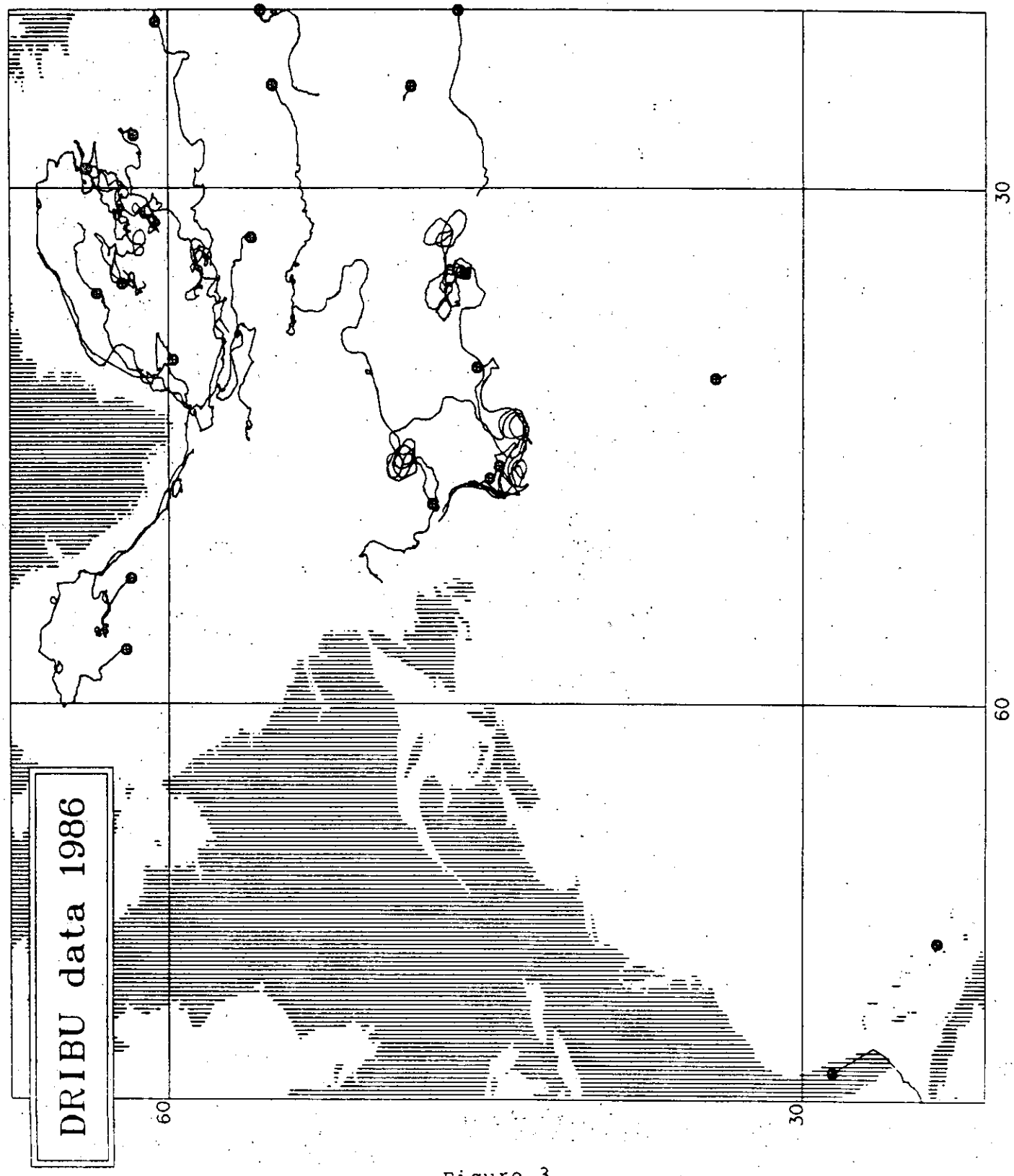
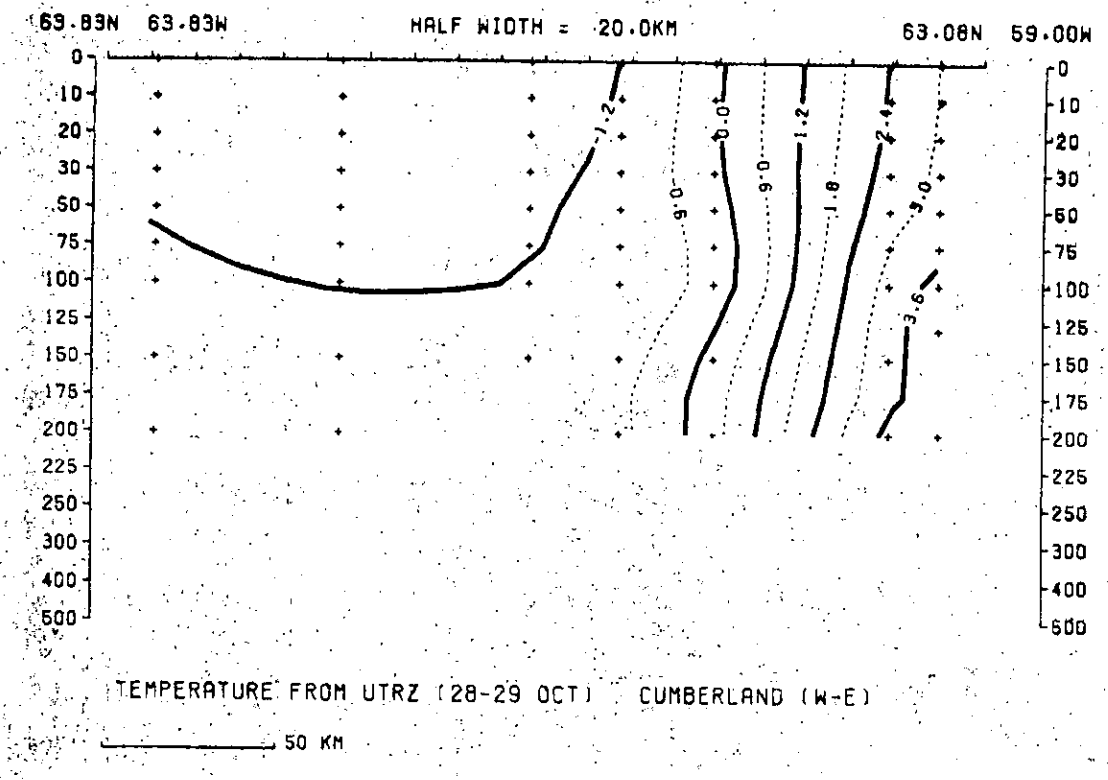


Figure 3.

Figure A1.



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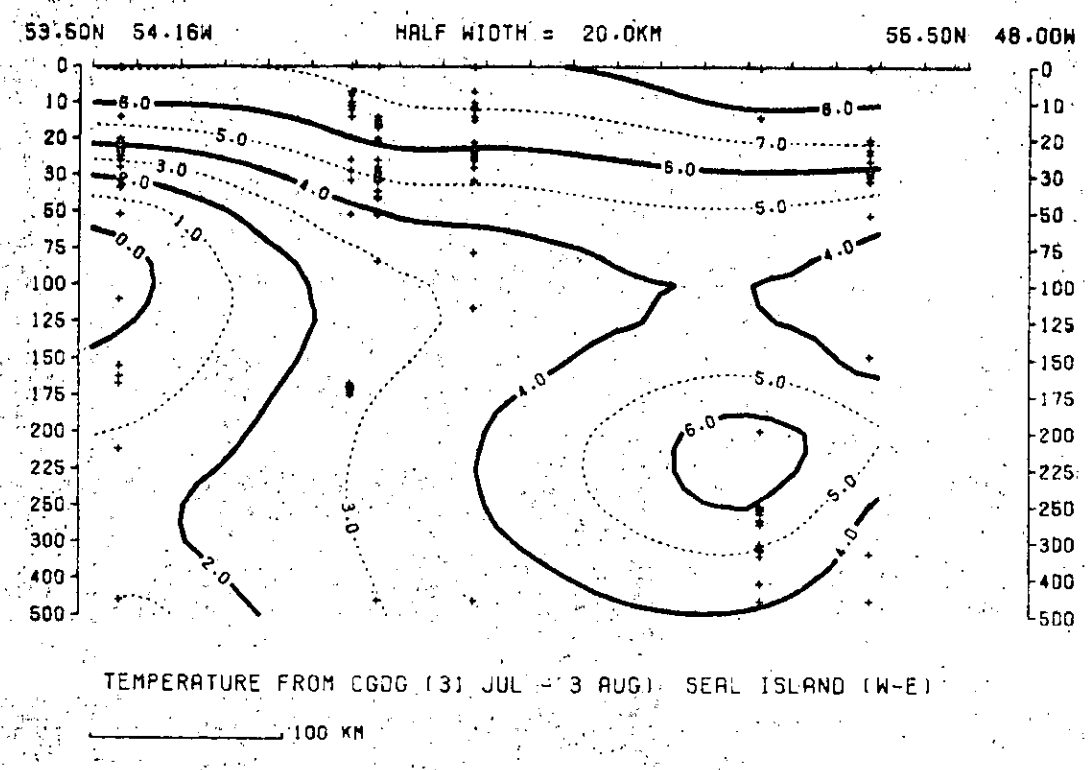


Figure A3.

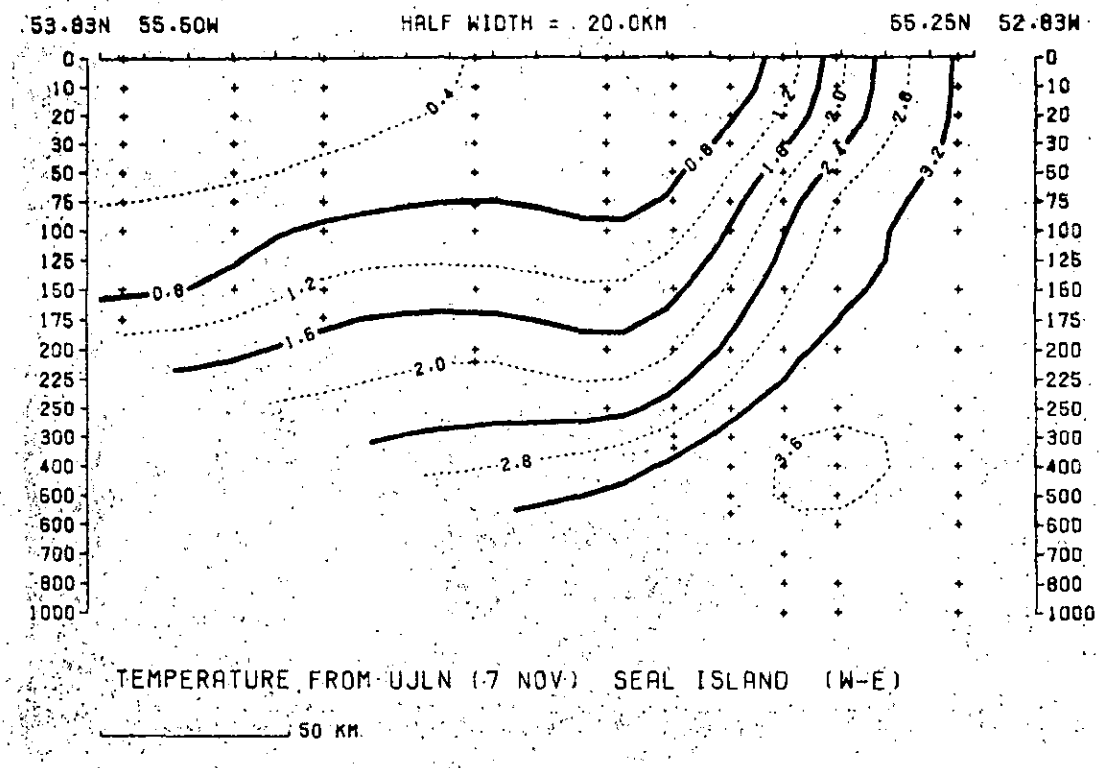


Figure A4.

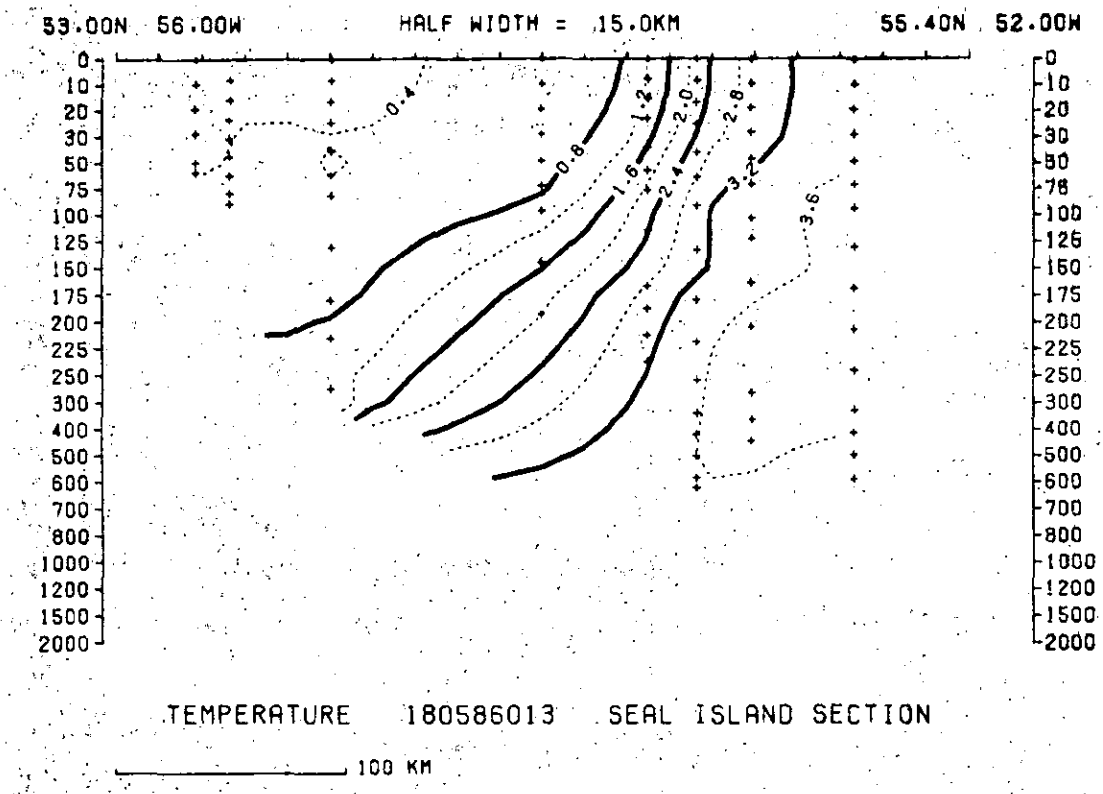


Figure A5.

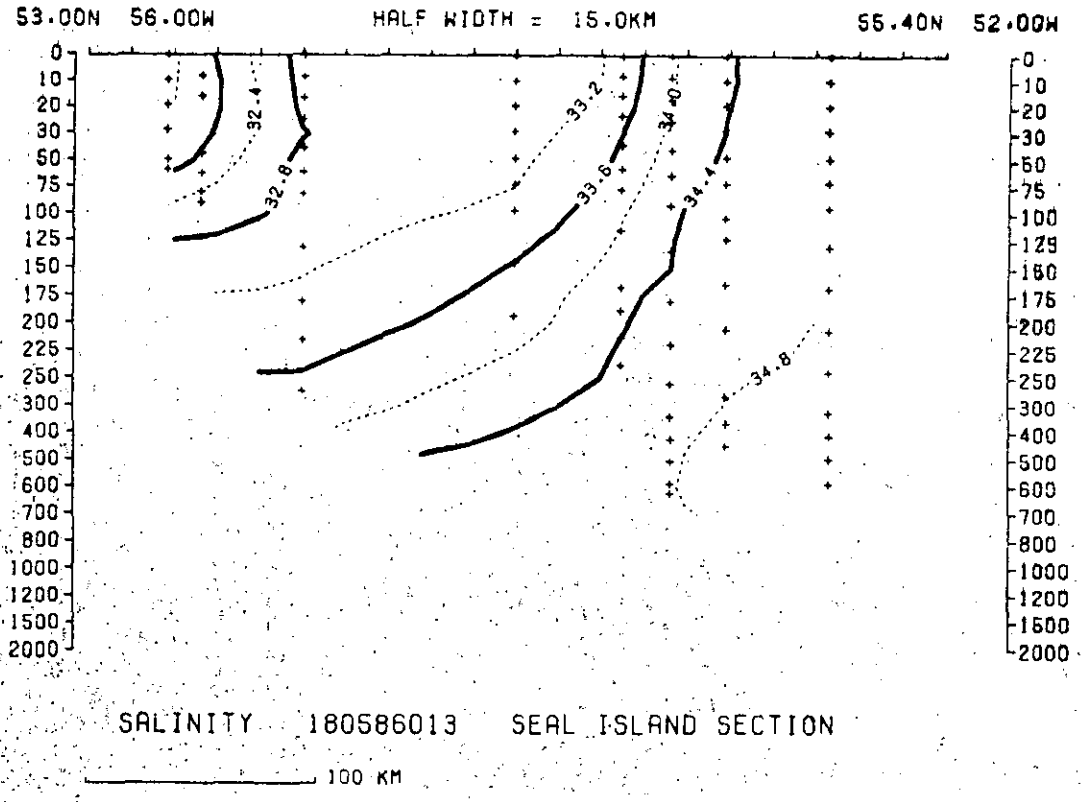


Figure A6.

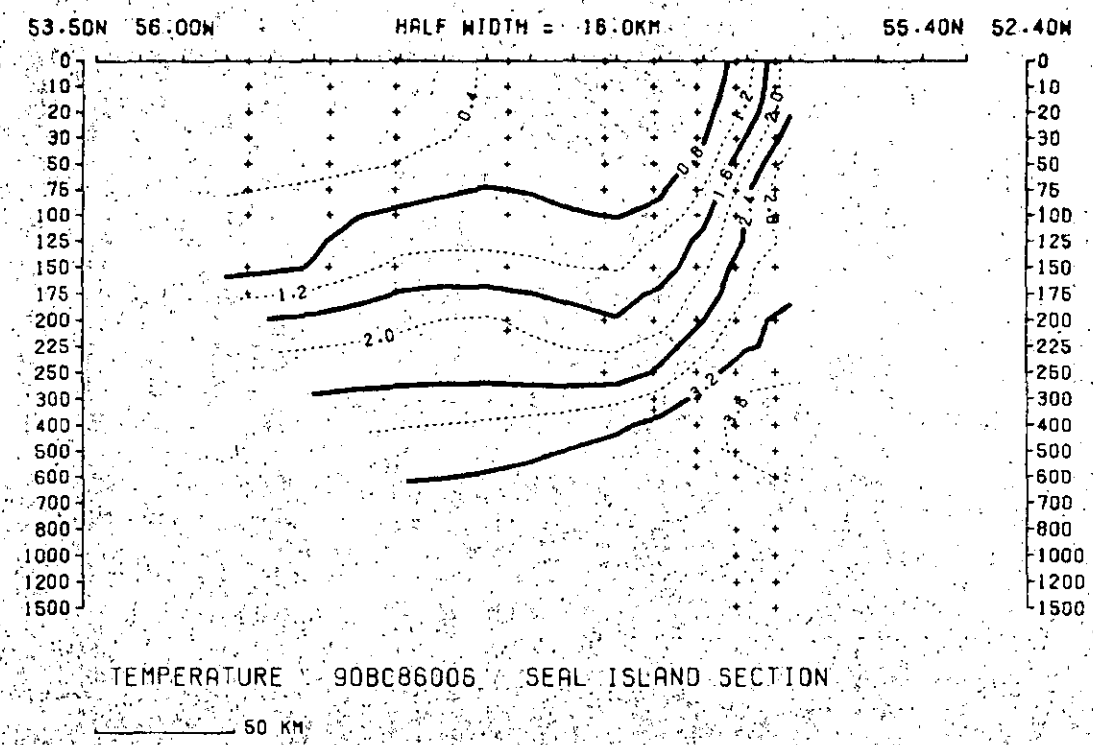


Figure A7.

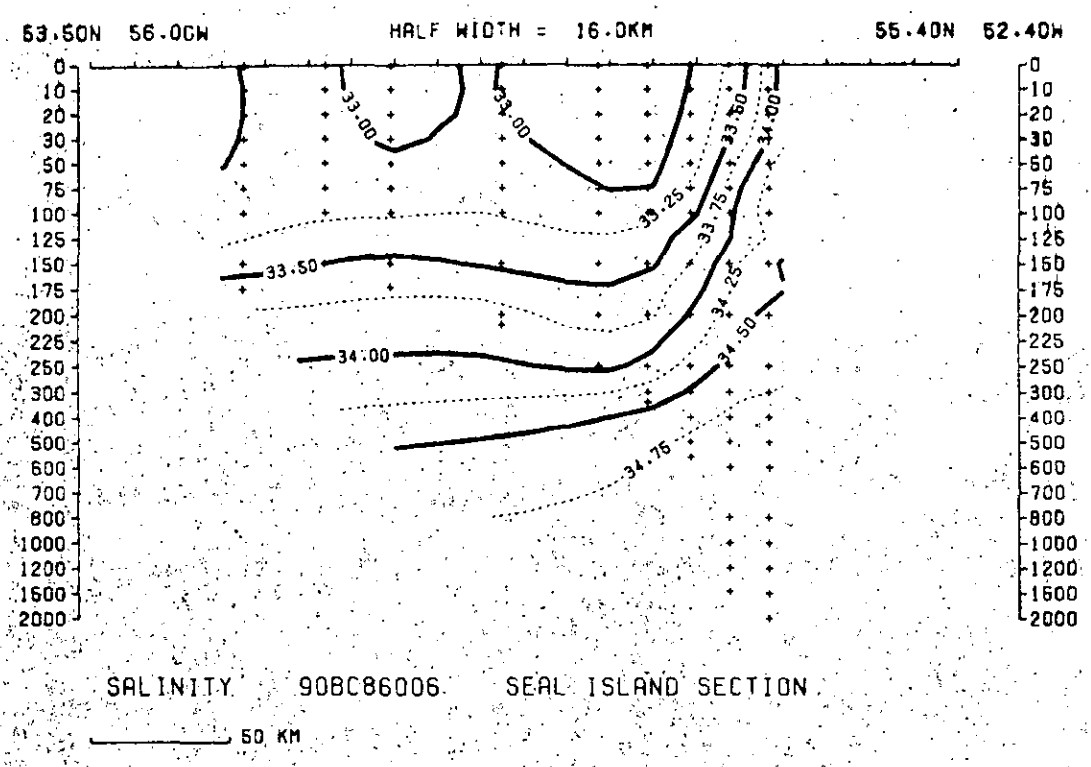


Figure A8.

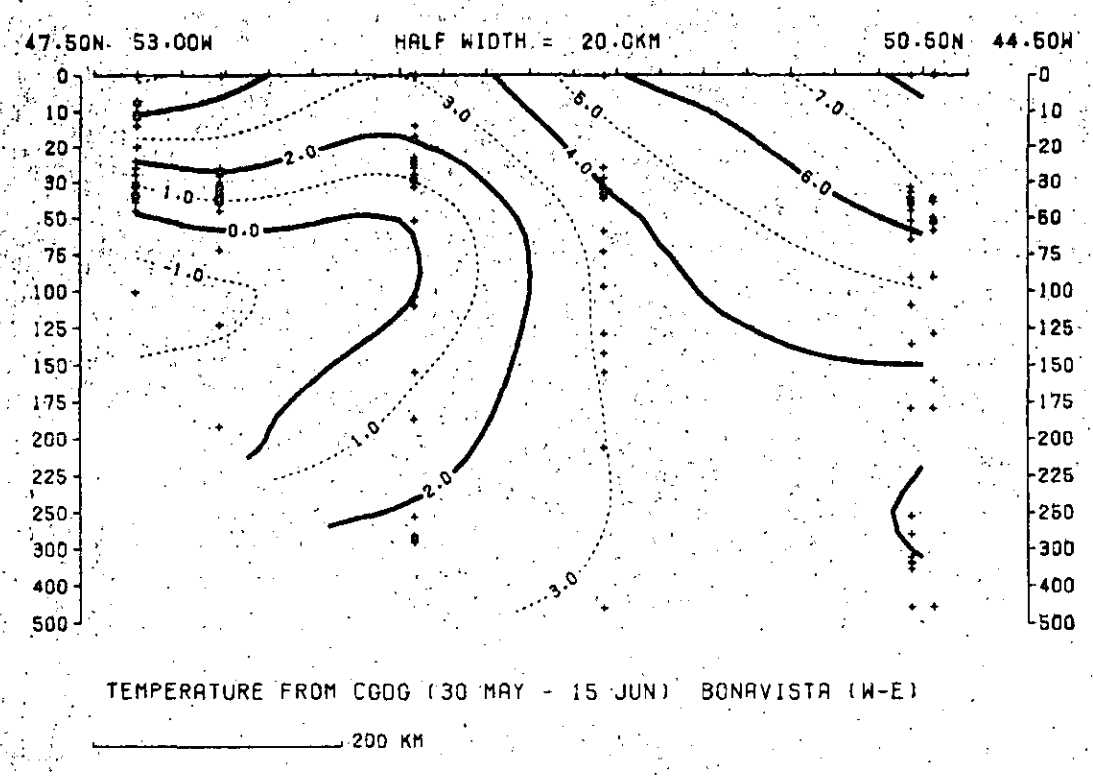
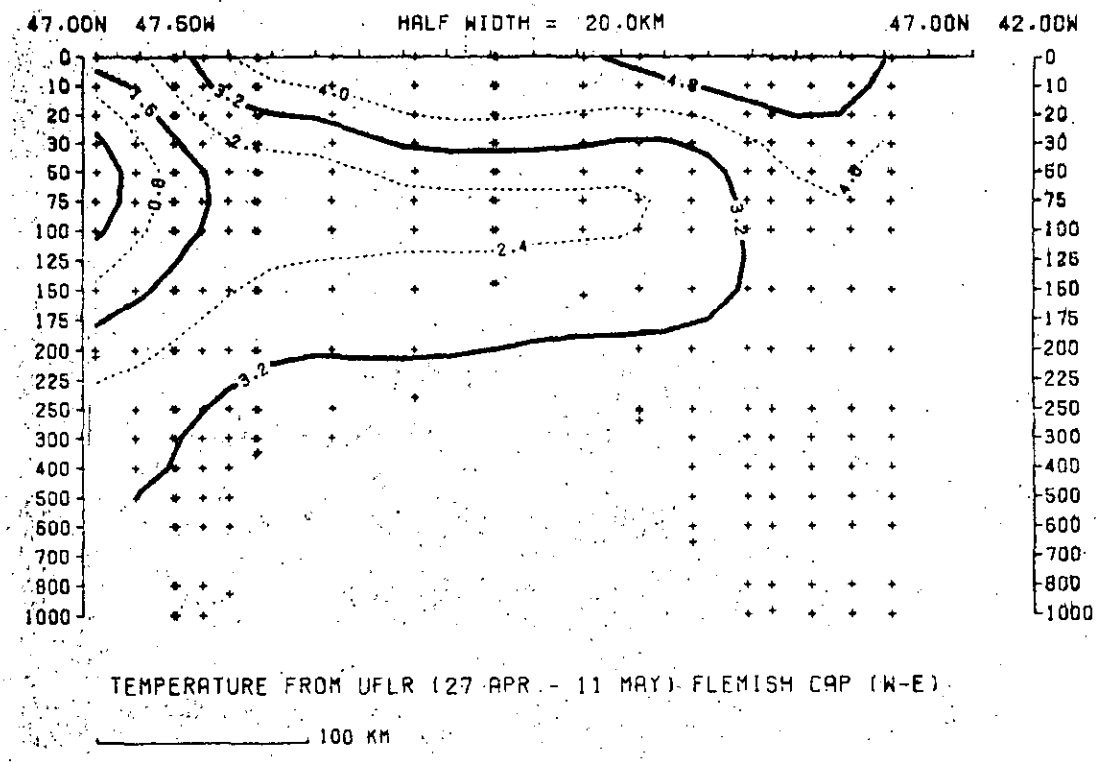


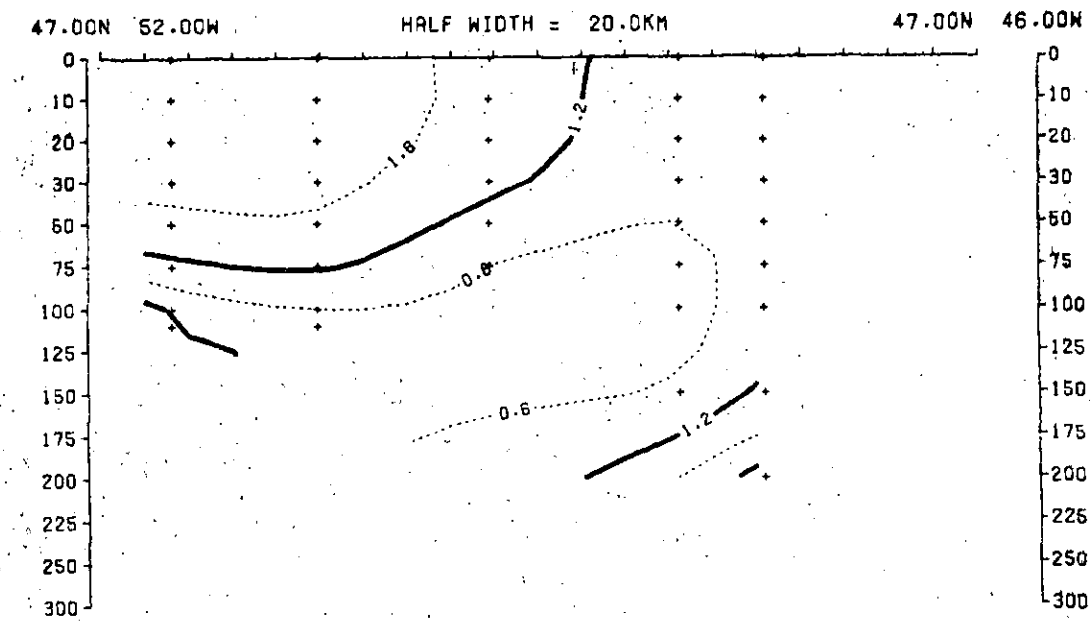
Figure A9.



TEMPERATURE FROM UFLR (27 APR - 11 MAY) FLEMISH CAP (W-E)

100 KM

Figure A10.



TEMPERATURE FROM UTRZ (2-3 DEC) FLEMISH CAP (W-E)

100 KM

Figure A11.

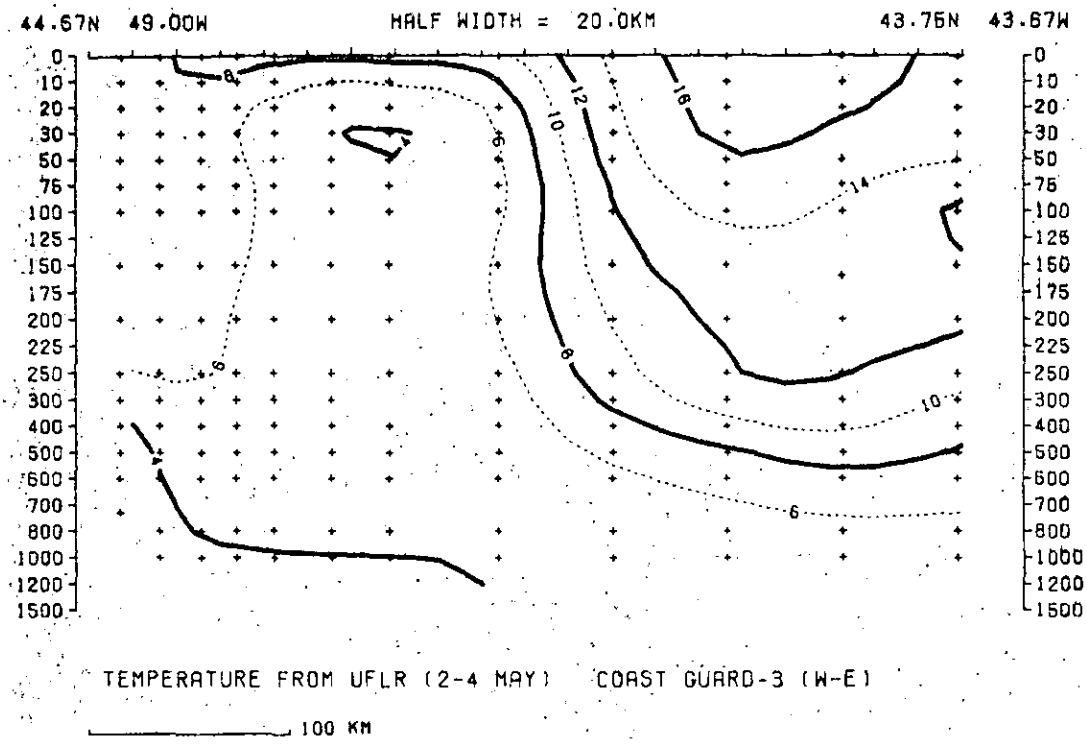


Figure A12.

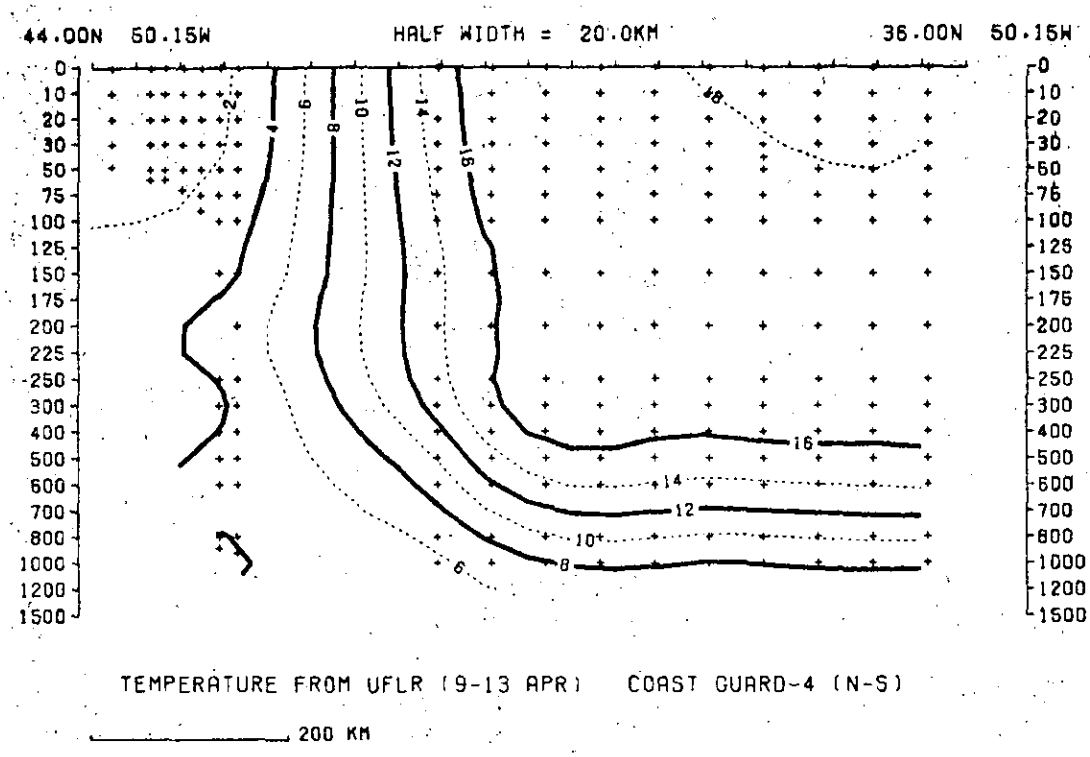
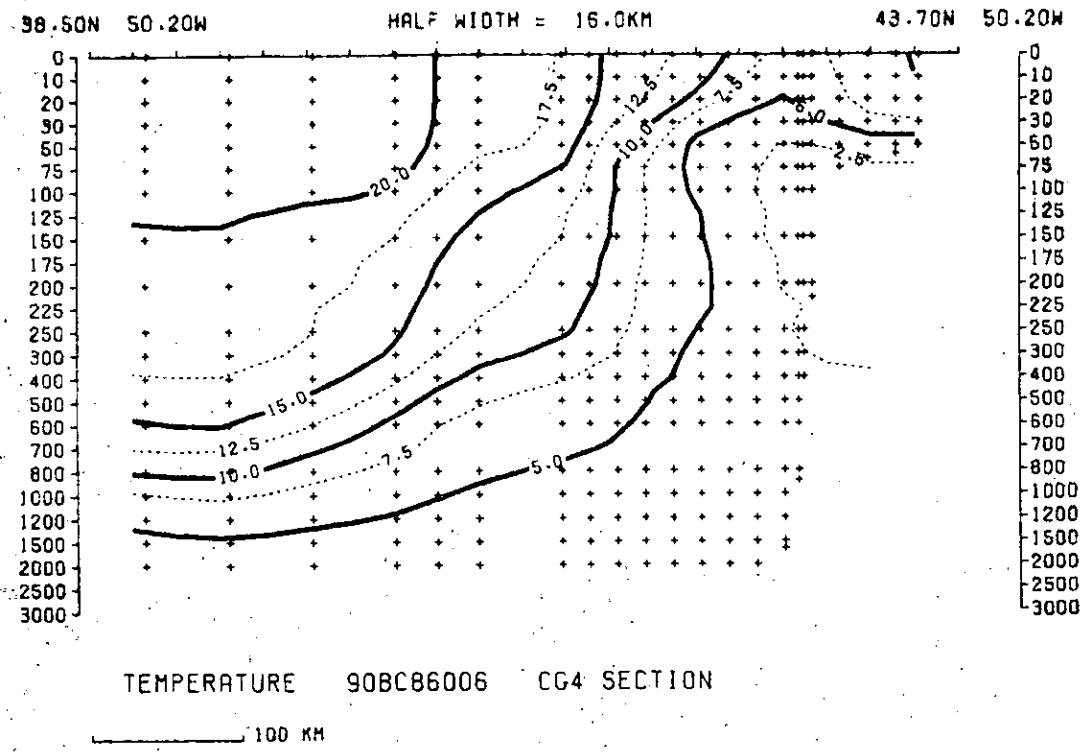


Figure A13.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