

Marine Environmental Data Service Report for 2000

by

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Summary

MEDS has the responsibility to be the Regional Environmental Data Center for NAFO, and as such is required to provide an inventory of environmental data collected in the NAFO area annually to the NAFO subcommittee for the environment (STACFEN). This year's report (June 2000) is for the calendar year of 1999. The report includes physical oceanographic inventories of profiles, drifting buoys, currents, waves, tides and water levels. It is important for STACFEN to encourage members to send data and information to the designated data centre in order to get significant return for NAFO.

Also included in this report are some of the recent activities at MEDS of interest to NAFO, such as:

- Archival of P-ALACE Float Data;
- New CD-Roms;
- Atlantic Zone Monitoring Program.

Background

MEDS has been recognized since 1975 as the Regional Environmental Data Center for ICNAF and subsequently for NAFO. As the regional center, MEDS is required to report on these data annually at the June Meeting of STACFEN, the Standing Committee of Fisheries and the Environment. In order for MEDS to carry out its responsibility of reporting to the Scientific Council, the Designated National Representatives selected by STACFEN are requested to provide MEDS with all marine environmental data collected in the Northwest Atlantic for the preceding years.

Provision of a meaningful report to the Council for its meeting in June 2000 required the submission to MEDS of a completed oceanographic inventory form for data collected in 1999, and oceanographic data pertinent to the NAFO area, for all stations occupied in the year prior to 1999. The data of highest priority are those from the standard sections and stations, as described in NAFO SCR DOC., No. 1, Serial N 1432, 9p.

Contacting MEDS

Data that have been formatted and archived at MEDS are available to all interested scientists on request. Requests can be made by telephone (613) 990-0243; by internet e-mail to services@meds-sdmm.dfo-mpo.gc.ca, by completing an on-line order form on the MEDS WWW: www.meds-sdmm.dfo-mpo.gc.ca, or by writing to Services, Marine Environmental Data Service (MEDS), Dept. of Fisheries and Oceans, Station W 82, 12th Floor, 200 Kent St., Ottawa, Ont. Canada K1A 0E6.

References

List of NAFO Standard Oceanographic Sections and Stations. The reprint of NAFO SCR DOC., NO. 1, Serial N1432, 9p. Printed and distributed by: NAFO, P.O. Box 638, Dartmouth, Nova Scotia, Canada B2Y 3Y9.

Recent Activities

1. Archival of P-ALACE Float Data

MEDS acquires and archives these data routinely as part of its GTSPP functions. MEDS will be handling the profiling float data from Canada. This means receiving the data from Service Argos, decoding and composing the GTS messages and running automated QC routines. The GTS data are to be issued within 12 hours of data collection. We will also be providing the data to other Argos Centres in net CDF. MEDS plans to return delayed mode data from PIs with necessary calibrations to data centres within 90 days.

Figure 1:

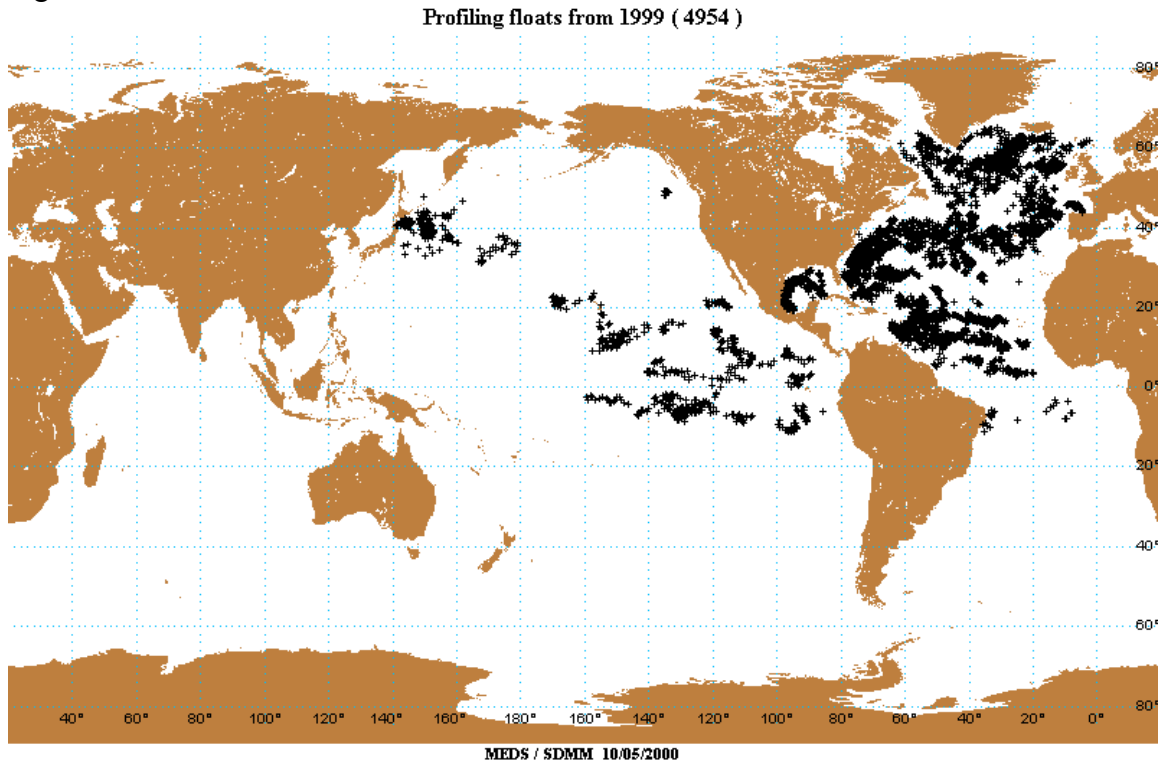
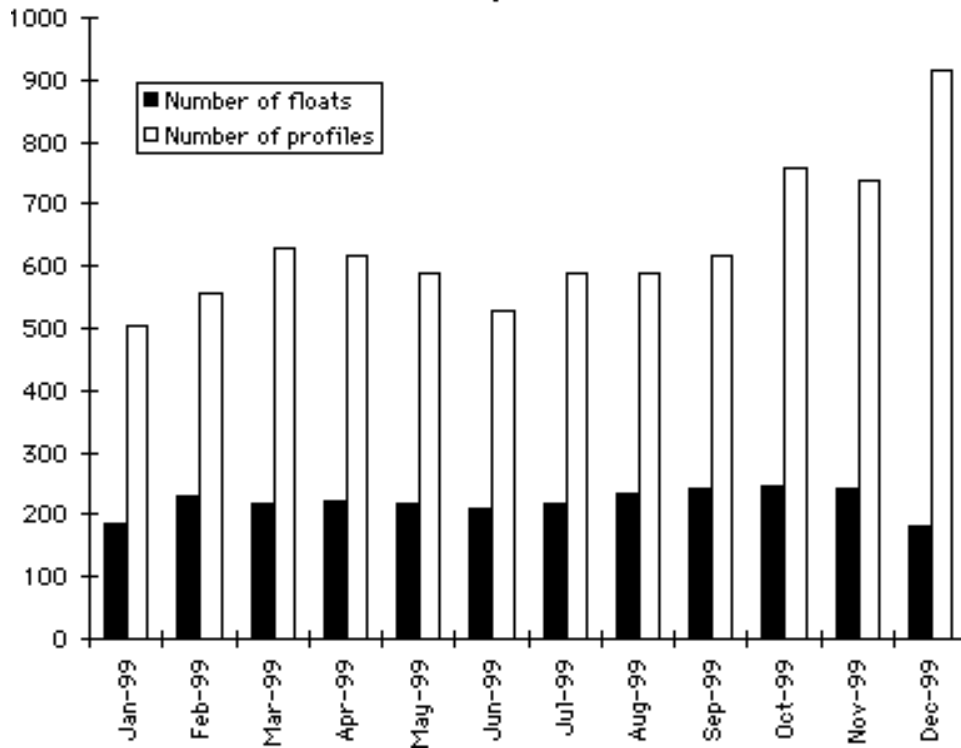


Figure 2:

Numbers of profiling floats operating globally and numbers of profiles collected



2. New CD-Roms

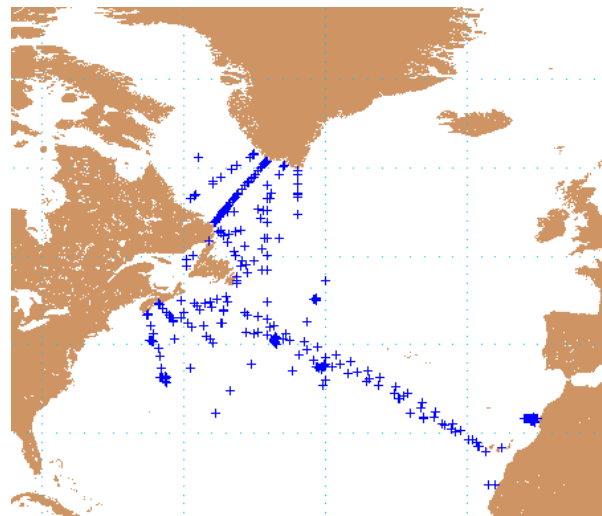
WOCE: The next edition of the WOCE CDs will be issued in September of this year. All of the data from all of the DACs (except one) will be in net CDF. The reason for this is to make the integration of data across CDs much easier than was the case with version 1.

International Arctic Buoy Programme (IABP): MEDS is currently producing a CD which will include all GTS and interpolated data from 1979 to 1999 for the Arctic. The first version of the CD will be presented at the IABP meeting in Alaska in June 2000.

Canadian Joint Global Ocean Flux Study (JGOFS): MEDS acts as the Canadian data centre for the Joint Global Ocean Flux Study (JGOFS). The acquired data from Canadian regional institutes is available on MEDS website. Once acquisitions are complete, these data will be published on a CD-ROM and distributed through MEDS.

JGOFS Cruises in the Atlantic by Bedford Institute of Oceanography (BIO)

Cruise	Date
North Atlantic Bloom Experiment	
cruise 89-003	1989
cruise 90-001 (JG90)	1990
cruise 91-001 (JG91)	1991
cruise 91-007 (WOCE 91)	1991
cruise 92-037 (JG92)	1992



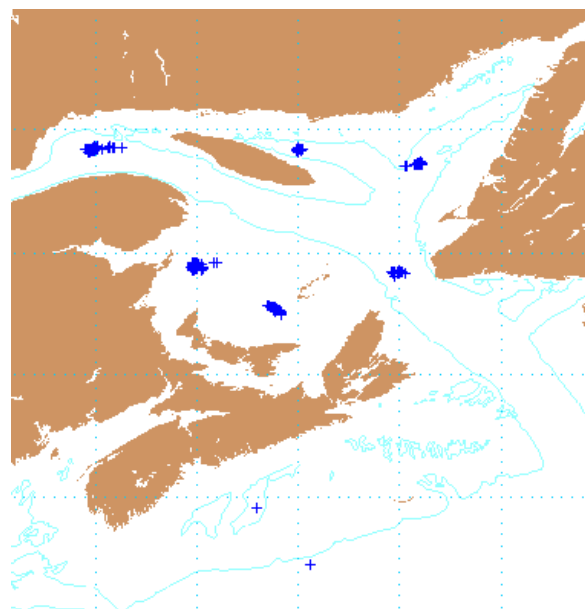
cruise 92-053 (WOCE 93)	1992
cruise 93-002 (JG93)	1993
cruise 94-008 (JG94)	1994
cruise 95-016 (JG95)	1995
cruise 96-006	1996
cruise 96-026	1996
cruise 97-009	1997
cruise 98-023	1998

Data Types

Primary Productivity (in situ Carbon
15N New Production
Bacteria and Cyanobacteria
Microzooplankton and Phytoplankton
Pigment and Mesozooplankton
Sediment Trap
Bottle Oxygen and Nutrients
CTD

JGOFS Cruises in the Gulf of St. Lawrence

Cruise	Date
JGOFS-1	23-Jul-1992
JGOFS-2	1-Sep-1992
JGOFS-3	25-Sep-1992
JGOFS-4	7-Dec-1992
JGOFS-5	25-May-1993
JGOFS-6	9-Jul-1993
JGOFS-7	21-Nov-1993
JGOFS-8	10-Apr-1994
JGOFS-9	13-Jun-1994



Data Types

All 8 standard meteorology observations
Temperature and Salinity
Oxygen and Nutrients: NO₂, NO₃, NH₄, PO₄, SiO₂ and urea
Carbonate: Total DIC and pH
Pigments, HPLC, POC and PON, Seston
Primary production by C-14
PAR profiles
Fluorescence and Light Transmission
Bacterial abundance, biomass and production
Plankton and bacterial abundance
ETS (size fractionated)
Microzooplankton abundance and grazing
Analysis of Sediments and Porewaters Sampled from Box Cores

3. Atlantic Zone Monitoring Programme (AZMP)

DFO has funded a programme for the East Coast of Canada called the Atlantic Zonal Monitoring Programme. The programme's activities included regular sampling of fixed stations and occasional cruises in the AZMP area to collect physical, chemical and biological data. The first set of reports on the state of the ocean were produced from these data by each region and presented at the FOC meeting in St-John's. As part of MEDS activities as leader of the data management team, MEDS is currently building a web site that allows easy access to the data collected within the programme for the current and previous year. At this time, the web site displays physical and chemical data that MEDS has been receiving from the regions near real time for the fixed stations and sea water level data from nine pre-selected tide gauges. Biological data will be stored in a nationally distributed database (BIOCHEM) that is presently being developed at BIO in Halifax. AZMP Web address: www.meds-sdmm.dfo-mpo.gc.ca/zmp/main_zmp.html

Data Inventories:

Ocean Subsurface Data

Vertical profiles are collected worldwide with water sampling bottles and electronic instruments. These subsurface measurements include temperature, salinity, oxygen, a wide variety of nutrients and chemicals, and biological and other physical variables. Derived parameters, such as sigma-t and geopotential anomaly can be computed upon request.

MEDS becomes aware of surveys of the physics and chemistry of the water column, directly, by delivery of these data to MEDS from responsible institutions and the IGOSS reporting system, and, indirectly, from Cruise Summary Reports and other reports of ocean cruise activity. Table 1 lists data collected in the NAFO area in 1999, received at MEDS but not yet archived. Table 2 gives a summary of the MEDS IGOSS archive for data received during 1999. Table 3 gives a summary of the delayed-mode data received for 1999, which have been processed and archived. Table 4a lists data processed and archived, in the past year, that were in the NAFO area, but for years prior to 1999. Table 4b lists those datasets that were received in the past year for years prior to 1999 but have not yet been processed.

Ocean subsurface data is processed at MEDS in much the same way for each of the data sets described in tables 2 and 3. Electronic files are converted from a wide range of formats, into a common Ocean's format. Quality control is carried out by a combination of specially designed software and trained personnel. The quality control has four main functions. The first is to check and ensure that each data message is properly formatted. The second is to identify duplication, and select the best version of a message, based on data type, source of the data, and general qualities in analysis and reporting of the observations. The third check identifies and, if possible, corrects the date/time and geographical positioning information of each message using computer tests and visual inspection of the track for each cruise. The final quality control procedure uses a series of algorithms to find and flag common instrument failures found in profiles of subsurface measurements. Each subsurface profile of temperature, salinity and other subsurface constituents, is also visually inspected using software to plot the data and allow a technician to set quality flags to individual points on a profile.

The tables show summaries of data for the NAFO area. Much of the data MEDS has been aware of, for 1999, has been processed and made available to scientists conducting environmental assessments of the NAFO area. Table 3 includes data from net mounted CTDs.

Table 1: Data collected in the NAFO area in 1999, received at MEDS but not yet archived.

MEDS ID	No of Stns
18CN99011	5
18MF99014	112
18MF99017	60
18BG99020	23
18TF99025	27
18NE99029	256
18MF99042	33
18GP99043	36
18HU99044	44
18NE99046	59
18HU99053	65
18GP99099	78
06WH99211	104

Table 2: IGOSS Stations Archived at MEDS for 1999

NAFO IGOSS (5191)

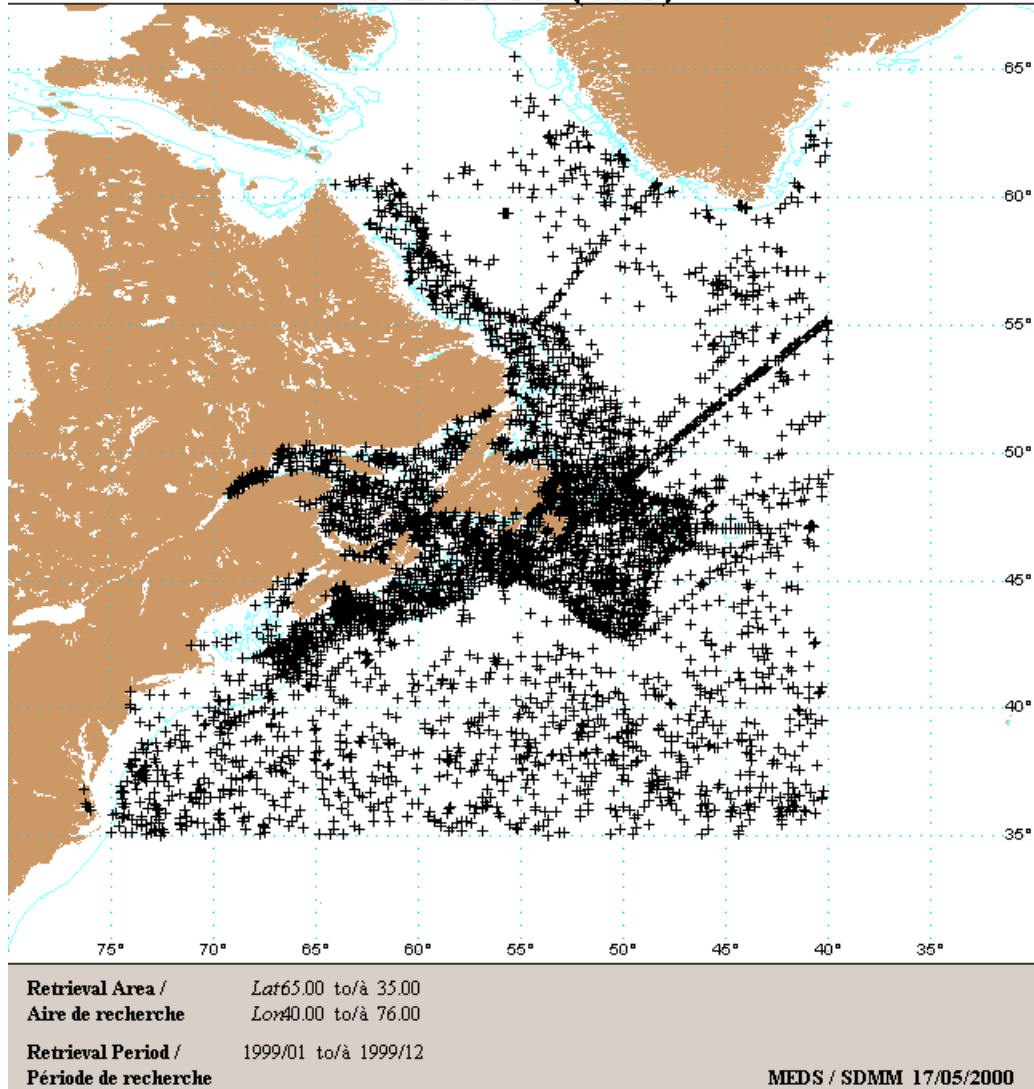


Table 2: IGOSS data received during 1999, and archived. Total = 5191 stations

Ship Name	Country	Call Sign	Cruise Period	BATHY	TESAC	NAFO Subarea
P-ALACE	USA	41536	99 Jan-02 - Dec-29	0	594	3K, 3M, 3N, 3O, 4X, 4W, 4VS, 5ZE, 6A, 6B, 6C, 6D, 6E, 6F, 6G, 6H, 4X
BUOY	UNKNOWN	46729	99 Nov-17 - Nov-24	0	16	4X
P-ALACE	USA	62688	99 Jan-02 - Dec 31	0	270	0B, 1C, 1D, 1E, 1F, 2G, 2H, 2J, 3K, 3L, 3M, 6H
NEPTUNE OLIVINE	SINGAPORE	9VBL	99 Jan-11 - Jan-13 Apr-11 - Apr-12 Apr-26 - Apr-27 Jul-12 - Jul-12 Jul-25 - Jul-26 Oct-09 - Oct-10 Oct-24 - Oct-25	5 7 2 6 4 8 10	0 0 0 0 0 0 0	3M 3L, 3M 3M 3L, 3M 3M 3L, 3M 1F, 2J, 3K, 3L
MELBOURNE STAR	BAHAMAS	C6JY6	99 Sep-16 - Sep-16 Sep-25 - Sep-28	1 7	0 0	6D 6D, 6E, 6F, 6H
UNKNOWN	CANADA	CCG206	99 Aug-12 - Aug-12	0	1	3L
OPILIO	CANADA	CFD2576	99 May-21 - May-21 Jun-09 - Jun-09	0 0	1 1	4T 4T

PANDALUS	CANADA	CFD4703	99	Nov-17 - Nov-17	0	1	4T
NAVICULA	CANADA	CG2364	99	Nov-17 - Nov-17	0	1	4X
SAMBRO	CANADA	CG2613	99	Feb-16 - Feb-25	0	38	5ZE
				Jan-30 - Jan-30	0	1	4W
				Jun-10 - Jun-10	0	1	4W
				Nov-24 - Nov-24	0	1	4W
SHAMOOK	CANADA	CG2676	99	Apr-29 - May-10	17	5	3L, 3PS
				May-20 - Jun-03	4	11	3L
				Jun-08 - Jun-13	7	2	3L
				Aug-03 - Aug-14	0	16	3L
				Sep-29 - Oct-09	11	5	3L
				Nov-09 - Nov-16	12	3	3PS
				Nov-24 - Dec 06	0	29	3L
				Dec 12 - Dec 12	0	1	3L
ALFRED NEEDLER	CANADA	CG2683	99	Mar-02 - Mar-21	0	103	3PS, 4VS, 4W, 4X
				Jul-06 - Aug-31	0	456	3PN, 4R, 4S, 4T, 4VN, 4VS, 4W, 4X, 5Y
				Sep-08 - Sep-30	0	180	4T, 4VN
				Oct-27 - Nov-11	0	21	4W, 5ZE
WESTON	CANADA	CG3005	99	May-19 - May-19	0	1	4W
BELUGA	CANADA	CG3161	99	May-21 - May-21	0	1	4T
				May-27 - May-31	0	2	4T
NSC CALANUS II	CANADA	CG3187	99	May-04 - May-13	0	6	4S, 4T
UNKNOWN	CANADA	CGAG	99	Feb-26 - Feb-26	2	0	3N
HMCS HALIFAX	CANADA	CGAP	99	Oct-21 - Oct-22	3	0	4X
PARIZEAU	CANADA	CGBS	99	Feb-11 - Feb-16	0	57	4W, 4X, 5ZE
				Nov-24 - Dec 05	0	38	4R, 4T, 4VN, 4X
TRACY	CANADA	CGBX	99	Oct-21 - Oct-21	0	2	4S, 4T
				Nov-09 - Nov-09	0	2	4S, 4T
TELEOST	CANADA	CGCB	99	Jan-04 - Jan-17	0	20	2J, 3L, 3PS
				May-13 - Jun-17	120	75	2J, 3K, 3L, 3PS
				Jul-06 - Jul-06	0	1	3L
				Aug-23 - Sep-22	0	56	2J, 3K, 3L
				Sep-28 - Oct-04	0	5	4W, 4X
				Oct-09 - Dec 12	24	419	2G, 2H, 2J, 3K, 3L, 3M
MARTHA L. BLACK	CANADA	CGCC	99	Jan-13 - Jan-13	0	2	4S, 4T
				Jan-29 - Jan-30	0	2	4S, 4T
				Feb-15 - Feb-15	0	2	4S, 4T
				May-18 - May-18	0	2	4S, 4T
				May-27 - May-27	0	1	4T
				Dec 02 - Dec 02	0	2	4S, 4T
GEORGE R. PEARKES	CANADA	CGCX	99	May-05 - May-05	0	2	4S, 4T
				May-11 - May-11	0	2	4S, 4T
				Jun-04 - Jun-08	0	21	4S, 4T
HUDSON	CANADA	CGDG	99	Jun-27 - Jul-11	0	54	1F, 2H, 2J, 4R, 4VS, 4W, 4X
				Sep-11 - Sep-15	0	14	4W, 6G
				Sep-21 - Sep-28	0	23	1E, 1F, 2G
				Oct-23 - Nov-05	0	53	3PS, 4R, 4VN, 4VS, 4W, 4X
				Nov-18 - Nov-27	48	47	3K, 3L, 3M, 3N, 3O
				Dec 04 - Dec 11	0	65	4R, 4S, 4T, 4VN
W. TEMPLEMAN	CANADA	CGDV	99	Apr-10 - Jun-29	41	546	3L, 3N, 3O, 3PS, 3PN
				Sep-07 - Sep-27	10	45	3K, 3L, 3N, 3O
				Oct-12 - Dec 14	28	311	3L, 3N, 3O
CGS CYGNUS	CANADA	CGDW	99	Mar-24 - Apr-01	0	38	4W, 4X, 5ZE
ATHABASKAN	CANADA	CYWM	99	Jan-25 - Jan-26	2	0	4X
				Feb-23 - Feb-23	1	0	4X
				Mar-02 - Mar-02	1	0	5ZE
UNKNOWN	LIBERIA	ELVX4	99	Feb-10 - Feb-10	1	0	3M
				May-10 - May-11	2	0	4VS, 4X
				Aug-05 - Aug-07	6	0	3N, 3O, 4W, 4X, 5ZE
				Nov-04 - Nov-06	9	0	3M, 3N, 3O, 4VS, 4W, 4X
CONTSHIP WASHINGTON	LIBERIA	ELVZ5	99	Mar-27 - Mar-28	5	0	3N, 3O, 4VS, 4W
				Jun-20 - Jun-21	3	0	3M
				Sep-17 - Sep-17	3	0	3M, 3N
CONTSHIP ROME	LIBERIA	ELVZ6	99	Jan-20 - Jan-22	6	0	3O, 4VS, 4W, 4X, 5ZE
				Apr-16 - Apr-18	3	0	3M, 4X
SEALAND DEVELOPER	USA	KHRH	99	Apr-22 - Apr-22	1	0	6C
NOLIZWE	UK	MQLN7	99	Feb-08 - Feb-09	3	0	6A, 6B, 6D
				Mar-30 - Mar-30	1	0	6D
				May-17 - May-17	1	0	6D
				Oct-21 - Oct-21	1	0	6D
NOMZI	UK	MTQU3	99	Oct-06 - Oct-06	1	0	6D
				Nov-22 - Nov-23	3	0	6D, 6E
UNKNOWN	USA	NANY	99	Jan-11 - Jan-17	3	0	5ZE, 6B, 6D
USS ARLEIGH BURKE	USA	NBRK	99	Oct-27 - Oct-27	4	0	6C
USS CAPE ST GEORGE	USA	NCSG	99	Dec 15 - Dec 15	1	0	6C
SPRUANCE	USA	NDQV	99	Sep-26 - Sep-26	2	0	3M, 6H
ICEPAT GROTON CT	USA	NIDK	99	May-16 - May-16	1	0	3L
				May-29 - Jun-01	8	0	3K, 3L
USS LABOON	USA	NJFL	99	Oct-26 - Oct-27	5	0	6C
USS MITSCHER	USA	NMTR	99	Oct-27 - Oct-27	2	0	6C
MONTER	USA	NRAR	99	Sep-25 - Sep-25	1	0	6D
HAWES	USA	NREH	99	Oct-15 - Oct-15	1	0	6C
USS SIMPSON	USA	NRWS	99	Jan-14 - Jan-14	1	0	6C
				Feb-17 - Feb-18	2	0	5ZW, 6B
SAMUEL B. ROBERTS	USA	NSBR	99	Dec 04 - Dec 04	2	0	6C
OLEANDER	NETHERLAND	PJJU	99	Apr-09 - Apr-09	4	0	6A
HANNE SIF	SINGAPORE	S6LA	99	Jun-16 - Jun-18	4	0	6A, 6C

UNKNOWN	UNKNOWN	SHIP	99	Jul-05 - Jul-11	12	0	1F, 2J, 3K, 4X, 5Y				
				Dec 01 - Dec 04	2	0	5ZW, 6C				
				Jan-08 - Jan-27	48	0	3L, 3M, 3N, 3O, 3PS, 4VS, 4W, 4X, 5Y, 6E, 6F				
				Feb-02 - Mar-02	49	3	1F, 3O, 4X, 5ZE, 6B, 6C, 6E, 6H				
				Mar-08 - Mar-14	17	0	3N, 3O, 4VS, 4W, 6A, 6B, 6C, 6G, 6H				
				Mar-26 - Mar-26	0	1	3L				
				Apr-16 - Apr-21	30	1	3L, 3M, 4X, 6C, 6E				
				Apr-29 - May-04	13	1	3K, 3L, 4X, 6D				
				May-13 - May-19	13	0	3L, 3O, 4VS, 4W, 4X				
				Jun-01 - Jun-26	103	28	1F, 3L, 4S, 4VN, 4W, 4X, 5Y, 5ZE, 6A, 6B, 6E				
				Sep-11 - Sep-11	2	0	6B, 6C				
				Oct-12 - Oct-12	1	0	4X				
				Oct-26 - Nov-10	90	0	4VN, 4VS, 4W, 4X				
				Nov-17 - Nov-18	3	0	4W				
				Nov-29 - Dec 02	8	0	3N, 3O				
				Dec 07 - Dec 16	19	0	3L, 3M, 3N, 3O, 4X, 6C				
				Sep-22 - Sep-22	1	0	2H				
				Jan-04 - Jan-06	5	0	1F, 3K, 3L				
				Jan-21 - Jan-22	4	0	2J, 3K, 3L				
				Feb-02 - Feb-03	4	0	2J, 3K, 3L				
				Feb-18 - Feb-19	4	0	1F, 3K, 3L				
				Mar-01 - Mar-03	6	0	1F, 3K, 3L				
				Mar-18 - Mar-20	5	0	1F, 2J, 3K, 3L				
				Mar-29 - Apr-04	6	0	2J, 3K, 3L				
				Apr-15 - Apr-16	4	0	2J, 3K, 3L				
				Apr-26 - Apr-28	7	0	1F, 2J, 3K, 3L				
				May-03 - May-03	1	0	3L				
				May-13 - May-14	6	0	2J, 3K, 3L				
				May-24 - May-26	6	0	1F, 2J, 3K, 3L				
				Jun-07 - Jun-11	5	0	1F, 2J, 3K, 3L				
				Jun-18 - Jun-19	7	0	1F, 3K, 3L				
				Jul-09 - Jul-10	4	0	1F, 3K				
				Jul-19 - Jul-21	6	0	1F, 2J, 3K				
				Aug-01 - Aug-07	6	0	1F, 2J, 3K, 3L				
				Aug-17 - Aug-18	3	0	1F, 3K, 3L				
				Sep-02 - Sep-03	6	0	1F, 2J, 3K, 3L				
				Sep-13 - Sep-15	7	0	1F, 2J, 3K, 3L				
				Sep-30 - Oct-01	6	0	1F, 2J, 3K, 3L				
				Oct-12 - Oct-14	6	0	1F, 3K, 3L				
				Oct-29 - Oct-30	6	0	1F, 3K, 3L				
				Nov-25 - Nov-26	5	0	1F, 3K, 3L				
				Dec 11 - Dec 12	5	0	3K, 3L, 3M				
				Dec 25 - Dec 25	2	0	3K				
				Jan-27 - Jan-27	1	0	5ZW				
				Feb-17 - Feb-18	7	0	1F, 2J, 3K, 3L				
				Apr-12 - Apr-18	19	0	1F, 2J, 3K, 4X, 5Y, 5ZW				
				Nov-23 - Dec 02	95	0	3O, 3PS				
Feb-21 - Feb-24	3	0	6D, 6G								
Mar-27 - Mar-30	10	0	6D, 6E, 6F, 6G, 6H								
May-18 - May-21	7	0	6D, 6E, 6F, 6G, 6H								
Jun-25 - Jul-01	7	0	4VS, 6C, 6D, 6E, 6F, 6G, 6H								
Aug-09 - Aug-11	7	0	6D, 6E, 6G, 6H								
Sep-13 - Sep-14	2	0	6G, 6H								
Sep-25 - Sep-27	3	0	6D, 6E, 6G								
Mar-12 - Mar-14	4	0	6F, 6H								
May-08 - May-09	2	0	4VS, 6F								
Jul-31 - Aug-03	6	0	3M, 6C, 6D, 6E, 6G								
Oct-01 - Oct-04	15	0	3M, 3O, 4VS, 4W, 4X, 5ZE, 5ZW, 6A								
Nov-21 - Nov-23	4	0	3M, 4X								
Jan-23 - Jan-25	10	0	5ZE, 6D, 6E, 6F, 6G								
Feb-03 - Feb-04	3	0	6G, 6H								
Mar-08 - Mar-13	13	0	5ZE, 6B, 6D, 6E, 6F, 6G, 6H								
Apr-21 - Apr-25	12	0	5ZE, 6E, 6F, 6G, 6H								
Jun-01 - Jun-04	8	0	5ZE, 5ZW, 6D, 6E, 6F, 6G, 6H								
Jun-10 - Jun-14	13	0	3M, 3N, 3O, 4VS, 4W, 6C, 6D, 6E								
Jul-14 - Jul-16	8	0	3M, 3N, 3O, 3PS, 4VS, 4W								
Jul-25 - Jul-28	14	0	3M, 3N, 4VS, 6C, 6D, 6E, 6F								
Aug-29 - Sep-10	15	0	3M, 3N, 3O, 4VS, 5ZE, 6B, 6C, 6D								
Oct-09 - Oct-11	9	0	3M, 3N, 3O, 4VS, 4W								
Oct-22 - Oct-24	6	0	6D, 6E, 6F, 6G								
Dec 26 - Dec 26	1	0	6H								
Jun-12 - Jun-13	5	0	6B, 6C								
Sep-03 - Sep-03	2	0	6B, 6C								
Sep-17 - Sep-17	2	0	6B								
PENNYSMART ENDURANCE	CANADA USA	VOFG WAUU	99	Nov-23 - Dec 02	95	0	3O, 3PS				
				Feb-21 - Feb-24	3	0	6D, 6G				
				Mar-27 - Mar-30	10	0	6D, 6E, 6F, 6G, 6H				
				May-18 - May-21	7	0	6D, 6E, 6F, 6G, 6H				
				Jun-25 - Jul-01	7	0	4VS, 6C, 6D, 6E, 6F, 6G, 6H				
				Aug-09 - Aug-11	7	0	6D, 6E, 6G, 6H				
				Sep-13 - Sep-14	2	0	6G, 6H				
				Sep-25 - Sep-27	3	0	6D, 6E, 6G				
				Mar-12 - Mar-14	4	0	6F, 6H				
				May-08 - May-09	2	0	4VS, 6F				
ENDEAVOR	USA	WAUW	99	Jul-31 - Aug-03	6	0	3M, 6C, 6D, 6E, 6G				
				Oct-01 - Oct-04	15	0	3M, 3O, 4VS, 4W, 4X, 5ZE, 5ZW, 6A				
				Nov-21 - Nov-23	4	0	3M, 4X				
				Jan-23 - Jan-25	10	0	5ZE, 6D, 6E, 6F, 6G				
				Feb-03 - Feb-04	3	0	6G, 6H				
				Mar-08 - Mar-13	13	0	5ZE, 6B, 6D, 6E, 6F, 6G, 6H				
				Apr-21 - Apr-25	12	0	5ZE, 6E, 6F, 6G, 6H				
				Jun-01 - Jun-04	8	0	5ZE, 5ZW, 6D, 6E, 6F, 6G, 6H				
				Jun-10 - Jun-14	13	0	3M, 3N, 3O, 4VS, 4W, 6C, 6D, 6E				
				Jul-14 - Jul-16	8	0	3M, 3N, 3O, 3PS, 4VS, 4W				
ENTERPRISE	USA	WAUY	99	Jul-25 - Jul-28	14	0	3M, 3N, 4VS, 6C, 6D, 6E, 6F				
				Aug-29 - Sep-10	15	0	3M, 3N, 3O, 4VS, 5ZE, 6B, 6C, 6D				
				Oct-09 - Oct-11	9	0	3M, 3N, 3O, 4VS, 4W				
				Oct-22 - Oct-24	6	0	6D, 6E, 6F, 6G				
				Dec 26 - Dec 26	1	0	6H				
				Jun-12 - Jun-13	5	0	6B, 6C				
				Sep-03 - Sep-03	2	0	6B, 6C				
				Sep-17 - Sep-17	2	0	6B				
				SEALAND CRUSADER	USA	WZJF	99	Jul-05 - Jul-11	12	0	1F, 2J, 3K, 4X, 5Y
								Dec 01 - Dec 04	2	0	5ZW, 6C
Jan-08 - Jan-27	48	0	3L, 3M, 3N, 3O, 3PS, 4VS, 4W, 4X, 5Y, 6E, 6F								
Feb-02 - Mar-02	49	3	1F, 3O, 4X, 5ZE, 6B, 6C, 6E, 6H								
Mar-08 - Mar-14	17	0	3N, 3O, 4VS, 4W, 6A, 6B, 6C, 6G, 6H								
Mar-26 - Mar-26	0	1	3L								
Apr-16 - Apr-21	30	1	3L, 3M, 4X, 6C, 6E								
Apr-29 - May-04	13	1	3K, 3L, 4X, 6D								
May-13 - May-19	13	0	3L, 3O, 4VS, 4W, 4X								
Jun-01 - Jun-26	103	28	1F, 3L, 4S, 4VN, 4W, 4X, 5Y, 5ZE, 6A, 6B, 6E								

Thermosalinograph data:

A number of vessels have been equipped with thermosalinographs to collect surface temperatures and salinities. These data are transmitted via satellite and GTS and captured and archived at MEDS. The sampling locations in 1999 and number of observation locations in NAFO area for each month are given in Fig. 3 and 4 respectively.

Figure 3:

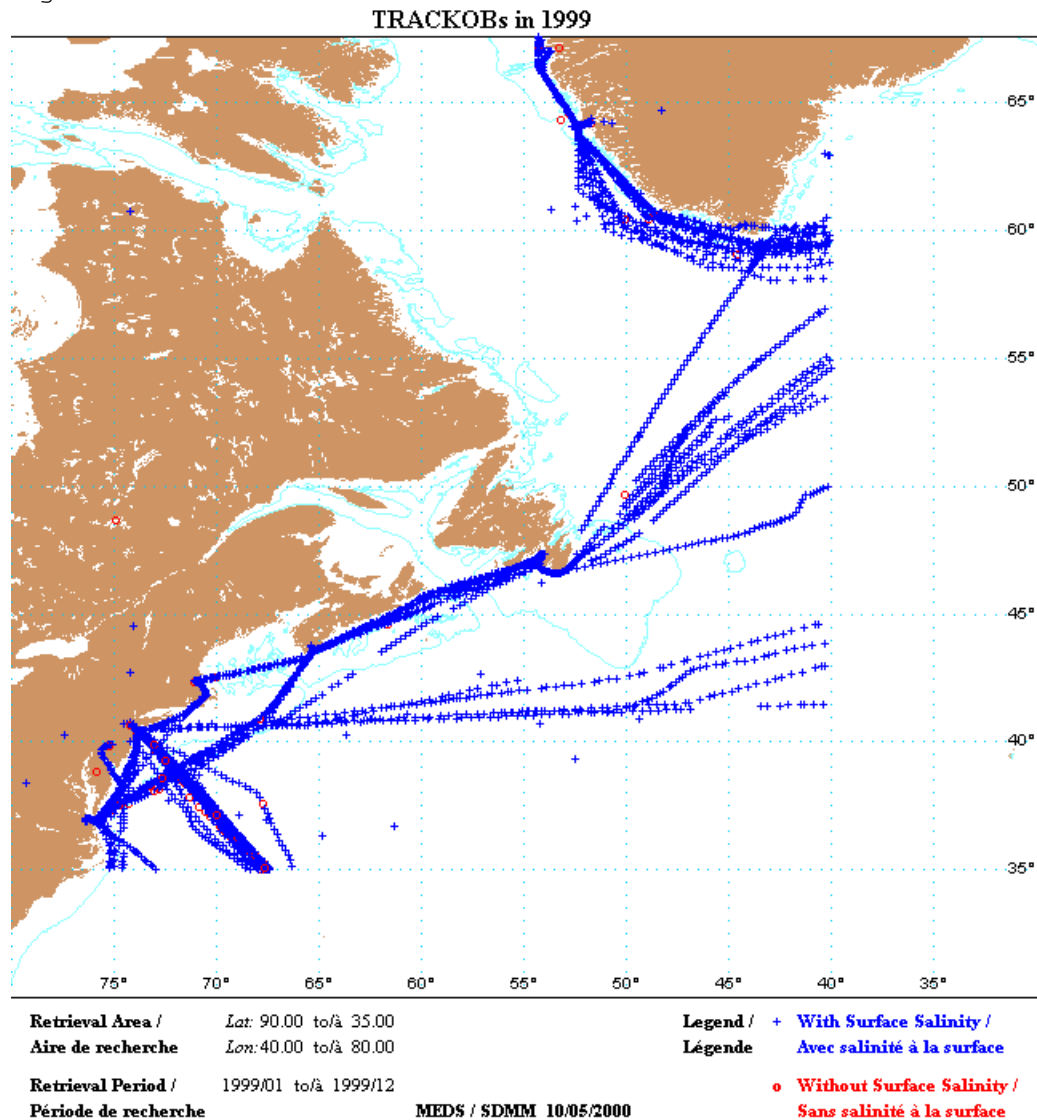
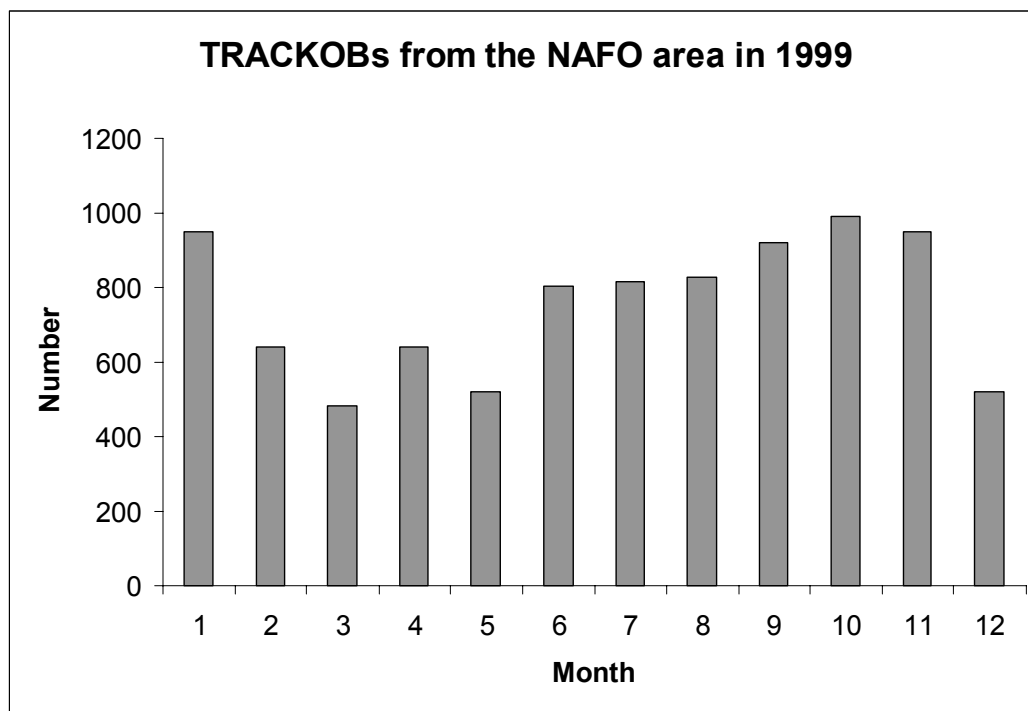


Figure 4:



TRACKOB data received during 1999.

Total = 8802 stations

Ship Name	Country	Call Sign	Cruise Period	TRACKOB	NAFO Subarea
MELBOURNE STAR	BAHAMAS	C6JY6	99 Jan-28 - Feb-01	87	6B,6C
			99 Apr-16 - Apr-19	69	6B,6C
METEOR	GERMANY	DBBH	99 Aug-13 - Aug-16	71	1F,2J,3K,3L
UNKNOWN	LIBERIA	ELVX4	99 Nov-04 - Nov-09	76	3M,3N,3O,4VS,4W,4X, 5ZE,5ZW,6A,6B,6C
CONTSHIP WASHINGTON	LIBERIA	ELVZ5	99 Mar-27 - Mar-31	71	4VS,4W,4X,5ZE,5ZW,6A,6B,6C
			99 Sep-17 - Sep-22	111	3M,3N,3O,4VS,4W,4X,5ZE, 5ZW,6A,6B,6C
			99 Dec 15 - Dec 20	52	3M,3N,3O,4VS,6B,6C,6D
CONTSHIP ROME	LIBERIA	ELVZ6	99 Jul-12 - Jul-17	105	3M,3N,3O,4VS,4W,4X, 5ZE,5ZW,6A,6B,6C
UNKNOWN	USA	KWAL	99 Feb-04 - Feb-04	1	3PS
			99 Mar-17 - Mar-21	2	3K,5Y
			99 Sep-15 - Sep-15	1	1D
			99 Feb-03 - Feb-03	1	4W
NUKA ARCTICA	DENMARK	NOCALL	99 Apr-20 - Apr-27	31	1B,1C,1D,1E,1F
			99 May-11 - May-20	210	1B,1C,1D,1E,1F,3L
			99 Jun-01 - Jun-09	193	1B,1C,1D,1E,1F
			99 Jun-17 - Jul-03	223	1B,1C,1D,1E,1F
			99 Jul-15 - Jul-23	205	1B,1C,1D,1E,1F
			99 Aug-01 - Aug-12	202	1A,1B,1C,1D,1E,1F
			99 Aug-25 - Sep-02	191	1B,1C,1D,1E,1F
			99 Sep-14 - Sep-21	177	1B,1C,1D,1E,1F,3N
			99 Oct-05 - Oct-13	169	1B,1C,1D,1E,1F
			99 Oct-28 - Nov-06	196	1B,1C,1D,1E,1F
			99 Nov-18 - Nov-25	159	1B,1C,1D,1E,1F
			99 Dec 06 - Dec 16	107	1B,1C,1D,1F
UNKNOWN	NETHERLAND	PBJU	99 May-26 - May-26	1	6D
			99 Oct-30 - Oct-30	1	6B

OLEANDER	NETHERLAND	PJJU	99	Jan-01 - Mar-03	710	5ZW, 6A, 6B, 6C, 6D, 6E				
				Mar-12 - Mar-14	32	6A, 6B, 6D				
				Apr-09 - May-13	398	1A, 6A, 6B, 6C, 6D				
				May-21 - Sep-29	1744	4VS, 5ZW, 6A, 6B, 6D				
				Oct-08 - Nov-24	617	4VS, 5ZW, 6A, 6B, 6C, 6D, 6E				
				Dec 03 - Dec 23	208	6A, 6B, 6D				
HANNE SIF	SINGAPORE	S6LA	99	Dec 30 - Dec 30	1	6A				
				Jun-14 - Jun-14	2	5ZW				
				Aug-13 - Aug-13	4	6B				
				Sep-10 - Sep-16	142	3PS, 4VN, 4VS, 4W, 4X, 5ZE, 5ZW, 6A, 6B, 6C				
				Oct-02 - Oct-16	230	1F, 2J, 3K, 3L, 3PS, 4VN, 4X, 5ZE, 5ZW, 6A, 6B, 6C				
				Oct-25 - Nov-08	309	1F, 2J, 3K, 3L, 3PS, 4VN, 4VS, 4W, 4X, 5Y, 5ZE, 5ZW, 6A, 6B, 6C				
				Nov-26 - Dec 07	214	3L, 3M, 3PS, 4VN, 4VS, 4W, 4X, 5Y, 5ZE, 5ZW, 6A, 6B, 6C				
				Dec 29 - Dec 31	32	5ZW, 6A				
				UNKNOWN	UNKNOWN	SHIP	99	Jan-01 - Jan-02	3	4X, 6B
								Jan-23 - Jan-23	1	6A
Jan-28 - Jan-29	3	5ZW, 6A, 6B								
Mar-20 - Mar-21	2	4W, 5ZW								
Apr-23 - May-01	3	6A, 6D								
May-22 - May-22	1	6D								
Oct-20 - Oct-22	2	6A, 6D								
Nov-06 - Nov-06	1	6A								
UNKNOWN	ANTIGUA AN	V2XM	99	Dec 11 - Dec 12	2	1B, 4X				
				Jan-01 - Jan-07	140	1F, 2J, 3K, 3L, 3PS, 4VS, 4W, 4X, 5ZE, 5ZW, 6B, 6C				
				Jan-19 - Feb-06	369	1F, 2J, 3K, 3L, 3PS, 4VN, 4VS, 4W, 4X, 5Y, 5ZE, 5ZW, 6A, 6B, 6C				
				Feb-17 - Mar-05	276	1F, 2J, 3K, 3L, 3PS, 4VN, 4W, 4X, 5Y, 5ZE, 5ZW, 6A, 6B, 6C				
				Mar-16 - Apr-04	396	1F, 2J, 3K, 3L, 3PS, 4VN, 4VS, 4W, 4X, 5ZE, 5ZW, 6A, 6B, 6C				
				Apr-12 - Apr-22	214	2J, 3K, 3L, 3PS, 4VN, 4VS, 4W, 4X, 5Y, 5ZW, 6A, 6B, 6C				
JOHN V VICKERS KA' IMIMOANA	USA	WTEC	99	Jan-14 - Jan-18	33	0A, 6B, 6C				
	USA	WTEU	99	Aug-27 - Aug-27	1	1D				

Table 3: Delayed mode Oceanographic Stations Archived at MEDS for 1999

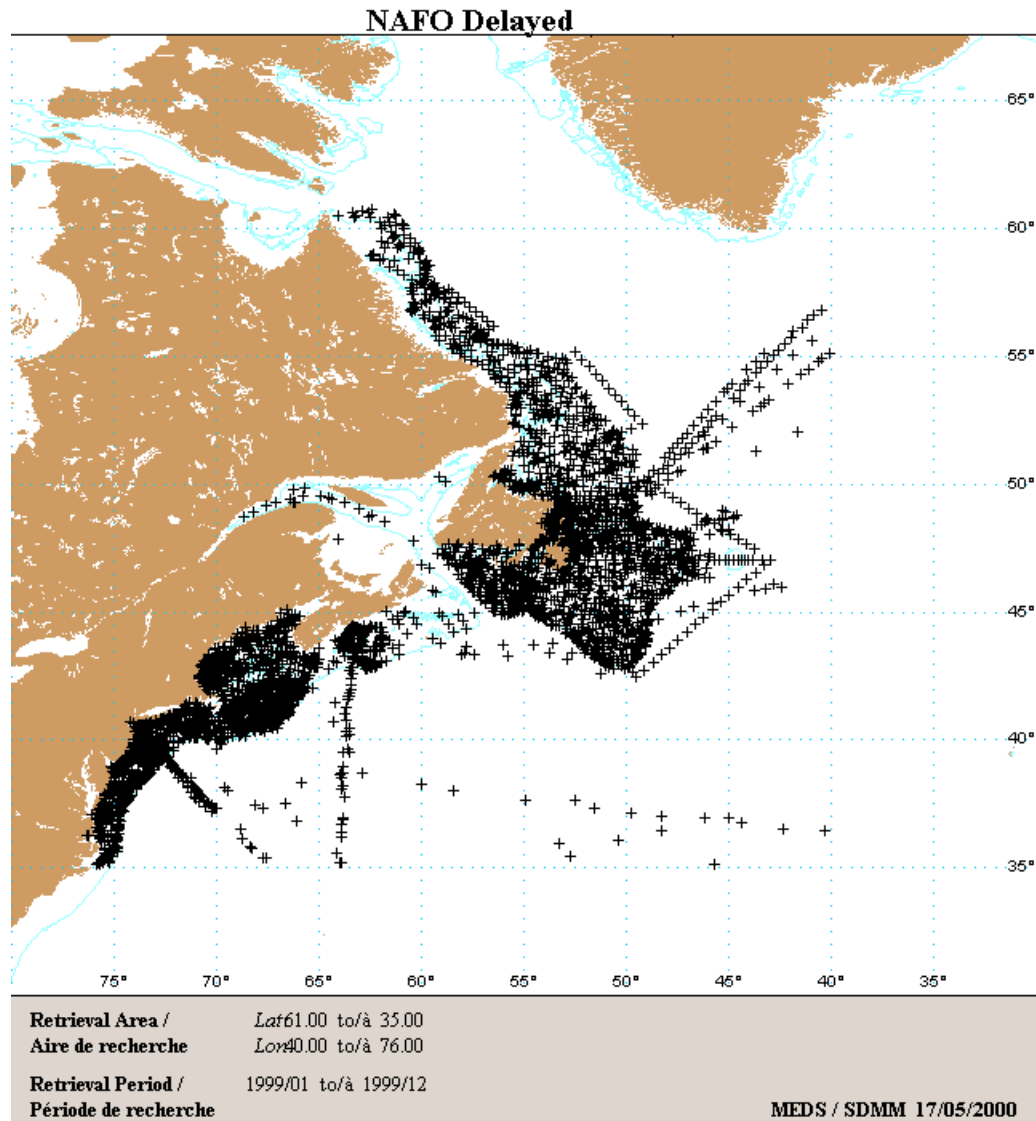


Table 3: Delayed mode data received during 1999. Total = 5208 stations

Country	Cruise Num	Cruise Period	BT	CTD	BOTTLE	NAFO Subarea
CANADA	181C99001	Mar-29 - Apr-08	0	30	0	3L, 3PS
CANADA	181C99002	Apr-10 - Apr-10	0	1	0	3PS
CANADA	181C99003	Apr-13 - Apr-22	3	102	0	3PS, 3PN
CANADA	181C99004	Apr-25 - May-07	8	92	0	3L, 3O, 3PS
CANADA	181C99005	May-10 - May-21	11	78	0	3L, 3N, 3O
CANADA	181C99006	May-26 - Jun-04	6	62	0	3L, 3N, 3O
CANADA	181C99007	Jun-05 - Jun-18	8	116	0	3L, 3N
CANADA	181C99008	Jun-19 - Jun-29	7	96	0	3L
CANADA	181C99009	Sep-07 - Sep-20	0	18	0	3L, 3N, 3O
CANADA	181C99010	Sep-21 - Sep-27	10	27	0	3K, 3L
CANADA	181C99011	Oct-12 - Oct-22	5	44	0	3L, 3O
CANADA	181C99012	Oct-24 - Nov-05	7	45	0	3L, 3N, 3O

CANADA	181C99013	Nov-06 - Nov-19	6	61	0	3L, 3N, 3O
CANADA	181C99014	Nov-21 - Dec 02	8	96	0	3L, 3N
CANADA	181C99015	Dec 04 - Dec 14	9	65	0	3L
CANADA	18A199001	Mar-17 - Mar-20	21	0	0	3N, 3O
CANADA	18AH99004	Mar-24 - Mar-25	4	0	0	6G, 6H
CANADA	18C899001	Jan-08 - Jan-25	45	0	0	3L, 3M, 3N, 3O, 3PS, 4VS, 4W
CANADA	18C899002	Mar-23 - Mar-25	20	0	0	4W, 4X, 6E
		Apr-20 - Apr-21	6	0	0	4X, 6E
CANADA	18FN99001	Jul-29 - Jul-31	9	0	0	3N, 3O, 4VS
CANADA	18FN99002	Sep-28 - Sep-30	5	0	0	4W, 4X
CANADA	18GP99001	May-05 - May-05	0	2	0	4S, 4T
		May-11 - May-11	0	2	0	4S, 4T
		Jun-04 - Jun-05	0	2	0	4S, 4T
CANADA	18HU99003	Nov-18 - Nov-27	48	47	26	3K, 3L, 3M, 3N, 3O
CANADA	18HU99004	Apr-08 - Apr-08	0	0	1	4W
		Apr-18 - Apr-18	0	0	1	4W
CANADA	18HU99020	Nov-12 - Nov-12	0	0	1	4W
CANADA	18HU99022	Jun-27 - Jun-27	0	0	1	4W
CANADA	18HU99054	Oct-23 - Oct-23	0	0	1	4W
		Nov-05 - Nov-05	0	0	1	4W
CANADA	18IS99002	Jul-28 - Jul-28	1	0	0	3K
CANADA	18MF99001	Jan-13 - Jan-13	0	2	0	4S, 4T
		Jan-29 - Jan-30	0	2	0	4S, 4T
		Feb-15 - Feb-15	0	2	0	4S, 4T
		Mar-04 - Mar-04	0	2	0	4S, 4T
		May-18 - May-18	0	2	0	4S, 4T
		May-27 - May-27	0	2	0	4S, 4T
		Jun-30 - Jun-30	0	2	0	4S, 4T
		Jul-07 - Jul-07	0	2	0	4S, 4T
		Jul-13 - Jul-13	0	2	0	4S, 4T
CANADA	18MF99014	Jun-12 - Jun-12	0	2	0	4S, 4T
		Jun-17 - Jun-17	0	2	0	4R, 4S
CANADA	18MP99001	Apr-20 - Apr-21	4	0	0	4X
CANADA	18MP99002	Apr-29 - May-01	6	0	0	4X, 6D
		Jun-01 - Jun-01	3	0	0	4X, 5ZE
CANADA	18MP99003	Jan-11 - Jan-13	5	0	0	4W, 4X
CANADA	18MP99004	Jan-20 - Jan-20	1	0	0	4X
		Feb-16 - Feb-17	2	0	0	4X
		Feb-26 - Mar-11	20	0	0	3L, 3M, 3N, 3O, 4VS
CANADA	18MP99006	Sep-02 - Sep-02	2	0	0	4W
CANADA	18MP99007	Sep-07 - Sep-09	16	0	0	4S, 4T, 4VN, 4W
		Sep-22 - Sep-23	5	0	0	4S, 4T, 4VN
CANADA	18NE99025	Jul-05 - Jul-05	0	0	1	4W
		Jul-17 - Jul-17	0	0	1	4W
CANADA	18NE99029	Jul-31 - Jul-31	0	0	1	4W
CANADA	18NE99041	Sep-20 - Sep-20	0	0	1	4T
CANADA	18OD99001	Jan-25 - Feb-02	8	0	0	4W
CANADA	18OK99001	Apr-29 - May-10	17	5	0	3L, 3PS
CANADA	18OK99002	May-20 - Jun-03	5	11	0	3L
CANADA	18OK99003	Jun-08 - Jun-13	7	2	0	3L
CANADA	18OK99004	Aug-03 - Aug-14	0	16	0	3L
CANADA	18OK99005	Sep-29 - Oct-09	11	5	0	3L
CANADA	18OK99006	Nov-09 - Nov-16	12	3	0	3PS
CANADA	18OK99007	Nov-24 - Dec 06	0	29	0	3L
		Dec 12 - Dec 12	0	1	0	3L
CANADA	18OP99007	Oct-13 - Oct-13	0	1	1	4T
CANADA	18OP99008	Oct-30 - Oct-30	0	1	1	4T
CANADA	18OP99009	Nov-17 - Nov-17	0	1	1	4T
CANADA	18OP99668	Aug-03 - Aug-03	0	1	0	4T
CANADA	18PA99012	Oct-29 - Oct-29	0	1	1	4X
CANADA	18PA99013	Nov-17 - Nov-17	0	1	1	4X
CANADA	18PA99014	Sep-27 - Sep-27	0	1	1	4X
CANADA	18PA99015	Oct-12 - Oct-13	0	1	1	4X
CANADA	18PA99016	Aug-04 - Aug-04	0	1	1	4X
		Dec 04 - Dec 04	0	1	1	4X
		Dec 14 - Dec 14	0	1	1	4X
		Dec 29 - Dec 29	0	1	1	4X
CANADA	18PA99669	Jan-28 - Jan-28	0	1	0	4X
		Feb-11 - Feb-11	0	2	0	4X
		Mar-19 - Mar-19	0	1	0	4X
		Apr-15 - Apr-15	0	1	0	4X
		Apr-23 - Apr-23	0	1	0	4X
		May-27 - May-27	0	1	0	4X
		Jun-25 - Jun-25	0	1	0	4X
		Jul-28 - Jul-28	0	1	1	4X
		Aug-12 - Aug-12	0	1	1	4X

		Aug-30 - Aug-30	0	1	1	4X
CANADA	18PZ99078	Feb-10 - Feb-10	0	0	1	4W
		Feb-16 - Feb-16	0	0	1	4W
CANADA	18S699001	Feb-23 - Mar-04	13	0	0	4X, 5ZE, 5ZW
CANADA	18S699002	Mar-23 - Mar-25	9	0	0	4W, 4X, 6E
CANADA	18S699003	Sep-28 - Sep-30	8	0	0	4W, 4X
CANADA	18S999014	Nov-24 - Nov-24	0	1	1	4W
CANADA	18S999015	Dec 10 - Dec 10	0	1	1	4W
		Dec 23 - Dec 23	0	1	1	4W
CANADA	18S999666	Aug-13 - Aug-13	0	1	1	4W
		Aug-27 - Aug-27	0	1	1	4W
		Sep-10 - Sep-10	0	1	1	4W
CANADA	18TL99001	Jan-04 - Jan-17	0	20	0	2J, 3L, 3PS
CANADA	18TL99002	May-13 - May-28	121	37	24	3K, 3L
CANADA	18TL99003	May-30 - Jun-17	0	38	0	2J, 3L, 3PS
CANADA	18TL99004	Jul-16 - Aug-01	94	128	58	2H, 2J, 3K, 3L, 3M
CANADA	18TL99005	Aug-23 - Sep-17	0	44	0	2J, 3K, 3L
CANADA	18TL99006	Sep-20 - Sep-22	0	12	0	3L
CANADA	18TL99007	Sep-28 - Oct-04	0	5	0	4W, 4X
CANADA	18TL99008	Oct-09 - Oct-21	4	43	0	2G, 3L
CANADA	18TL99009	Oct-22 - Nov-04	6	103	0	2G, 2H
CANADA	18TL99010	Nov-06 - Nov-18	5	108	0	2H, 2J
CANADA	18TL99011	Nov-20 - Dec 01	4	102	0	2J, 3K
CANADA	18TL99012	Dec 04 - Dec 12	5	63	0	3K, 3L, 3M
CANADA	18TR99001	Feb-15 - Feb-25	22	0	0	4W, 4X, 5ZE
CANADA	18TR99002	Mar-23 - Mar-25	11	0	0	4W, 4X, 6E
CANADA	18TR99003	Feb-08 - Feb-09	4	0	0	4W, 4X
CANADA	18TY99001	Jul-27 - Jul-27	0	2	0	4S, 4T
CANADA	18VA99001	Mar-26 - Mar-26	0	1	0	3L
CANADA	18VA99002	Apr-16 - Apr-16	0	1	0	3L
CANADA	18VA99003	May-04 - May-04	0	1	1	3L
CANADA	18VA99004	Jun-17 - Jun-17	0	1	1	3L
CANADA	18VA99005	Jul-06 - Jul-06	0	1	1	3L
CANADA	18VA99006	Aug-12 - Aug-12	0	1	1	3L
CANADA	18VA99007	Nov-23 - Dec 02	95	0	0	30, 3PS
CANADA	18VA99008	Dec 21 - Dec 21	0	0	1	3L
CANADA	18VA99010	Dec 10 - Dec 10	0	1	1	4T
CANADA	18VA99011	Sep-27 - Sep-28	0	2	0	4W
CANADA	18VA99012	Oct-29 - Oct-29	0	4	0	4W
CANADA	18VA99013	Oct-25 - Oct-26	0	4	0	4W
CANADA	18VA99014	Sep-28 - Sep-29	0	3	0	4VS, 4W
CANADA	18VA99015	Sep-09 - Sep-14	0	6	0	4VS
CANADA	18VA99016	Nov-02 - Nov-02	0	2	0	4W
CANADA	18VA99017	Sep-20 - Sep-20	0	1	0	4W
CANADA	18VA99018	Nov-23 - Nov-23	0	2	0	4W
CANADA	18VA99019	Sep-06 - Sep-06	0	1	0	4W
CANADA	18VA99025	Mar-31 - Mar-31	0	0	1	4W
CANADA	18VA99666	Jan-13 - Jan-13	0	1	1	4W
		Jan-30 - Jan-30	0	1	0	4W
		May-05 - May-05	0	1	1	4W
		May-19 - May-19	0	1	1	4W
		Jun-10 - Jun-10	0	1	1	4W
CANADA	18VA99668	Apr-30 - Apr-30	0	1	1	4T
		May-21 - May-21	0	1	1	4T
		Jun-09 - Jun-09	0	1	1	4T
		Jun-30 - Jun-30	0	0	1	4T
		Aug-08 - Aug-08	0	0	1	4T
		Aug-23 - Aug-23	0	0	1	4T
CANADA	18VQ99001	May-11 - May-13	11	0	0	4W, 4X
		Jun-03 - Jun-11	0	75	0	4X, 5Y, 5ZE, 5ZW
		Jul-29 - Aug-27	0	42	0	4X, 5Y
		Jan-21 - Jan-26	0	33	0	4X, 5Y, 5ZE, 5ZW
		Feb-23 - Mar-10	0	29	0	5Y, 5ZW
		Mar-30 - Apr-08	0	38	0	5ZE, 5ZW
		Apr-27 - Apr-29	0	8	0	5ZW, 6A
		Jun-04 - Jun-08	0	9	0	6A
		Jun-15 - Jun-15	0	1	0	6A
		Jul-28 - Aug-08	0	80	0	4W, 4X, 5ZE
		Aug-17 - Aug-31	0	77	0	4W, 4X, 5Y
		Aug-21 - Sep-02	0	110	0	4X, 5Y, 5ZE, 5ZW, 6A
		Apr-16 - Apr-23	0	46	0	5ZE
		May-11 - May-27	0	71	0	5ZE
		Jan-13 - Jan-24	0	80	0	4X, 5ZE
		Feb-02 - Feb-24	0	146	0	5ZE, 5ZW, 6A, 6B, 6C
		Mar-02 - Mar-10	0	70	0	6A, 6B, 6C
		Mar-18 - Apr-22	0	261	0	4X, 5Y, 5ZE, 5ZW, 6A, 6B, 6C

31A499004	May-20 - May-27	0	83	0	4X, 5ZE
31A499005	Jun-02 - Jun-10	0	46	0	5ZE
31A499006	Jun-15 - Jun-23	0	41	0	4X, 5ZE
31A499007	Jun-29 - Jul-01	0	14	0	5Y, 5ZE, 5ZW
31A499008	Jul-07 - Jul-10	0	25	0	5ZE
31A499009	Jul-17 - Aug-05	0	110	0	5ZE, 5ZW, 6A, 6B, 6C
31A499010	Sep-21 - Sep-30	0	99	0	6A, 6B, 6C
	Oct-05 - Oct-14	0	96	0	5ZE, 5ZW, 6A
	Oct-19 - Nov-10	0	151	0	4X, 5Y, 5ZE, 5ZW
31A499011	Nov-13 - Nov-22	0	72	0	4X, 5Y, 5ZE, 5ZW
31EV99020	Mar-11 - Mar-22	0	78	0	4X, 5ZE
31NP99001	Nov-06 - Nov-11	0	35	0	5ZW, 6A, 6B, 6C
32E399001	Apr-21 - Apr-25	13	0	0	5ZE, 6E, 6F, 6G, 6H
32OC99036	Feb-11 - Feb-22	0	79	0	4X, 5ZE
32OC99041	Apr-17 - Apr-26	0	82	0	4X, 5ZE
32OD99001	Feb-12 - Feb-13	19	0	0	6A, 6B
32OD99002	May-07 - May-12	18	0	0	6A, 6B, 6D
32OD99003	Apr-09 - Apr-14	25	0	0	6A, 6B, 6D
32OD99004	Jun-04 - Jun-09	20	0	0	6A, 6B, 6D
33EU99001	Jan-16 - Jan-16	2	0	0	6C
	Jan-22 - Jan-22	1	0	0	6H
33EU99002	Feb-21 - Feb-24	6	0	0	6D, 6G
33S199001	Apr-22 - Apr-22	2	0	0	6C
74NO99001	Feb-08 - Feb-09	5	0	0	6A, 6B, 6D
AGGD99001	Jan-18 - Jan-20	31	0	0	1F, 2J, 3K, 3L
	Jan-26 - Jan-27	8	0	0	4X, 5Y, 5ZW
AGGD99002	Feb-17 - Feb-22	19	0	0	1F, 2J, 3K, 3L, 4X, 5Y, 5ZW
AGGD99003	Mar-21 - Mar-21	9	0	0	4X, 5Y, 5ZW
AGGD99004	Apr-12 - Apr-18	31	0	0	1F, 2J, 3K, 4X, 5Y, 5ZW
AGHA99001	Feb-18 - Feb-19	4	0	0	1F, 3K, 3L
AGHA99002	Mar-01 - Mar-03	5	0	0	1F, 3K, 3L
AGHA99003	Mar-18 - Mar-20	5	0	0	1F, 2J, 3K, 3L
AGHA99004	Mar-29 - Mar-30	5	0	0	2J, 3K, 3L

Table 4: Historical data (from years prior to 1999), received at MEDS since last NAFO report.

Table 4a: Historical data (from years prior to 1999)

NAFO Data Loaded in 1999

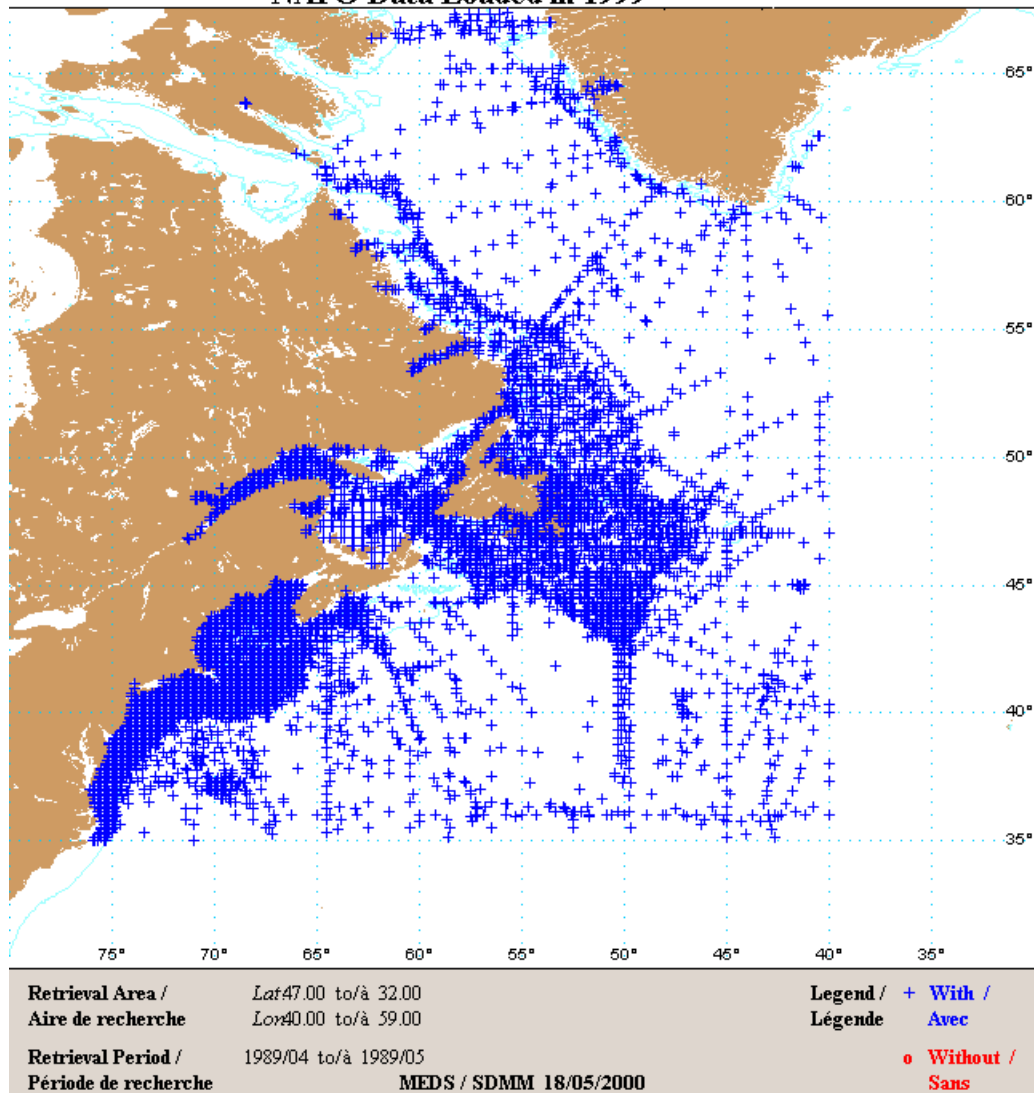


Table 4a: HISTORICAL DATA PROCESSED AND ARCHIVED Total = 18414 stations

Cruise No	Year	BT	Bottle	CTD	NAFO Subarea
06WH97001	1949	0	0	63	XX, 1C, 1D, 1E, 1F
180049022	1949	25	0	0	3K, 4R, 2J
180049023	1949	3	0	0	2J
180049031	1950	17	0	0	4R, 3K
180050022	1950	30	0	0	2J
180050023	1950	33	0	0	2J
180050036	1951	12	0	0	2G
180051022	1951	19	0	0	2J
180051023	1954	10	0	0	2H, 2J
180054023	1954	4	0	0	2H
180054036	1954	3	0	0	2G
180054037	1958	1	0	0	2G
180158319	1962	0	42	0	3M, 4W, 4V, 1F, 0B, 1D, 3K, 3L, 5Z, 2J, 6D, 1C, 0A, XX, 2H, 6F, 3N, 6G
180162356	1967	0	60	0	4V, 3P, 4W, 4X, 6F
180167045	1968	41	0	0	4W
180168003	1965	0	3	0	4T, 4X
180365001	1970	0	3	0	6C
180470001	1973	0	9	0	XX
180473003	1976	0	36	0	XX
180476001	1963	0	23	0	XX

181063005	1964	0	112	0	1A, XX, 2G, 0A, 2J, 1B, 1D, 0B, 1C
181064009	1966	0	76	0	6H, 3M, 3N, 4W, XX, 4X
181066001	1966	0	105	0	1E, 2H, 1F, 2J, 3M, XX, 2G, 3K
181066002	1968	0	38	0	3M, 3N, 4W, XX, 3O, 6H, 4X
181068033	1972	0	1	0	4T
181072008	1988	0	69	0	3M, 6H, 3N, XX
181088042	1990	0	34	0	4S, 4R, 4V, 4T
181089036	1997	0	27	0	4V, 4S, 4R, 4T
181C97001	1997	14	0	1	3P, 3L
181C97002	1997	5	0	2	3P, 3O, 3L
181C97003	1997	2	0	1	3O, 3N, 3L
181C97004	1997	3	0	1	3N, 3O, 3L
181C97005	1997	6	0	2	3N, 3L
181C97006	1997	7	0	1	3L, 3O, 3N
181C97007	1997	1	0	2	3L
181C97008	1997	0	0	80	3L
181C97009	1997	0	0	78	3O, 3L, 3N
181C97010	1997	0	0	7	4R, 3L
181C97011	1997	7	0	3	3O, 3N, 3L
181C97012	1997	3	0	5	3L, 3N, 3O
181C97013	1997	9	0	2	3N, 3L
181C97014	1997	9	0	5	3L, 3N, 3O, 3P
181C97015	1997	3	0	1	3L
181C97016	1971	5	0	2	3L, 3K
182471017	1972	0	7	0	4T
182472038	1980	0	28	0	XX, 4T
189980001	1980	0	11	0	3N, 3L
189980002	1980	0	23	0	3L, 3O, 3N
189980003	1980	0	46	0	3O, 3P, 3L, 3N
189980004	1980	0	46	0	3L, 3N, 3P, 3O
189980005	1980	0	46	0	3L, 3P, 3N, 3O
189980006	1980	0	57	0	3N, 3L, 3O, 3P
189980007	1980	0	49	0	3N, 3L, 3O, 3P
189980008	1980	0	58	0	3N, 3O, 3L, 3P
189980009	1980	0	43	0	3O, 3L, 3N
189980010	1980	0	63	0	3O, 3N, 3L, 3P
189980011	1980	0	48	0	3N, 3O, 3L, 3P
189980012	1980	0	52	0	3N, 3O, 3L, 3P
189980013	1980	0	50	0	3O, 3P, 3L, 3N
189980014	1981	0	45	0	3L, 3O, 3N, 3P
189981001	1997	0	46	0	3N, 3O, 3L, 3P
18A197001	1997	39	0	0	3O, 3N
18A197002	1997	44	0	0	3N, 3O
18A197003	1997	49	0	0	3O, 3N
18A197004	1996	30	0	0	3N, 3O
18AH96003	1989	42	0	0	4X, 5Y, 4W
18BA89003	1949	0	40	65	6G, XX, 3N, 3M, 3P, 3O, 6F
18BD49001	1950	0	75	0	2G, 2H, 2J, 3K, 4R
18BD50001	1993	0	136	0	2J
18BG93012	1995	0	0	28	4T
18BG95017	1996	0	0	12	4T
18BG96017	1997	0	0	15	4T
18BW97001	1993	0	0	51	3P
18C793022	1997	0	0	10	4T
18C897004	1998	17	0	0	4W, 4X
18C898002	1998	12	0	0	3L, 3N, 3M, 3P, 4S, 4V
18C898003	1991	41	0	0	4R, 4W, 4V, 4X, 4S
18CN91044	1991	0	0	3	4T
18CN91068	1992	0	0	4	4S
18CN92038	1992	0	0	5	4S
18CN92060	1993	0	0	2	4T
18CN93007	1993	0	0	6	4T
18CN93010	1993	0	0	6	4T, 4S
18CN93044	1995	0	0	7	4T
18CN95003	1995	0	0	2	4S
18CN95008	1995	0	0	2	XX
18CN95035	1995	0	0	17	4T
18CN95036	1996	0	0	9	4T
18CN96016	1996	0	0	18	4V
18CN96036	1996	0	0	1	4S
18CN96037	1990	0	0	33	4T
18DA90012	1990	0	0	31	2J, 1F, 2H
18DA90073	1997	0	0	6	4T, XX
18EN97001	1992	5	0	0	4W
18FC92020	1992	0	0	28	4V
18FC92047	1993	0	0	33	4T

18FC93015	1995	0	0	41	4V
18FC95042	1991	0	0	24	4T, XX
18FL91002	1991	0	0	6	4T, XX
18FL91063	1992	0	0	6	4T, XX
18FL92001	1992	0	0	33	4V, 4S, 4T
18FL92002	1992	0	0	69	4T, 4V, 4S
18FL92016	1992	0	0	80	4S
18FL92046	1992	0	0	19	4T
18FL92057	1993	0	0	13	4R, 4S, 4T
18FL93001	1993	0	0	30	4R, 4S, 4T
18FL93002	1993	0	0	55	4S, 4T, 4R
18FL93039	1997	0	0	7	4T
18FN97004	1998	30	0	0	4X, 4W, 5Y
18FN98001	1998	9	0	0	6E, 4X
18FN98002	1998	4	0	0	4X, 4W
18FN98003	1991	1	0	0	XX
18GA91002	1988	0	0	29	4R, 4T, 3P, 4S, 4V
18GE88001	1988	0	0	35	4T
18GE88002	1989	0	0	35	4T
18GE89015	1990	0	0	8	4T
18GE90006	1990	0	0	3	4S
18GE90010	1990	0	0	13	4S
18GE90068	1997	0	0	2	4T, XX
18HB97001	1997	0	0	1	3L
18HB97002	1997	0	0	21	3L, XX
18HB97003	1997	0	0	20	3P
18HB97004	1997	0	0	33	3P, 3L
18HB97005	1989	22	0	0	3L
18HH89001	1990	0	0	326	4T
18HH90001	1990	0	0	299	4T
18HH90002	1991	0	0	15	4T
18HH91001	1991	0	0	16	4T
18HH91002	1992	0	0	15	4T
18HH92001	1997	0	0	27	XX, 4T
18HL97004	1998	4	0	0	6H, 4V
18HL98001	1998	19	0	0	4W, 6F, XX, 3M, 6H, 6G
18HL98003	1998	33	0	0	4W, 4X
18HL98005	1997	10	0	0	4W, 4X
18HS97001	1992	18	0	18	2H, 3L, 2J, 3K
18HU92001	1992	0	0	83	4S, 4V, 4T
18HU92003	1992	0	0	42	4T, 4S, 4V
18HU92014	1994	0	0	51	2J, 3K, 3M, 1F, XX, 2H
18HU94009	1997	0	0	83	4T, 4V, 4S, 4W
18IS97010	1997	6	0	0	4W, 4X
18IS97011	1998	14	0	0	4X, 4W
18IS98001	1998	14	0	0	6E, 6G, 6F, 3M, 4X, 6H
18IS98003	1998	3	0	0	4X
18IS98004	1983	53	0	0	4W, 4R, 4S, 4V, 4X
18LH83001	1983	0	27	0	4X, 5Z
18LH83002	1983	0	22	0	4X
18LH83003	1983	0	27	0	4X
18LH83004	1984	0	26	0	4X
18LH84002	1984	0	0	44	4X, 5Z
18LH84003	1984	0	0	50	5Z, 4X
18LH84004	1984	0	0	59	4X, 5Z
18LH84005	1985	0	0	39	4X
18LH85002	1985	0	0	84	4X, 5Z, 5Y
18LH85003	1985	0	0	42	4X, 5Z
18LH85004	1989	0	0	90	4X, 5Z, 5Y
18LH89001	1989	4	0	0	4S, 4R
18LH89047	1990	0	0	91	4S, 4R, 4T, 4V
18LH90001	1991	0	0	1	5Z
18LH91001	1988	0	0	1	5Z
18LL88027	1990	0	0	81	4T
18LL90001	1990	0	0	58	4T, 4S
18LL90034	1990	0	0	8	4T, XX
18LL90058	1990	0	0	7	XX, 4T
18LL90067	1991	0	0	58	4T, 4S
18LL91001	1991	0	0	182	4T, XX
18LL91014	1991	0	0	5	4T, XX
18LL91021	1991	0	0	76	XX, 4T, 4S
18LL91064	1997	0	0	163	4T
18LL97001	1994	233	0	0	3L, 3K, 3P, XX
18LU94001	1998	0	0	65	4T, 4S
18MP98001	1998	11	0	0	4X, 5Z
18MP98002	1992	4	0	0	4W, 4V

18NE92009	1995	0	0	49	3P, 4R
18NE95026	1998	0	0	3	4T
18NN98003	1998	11	0	0	4W, 4X
18NN98004	1998	5	0	0	4X, 4W
18NN98005	1998	42	0	0	4W
18NN98006	1997	6	0	0	4X, 4W
18OK97001	1997	16	0	0	3P
18OK97002	1997	0	0	35	3L
18OK97003	1997	0	0	25	3P
18OK97004	1997	0	0	28	3L
18OK97005	1997	0	0	11	3L
18OK97006	1997	0	0	11	3L
18OK97007	1997	2	0	22	3L
18OK97008	1997	1	0	5	3L
18OK97009	1997	0	0	29	3L
18OK97010	1983	0	0	7	3L
18PE83001	1988	0	15	0	4X, 5Z
18PE88002	1990	0	0	133	4T, 4V, 4S
18PE90024	1991	0	0	119	4T, 4S
18PE91020	1987	0	0	101	4T, 4S
18PT87029	1993	0	0	128	4T
18PZ93001	1996	0	0	35	4S, 4T
18PZ96013	1997	0	0	25	4V, 4R
18PZ97014	1997	32	0	65	3O, 3K, 3M, 3L, 3N
18PZ97015	1972	50	0	132	3M, 3L, 3K, 2J, 4R
18QU72001	1998	0	10	0	1B, 1A, 4S, 1C, 1F, 2H
18S698001	1998	18	0	0	6G, 6F, 6H, 4W, 3M, XX, 4V
18S698002	1998	29	0	0	4W, 4X
18S698003	1997	5	0	0	4X
18SN97020	1997	0	0	59	XX, 2G, 0A, 0B, 1B, 1A
18SN97021	1977	0	0	19	XX, 1A, 0A
18TC77001	1997	0	0	59	4T
18TL97001	1997	1	0	16	3P, 3L, 3O
18TL97002	1997	0	0	3	3L, 3K, 2J
18TL97003	1997	0	0	9	3P, 3L
18TL97004	1997	0	0	9	3L, 3N
18TL97005	1997	0	0	28	3L
18TL97006	1997	13	0	2	3P, 4V, 3O, 4T, 3L
18TL97007	1997	0	0	74	3K, 2J, 3L
18TL97008	1997	0	0	1	3P, 3L
18TL97009	1997	0	0	9	4X
18TL97010	1997	5	0	1	2G, 3L, 2H
18TL97011	1997	5	0	1	2J, 2H
18TL97012	1997	7	0	0	2J, 3K
18TL97013	1997	13	0	0	3K
18TL97014	1997	4	0	3	3L, 3K, 3M
18TL97015	1998	4	0	1	3L, 3M, 3N
18TR98001	1988	4	0	0	3M, 3O, 3P
18VA88037	1988	0	0	11	4T
18VA88040	1988	0	0	17	XX, 4T
18VA88042	1989	0	0	61	4S, 4R, 4T
18VA89056	1990	0	0	82	4T, 4S
18VA90009	1995	0	0	24	4V, 4R
18VA95048	1997	0	0	72	4R
18VA97001	1997	0	0	46	3P
18VA97002	1996	0	0	36	3L
18VQ96004	1997	1	0	0	4X
18VQ97005	1950	28	0	0	4X, 4W
26 05350	1955	0	17	0	1C, 1D, 1A, 1B
26 08460	1971	0	36	0	1B, 1D, 0B, 1A, 1C
26AJ00820	1946	0	3	0	1D
26AJ46001	1953	0	2	0	1C
26AJ53101	1954	0	1	0	1D
26AJ54824	1955	0	3	0	1D
26AJ55116	1956	0	2	0	1D
26AJ56001	1978	0	5	0	1D
26AJ78001	1979	0	94	0	1D, 1E, 1C, 1B, 1A
26AJ79001	1980	0	57	0	1C, 1B, 1D, 1E, 1A, 1F
26AJ80001	1954	0	1	0	1D
26DA08240	1964	0	18	0	1A, 1B, 0B, 1C, 1D
26DA64075	1928	0	16	0	1B, 1D, 1A, 0B
26GO28001	1953	0	120	0	1A, 0A, XX, 1B, 1C, 0B, 1D
26RG53001	1975	0	42	0	1B, 1A, 1C, 2H, 1D, 1F, 1E, 2G
26RG75001	1980	0	1	0	1D
26RG80001	1992	0	4	0	1D, 1C
310292001	1992	0	0	16	5Y

310292002	1992	0	0	15	5Y
310292003	1992	0	0	16	5Y
310292004	1993	0	0	55	4X, 5Y
310293001	1994	0	0	34	4X, 5Y
310294001	1995	0	0	10	4X, 5Z
310295001	1995	0	0	35	6B, 6D, 5Z, 6C
310295002	1995	0	0	49	4X, 5Y, 5Z
310295004	1995	0	0	54	5Z
310295005	1995	0	0	87	5Z
310295006	1995	0	0	39	6B, 6C, 6A, XX
310295007	1996	0	0	120	5Z
310296001	1996	0	0	10	5Z
310296002	1996	0	0	7	5Z
310296003	1996	0	0	25	5Z
310296004	1997	0	0	31	4X, 5Y
310297001	1969	0	0	20	6E, 4X, 4W, 5Z
311S15330	1990	0	2	0	XX
316G90001	1990	0	0	176	5Z, 6A, 5Y
316G90003	1990	0	0	90	5Z
316G90005	1990	0	0	96	5Z
316G90006	1990	0	0	100	5Z
316G90011	1990	0	0	74	5Z
316G90012	1990	0	0	121	5Z, 5Y
316G90014	1991	0	0	128	5Z
316G91001	1991	0	0	128	5Z, 5Y
316G91003	1991	0	0	149	6A, 5Z, 5Y
316G91005	1991	48	0	269	6C, 6A, 5Z, 4X, 5Y, XX, 6B
316G91008	1991	0	0	82	5Z, 5Y, 4X
316G91010	1991	0	0	341	5Y, 6B, 6A, 5Z, 6C, 4X, XX
316G91011	1991	0	0	125	5Z, 5Y
316G91013	1992	0	0	132	5Z
316G92001	1992	0	0	85	5Z
316G92002	1992	0	0	123	5Z
316G92003	1992	0	0	61	6A, 5Z
316G92005	1992	0	0	25	5Z, 6A, 6B
316G92006	1992	0	0	120	5Y, 5Z, 6A, 6B, 6C
316G92007	1992	0	0	112	5Z, 5Y, 4X
316G92012	1992	0	0	128	5Z, 5Y
316G92014	1993	0	0	116	5Z
316G93001	1993	0	0	40	5Y
316G93006	1993	0	0	123	5Z, 4X
316G93008	1993	0	0	100	5Y, 5Z, 4X
316G93011	1993	0	0	329	5Z, 5Y, 4X, 6B, 6A, 6C
316G93012	1993	0	0	132	5Z, 5Y
316G93014	1994	0	0	133	5Z
316G94001	1994	0	0	95	5Z
316G94002	1994	0	0	153	5Z, 6C, 6A, 6B
316G94003	1994	0	0	306	5Z, 6C, 6A, 4X, 6B, 5Y, XX
316G94004	1994	0	0	194	5Z
316G94006	1994	0	0	106	5Z
316G94007	1994	0	0	136	6A, 5Z, 6C, 6B, 5Y
316G94008	1994	0	0	26	5Z
316G94009	1994	0	0	58	5Z, 6A
316G94012	1997	0	0	4	5Z, 5Y
316G97005	1997	0	0	29	6C, 6A, 6B
316G97006	1997	0	0	18	6A
316G97007	1997	0	0	30	5Z, 6A, 6C, 6B
316G97008	1975	0	0	12	5Y
316N25090	1974	0	11	0	6A
316N27080	1991	0	57	0	6F, 4X, 6E, 4W, 4V, 6B, 6D, 6C
316O91005	1992	0	0	111	5Z, 6A, 6B, 6C
316O92004	1993	0	0	100	6A, 6B, 5Z, 6C
316O93001	1951	0	0	141	5Z, 6B, 6A, 6C
319970180	1993	0	224	0	5Z
319993001	1995	0	0	177	5Z, 6A
319995001	1995	0	0	41	6A, 5Z, 6B, 6C
319995002	1996	0	0	34	5Z
319996001	1964	0	0	54	5Y, 4X, 5Z
31A427100	1975	0	1	0	4X
31A428870	1992	0	1	0	5Z
31A492002	1992	0	0	59	6B, 6C, 6A
31A492003	1992	0	0	307	6B, 6A, 5Z, 6C, 5Y, XX, 4X
31A492004	1992	0	0	51	5Z
31A492005	1992	0	0	33	5Z
31A492011	1993	16	0	291	5Y, 5Z, 6A, 6B, 6C, 4X
31A493003	1994	0	0	117	6B, 5Z, 6A, 6C

31A494003	1963	0	0	1	5Z
31AN01730	1952	0	1	0	4X
31AS03840	1961	0	1	0	4W
31CF04290	1956	0	204	0	5Z, 4X, 6B, 6A, 6D, 5Y, 6C, 4W
31CF09990	1956	0	18	0	6A, 5Z
31CF22990	1963	0	24	0	6A, 5Z
31EV63001	1968	0	22	0	2J, 1F, 2H
31EW13180	1970	0	3	0	1A
31KY25200	1971	0	18	0	6A
31KY25260	1971	0	12	0	6A
31KY25270	1971	0	15	0	6A
31KY25290	1971	0	15	0	6A
31KY25300	1971	0	5	0	6A
31KY25310	1971	0	7	0	6A
31KY25340	1951	0	15	0	6A
31RE14710	1963	0	2	0	3M, 3N
31TR02130	1971	0	61	0	5Z, 6D, 6A, 6G, 6F, 4X, 6E, 6H, 6B, 4W
31TR26870	1982	0	18	0	3L, 3K, 1F, 3O, XX, 3P
49K682001	1971	0	1	0	4W
67WI71001	1973	0	2	0	5Z, 4X
67WI73002	1975	0	2	0	5Z, 5Y
90BE75003	1959	0	1	0	5Z
90ML00140	1960	0	32	0	4W, 6F, 3M, 6D, 6B, XX, 5Z, 6E, 3O, 4X, 3N, 6C
90ML00690	1968	0	30	0	5Z, 4X, 6F, 6D, 4W, 6B, 6G, 6C, XX, 6E
90ML02350	1970	0	61	0	2J, 6G, 3L, 3N, 2H, 4V, 6F, 3M, XX
90MU02900	1971	0	18	0	4V, 6D, 4W, 6C, 3M, XX, 4X, 3N
90MU03050	1958	0	184	0	6D, 6B, 6E, 6G, 6C, 6H, 5Z, 6F, 4X, XX, 6A
90NO02100	1967	0	4	0	1D
90NO67022	1973	0	14	0	1B, 2J, 0A, 3K, 1D, 2G, 1C
90P304400	1973	0	46	0	3O, 3L, 3P, 4V, 3M, 3K, XX, 3N

TABLE 4b HISTORICAL DATA RECEIVED BUT NOT ARCHIVED.

All historical data from the NAFO area that were received at MEDS during 1999 have been archived.

Drifting Buoy (Dribu) Data

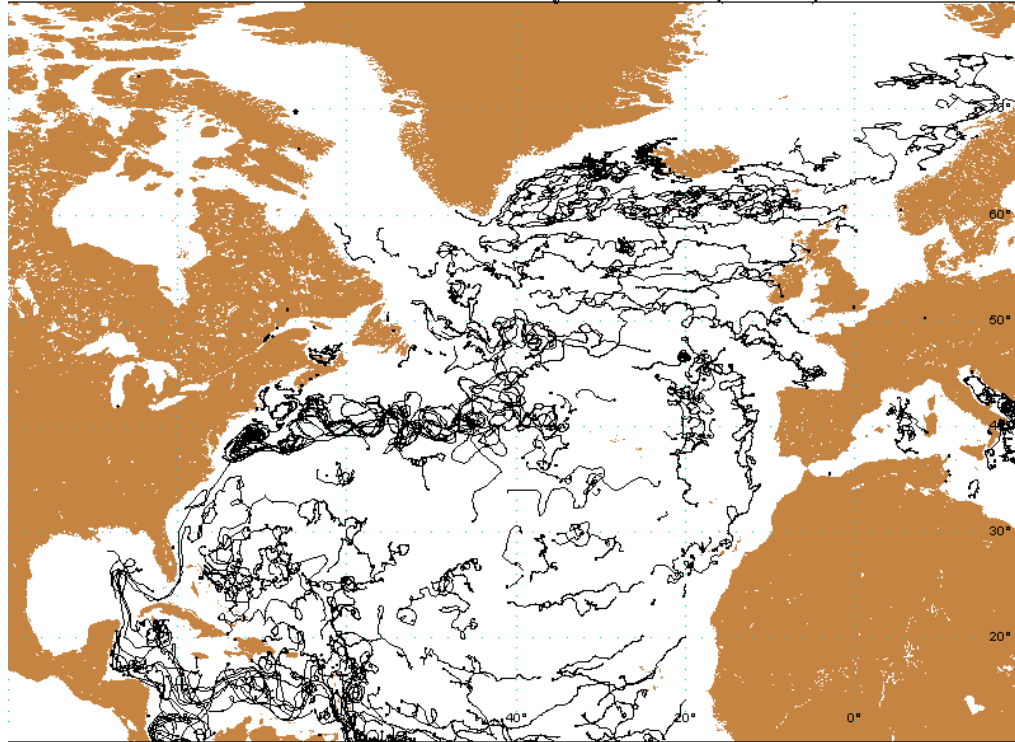
Drifting buoy (or DRIBU) data are received at MEDS over the GTS. Measures taken to assure its quality are much the same as those for the ocean subsurface data described previously. DRIBUs report via satellite, at rates of up to every 15 minutes. These messages are for format errors, and reformatted for quality control procedures and subsequent archival. Checks, flags, and possible corrections to the data are carried out by trained personnel, using a system of MEDS software, which organize, analyze and display plots of the data. Quality checks use algorithms which check drifting speed and position, and ranges of sea surface temperatures and sea level pressure. The range checks include a comparison to NOAA's Ashville SST Climatology (2.5x2.5 degrees and monthly). Duplicates are checked, which is important for discriminating between data received directly from buoys and messages routed through other data centers. Lower quality data (which are this type of duplicate) are flagged as such.

MEDS, as the RNO DC for drifting buoy data, has holdings of over 12 million unique DRIBU records for the world's oceans, from 1978 to 1999, and growing at a rate of more than one million messages per year. The message is comprised of the buoy position and some of the following parameters: surface and subsurface water temperature, air pressure and temperature, wind speed and direction.

Table 5 lists data collected by Drifting Buoys in the NAFO Area in 1999. Two maps of DRIBU tracks for the entire North Atlantic, processed and archived by MEDS in 1999, are shown in the figures.

Table 5 figure 1: DRIFTING BUOY DATA ARCHIVED IN THE NAFO AREA, JANUARY TO JUNE 1999

North Atlantic Drifters - January to June 1999 (117369)



Retrieval Area /	Lat 80.00 to/à 10.00
Aire de recherche	Lon 20.00 to/à 100.00
Retrieval Period /	1999/01 to/à 1999/06
Période de recherche	

MEDS / SDMM 23/05/2000

Table 5 figure 2: DRIFTING BUOY DATA ARCHIVED IN THE NAFO AREA, JULY TO DECEMBER 1999
 North Atlantic Drifters - July to December 1999 (151745)

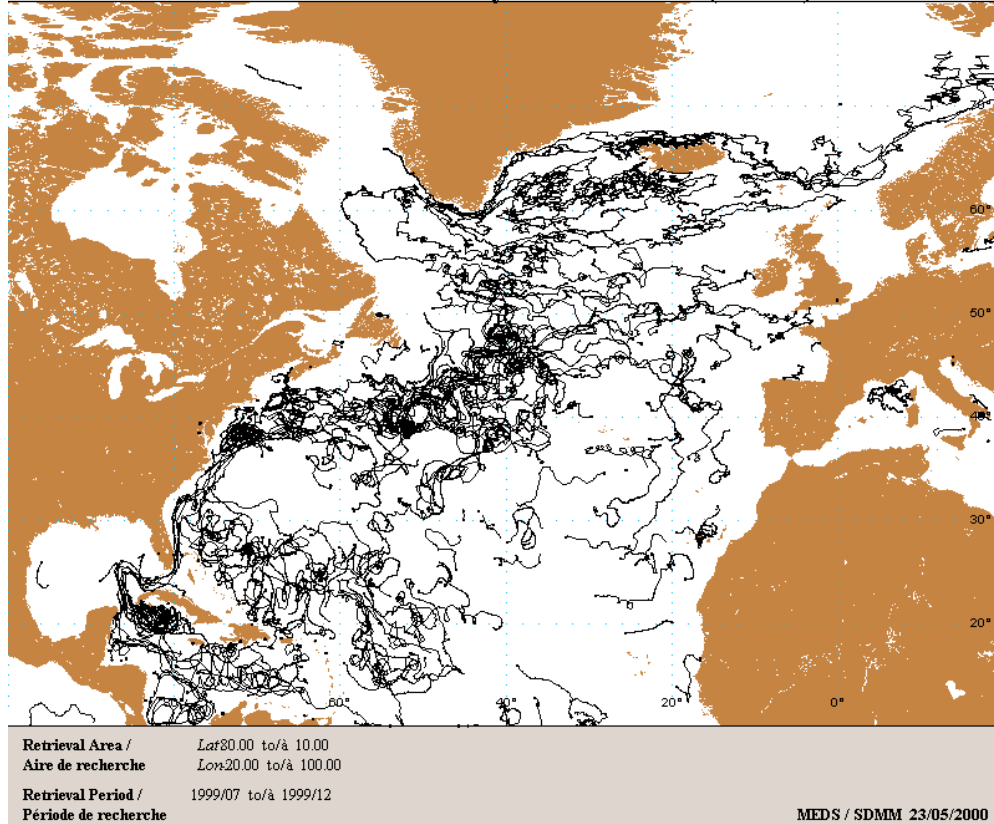


Table 5: Data Collected by Drifting Buoys in the NAFO Area in 1999
 Number of Buoys = 138 and Buoy Days = 12230

BUOY	DATE RANGE	DAYS	SST	AP	AT	WS	WD	TC	NAFO Subarea
14915	Feb-08 - Feb-08	1	X	X	X	-	-	-	4VS
17300	Dec 22 - Dec 31	10	X	X	-	-	-	-	6C, 6B, 6D
21512	Nov-26 - Dec 01	5	X	X	-	-	-	-	4T, 4VN
31933	Jan-16 - Jan-19	3	X	X	-	-	-	-	5ZW
31934	Jan-16 - Jan-19	4	X	X	-	-	-	-	5ZW
31935	Jan-16 - Jan-19	4	X	X	-	-	-	-	5ZW
31936	Jan-16 - Jan-19	4	X	X	-	-	-	-	5ZW
41505	Aug-29 - Dec 17	110	X	X	-	-	-	-	6F, 6E
41528	Sep-18 - Dec 09	83	X	X	-	-	-	-	6C, 6B, 6D, 6E, 6F
41552	Oct-17 - Dec 31	75	X	X	-	-	-	-	6C, 6B, 6D, 5ZE, 4X, 6E, 4W, 4VS
41573	Sep-20 - Dec 12	83	-	X	-	-	-	-	6H
41574	Sep-20 - Nov-24	65	X	X	-	-	-	-	6H
41575	Sep-20 - Dec 28	99	X	X	-	-	-	-	6C, 6B, 6D, 6E
41576	Sep-20 - Dec 31	103	X	X	-	-	-	-	6G, 6F, 4VS
41577	Sep-20 - Dec 31	103	X	X	-	-	-	-	6B, 5ZW, 6A, 6D
41612	Apr-21 - Oct-27	190	X	X	-	-	-	-	6C, 6B, 6D, 5ZE, 4X, 4W, 4VS, 3O, 6G, 3N, 3M
41616	Jan-01 - Apr-01	90	X	X	-	-	-	-	6E, 6F
41648	Jul-19 - Sep-22	66	X	X	-	X	X	-	4VS, 3O, 3N, 3M
41852	Sep-16 - Nov-05	50	X	X	X	-	-	-	6C, 6B, 6D, 6E, 4W, 4VS, 6F, 6G
41853	Dec 20 - Dec 31	12	X	X	X	-	-	-	6C, 6B, 6D
41908	Jan-01 - Jan-08	7	X	X	-	-	-	-	6E, 6F
41913	Jan-02 - May-27	145	X	X	-	-	-	-	4VS, 3O, 3N, 3M, 6H
41917	May-11 - Oct-18	160	X	X	-	-	-	-	6C, 6B, 6D, 6E, 4X, 5ZE, 4W, 4VS, 3N, 6H, 3M
41920	May-22 - May-25	3	X	X	-	-	-	-	6C
43804	Nov-29 - Dec 31	33	X	X	-	-	-	-	6C, 6B

44501	May-05	-	May-28	24	X	X	-	-	-	-	3K
44502	May-04	-	Aug-19	107	X	X	-	-	-	-	3K, 3L, 3N, 3M
44503	May-18	-	Aug-10	84	X	X	-	-	-	-	3K, 3L, 3M, 2J, 1F
44504	Apr-29	-	Dec 31	246	X	X	-	-	-	-	3L, 3O, 3PS, 4VS
44505	May-18	-	Aug-11	86	X	X	-	-	-	-	3L
44506	May-25	-	Jul-22	58	X	X	-	-	-	-	3L, 3N, 3M, 3K
44507	Jun-14	-	Dec 27	196	X	X	-	-	-	-	3K
44508	Jun-14	-	Oct-04	113	X	X	-	-	-	-	3L, 3N, 3O, 3M
44509	Nov-08	-	Dec 03	25	X	X	-	-	-	-	3N, 3M
44510	Nov-08	-	Dec 26	49	X	X	-	-	-	-	3L, 3N, 3M
44511	Nov-08	-	Dec 02	24	X	X	-	-	-	-	3N, 3M
44512	Mar-30	-	Jul-23	115	X	X	-	-	-	-	3K, 3L, 3M, 1F, 2J
44513	Mar-11	-	Dec 31	296	X	X	-	-	-	X	3M, 6H, 3K, 3L, 3N
44514	Mar-11	-	Dec 24	288	X	X	-	-	-	X	3N, 3M, 3K
44515	Mar-11	-	Apr-25	46	X	X	-	-	-	X	3M, 3N
44516	Mar-11	-	Apr-16	36	X	X	-	-	-	X	4VS, 3O, 3N, 3M
44517	Mar-11	-	Dec 16	281	X	X	-	-	-	X	3N, 3O, 3M
44541	Nov-25	-	Nov-26	1	X	X	-	-	-	-	6B
44542	Nov-26	-	Nov-26	1	X	-	-	-	-	-	6B
44543	Nov-26	-	Nov-26	1	X	X	-	-	-	-	6B
44544	Nov-26	-	Nov-26	1	X	X	-	-	-	-	6B
44546	Mar-10	-	Apr-22	44	X	X	X	-	-	-	3M
44607	Jan-19	-	Aug-27	221	X	X	X	X	X	X	2J, 3K, 1F
44608	Jan-20	-	Apr-06	77	X	X	X	-	-	-	3K, 3L, 3M
44610	Feb-17	-	Mar-19	31	X	X	X	-	-	-	1F
44614	Jul-08	-	Sep-05	60	-	X	X	-	-	-	3K, 2J
44621	Mar-11	-	May-14	65	X	X	X	-	-	-	3M
44624	Feb-01	-	Feb-01	1	-	X	-	-	-	-	1F
44626	Jul-16	-	Dec 16	154	X	X	X	-	-	-	3L, 3M
44627	Jul-19	-	Dec 16	151	X	X	X	-	-	-	4VS, 3PS, 3O, 3N, 3M
44628	Jul-19	-	Dec 31	166	X	X	X	-	-	-	4VS, 6G, 3O, 3N, 3M, 6H
44629	Jul-19	-	Aug-18	31	X	X	X	-	-	-	3N, 3M
44630	Jul-19	-	Sep-10	53	X	X	X	-	-	-	3N, 3M
44651	Feb-20	-	Mar-26	35	-	-	-	-	-	-	4T
44654	Apr-16	-	Jun-27	72	-	-	-	-	-	-	3K
44655	Feb-25	-	Apr-02	37	-	-	-	-	-	-	2G, 2H
44657	Mar-03	-	Mar-05	2	-	-	-	-	-	-	4S
44658	Feb-20	-	Feb-22	2	-	-	-	-	-	-	4T
44677	Mar-18	-	Mar-19	2	-	-	-	-	-	-	4T
44678	Mar-18	-	Mar-24	6	-	-	-	-	-	-	4T
44682	Feb-22	-	Mar-11	17	-	-	-	-	-	-	4T
44683	Feb-22	-	Mar-11	18	-	-	-	-	-	-	4T
44692	Feb-28	-	Mar-16	16	-	-	-	-	-	-	4T
44699	Mar-03	-	Mar-13	11	-	-	-	-	-	-	4T
44700	Mar-03	-	Mar-16	13	-	-	-	-	-	-	4T
44701	Feb-28	-	Mar-04	4	-	-	-	-	-	-	4T
44702	Mar-03	-	Mar-14	11	-	-	-	-	-	-	4T
44703	Feb-28	-	Mar-24	24	-	-	-	-	-	-	4T
44721	Oct-26	-	Oct-28	3	X	X	X	X	X	X	1F
44722	Oct-28	-	Nov-20	24	X	X	X	X	X	X	3K, 2J, 1F
44733	Mar-18	-	Mar-19	2	-	-	-	-	-	-	4T
44734	Feb-24	-	Mar-18	22	-	-	-	-	-	-	4T
44762	Jan-01	-	May-28	148	X	X	X	X	X	X	3M, 6H
44765	Mar-15	-	Jun-26	104	X	X	X	-	-	-	4VS, 6G, 6H
44766	Mar-15	-	Jul-09	116	X	X	X	-	-	-	1F, 2H, 2J
44777	Aug-18	-	Dec 31	136	X	X	X	X	X	X	1F, 1E, 2G, 2H
44835	Apr-06	-	Jun-18	74	-	X	-	-	-	-	4X, 4W, 4VS, 6F, 6G, 6H, 3N
44836	Apr-06	-	Apr-08	3	-	-	-	-	-	-	4X
44837	Apr-06	-	Dec 27	265	-	X	-	-	-	-	4X, 4W, 4VS, 3O, 6G, 3N, 6H
44838	Apr-06	-	Dec 31	270	-	X	-	-	-	-	5ZW, 6B, 6A, 6C, 6D, 5ZE, 4X, 6E, 4W, 4VS
44839	Apr-06	-	Jul-30	115	-	X	-	-	-	-	5ZW, 6B, 6D, 5ZE, 6E, 4W, 4VS, 6G, 3N, 6H, 3M
44840	Apr-06	-	Dec 31	269	-	X	-	-	-	-	5ZW, 6A, 6B, 6D, 6E, 4X, 5ZE, 4W, 4VS, 3PS, 3O, 3N
44850	Apr-06	-	Jul-03	88	-	X	-	-	-	-	5ZE, 4X
44909	Jan-02	-	Mar-18	76	X	X	-	-	-	-	3L, 3M, 3K
44910	Apr-06	-	Jul-27	112	-	X	-	-	-	-	4W, 4X, 5ZE, 4VS, 6F, 3O, 3N, 3M
44913	Apr-06	-	Dec 31	269	-	X	-	-	-	-	6D, 6E, 4W, 4VS, 6G, 6F, 3O, 3N, 3M
44916	Apr-06	-	Nov-04	212	-	X	-	-	-	-	6F, 4VS, 6G, 3N, 3O, 6H, 3M
44917	Apr-06	-	Dec 31	269	-	X	-	-	-	-	4X, 4W, 4VS, 6F, 6G, 6H, 3N, 3M
44918	Apr-06	-	Sep-24	171	-	X	-	-	-	-	4X, 4W, 4VS, 6G, 3O, 3N, 6H, 3M
44919	Apr-09	-	Aug-27	141	X	X	-	-	-	-	4X, 5ZE, 4W, 6E, 4VS, 6G, 6F
44920	Apr-06	-	Dec 31	269	-	X	-	-	-	-	5Y, 5ZE, 5ZW, 6B, 6C, 6D, 6E, 4W, 4VS, 6G
44922	Apr-06	-	Oct-30	207	-	X	-	-	-	-	5Y, 5ZW, 5ZE
44923	May-25	-	Sep-20	118	X	X	-	-	-	-	4X, 4W, 4VS, 6G, 3O, 3N, 6H
44924	Apr-06	-	Oct-14	191	-	X	-	-	-	-	5ZW, 6B, 6A, 6C, 6D, 6E, 4X, 4W, 6F, 4VS, 6G
44925	Apr-06	-	May-25	49	-	X	-	-	-	-	6B, 5ZW, 6A
44926	May-25	-	Nov-01	160	X	X	-	-	-	-	5Y, 4X

44931	Aug-22	-	Nov-24	94	X	X	-	-	-	-	6H
44932	Apr-09	-	Dec 30	266	X	X	-	-	-	-	5ZE, 5ZW, 6A, 6B, 6C, 6D, 4X, 6E
44936	Apr-06	-	Dec 31	269	-	X	-	-	-	-	6B, 6C, 6D, 5ZW, 6A, 5ZE
44937	Apr-07	-	Dec 31	269	-	X	-	-	-	-	5ZE, 5ZW, 6A, 6B, 6D, 4W, 4X, 4VS
44938	Apr-06	-	Dec 16	255	-	X	-	-	-	-	4W, 6F, 4VS, 6G, 3N, 6H, 3M
44939	May-25	-	Dec 31	221	X	X	-	-	-	-	4X, 5ZE, 5Y
44940	May-25	-	Sep-16	114	X	X	-	-	-	-	5ZE, 4X, 4W, 6E, 4VS, 3O, 3N, 6H, 3M
44942	May-25	-	Nov-08	168	X	X	-	-	-	-	5ZE
44943	Sep-20	-	Nov-19	60	-	X	-	-	-	-	5ZE, 4X
44944	Sep-20	-	Dec 25	96	X	X	-	-	-	-	4VS, 3PS, 3O, 3N, 3M
44945	Sep-20	-	Dec 31	103	-	X	-	-	-	-	5ZW, 6A, 6B, 6D
46510	Apr-30	-	May-04	5	X	X	-	X	X	-	4X
46641	Mar-03	-	Mar-05	2	X	X	X	-	-	-	4X
46660	Mar-01	-	Mar-07	7	-	X	X	X	X	-	4X
46729	Nov-17	-	Nov-24	8	X	X	-	-	-	X	4X
47553	Nov-04	-	Dec 01	28	-	X	-	-	-	-	0A, 1A
47556	Jan-01	-	Jan-09	9	-	X	-	-	-	-	0A
47557	Apr-21	-	Apr-26	5	-	-	-	-	-	-	0B
52542	Nov-26	-	Dec 01	5	-	X	-	-	-	-	4T, 4VN
56522	Dec 01	-	Dec 12	11	X	X	-	-	-	-	4X
61508	Jan-08	-	Jun-18	162	X	X	-	-	-	-	4T, 4S
61509	Jan-04	-	Feb-15	42	X	X	-	-	-	-	4T
61510	Jan-02	-	Apr-07	96	X	X	-	-	-	-	4T
61553	Sep-03	-	Sep-06	4	-	X	-	-	-	-	6B
64513	Sep-04	-	Sep-06	3	X	X	-	-	-	-	6B
64516	Sep-16	-	Dec 31	107	X	X	X	-	-	-	1F, 1E, 1D, 1C
64517	Jun-14	-	Dec 31	201	X	X	X	-	-	-	1F, 1E, 0B, 2G, 2H, 2J
64518	Jul-08	-	Sep-18	73	X	X	X	-	-	-	1F
64698	Nov-15	-	Dec 31	47	X	X	X	-	-	-	1F
64699	Oct-22	-	Dec 31	71	X	X	X	-	-	-	1F, 1E
64930	Jan-01	-	Feb-25	56	X	X	-	-	-	-	2G, 2H
64943	Jan-01	-	Jul-09	190	X	X	-	-	-	-	1F
64949	Aug-16	-	Nov-06	83	X	X	-	-	-	-	1F
64955	May-05	-	Nov-03	182	X	X	-	-	-	-	2J, 1F
64956	May-05	-	Jul-31	88	X	X	-	-	-	-	1F, 2J
65595	Apr-19	-	May-24	36	X	X	X	-	-	-	1F
65599	May-15	-	May-16	1	X	X	X	X	X	-	1F

Current Meter Data

Current meters have been deployed in the NAFO area for many years. These data are processed and archived at The Bedford Institute of Oceanography (BIO), Dartmouth, Nova Scotia and are available via the WWW: www.maritimes.dfo.ca/science/ocean/welcome.html

Table 6: Current Meter data archived at BIO for 1999

These data are in ODF format and will soon be added to the archive.

File specification	start date	end date	initial latitude	initial longitude	depth
MCM_98023_1275_3299_3600	30-JUN-1998	10-JUL-1999	56.727170	-52.480500	1256.000000
MCM_98023_1275_3584_3600	30-JUN-1998	10-JUL-1999	56.727170	-52.480500	1756.000000
MCM_98023_1275_6409_3600	30-JUN-1998	10-JUL-1999	56.727170	-52.480500	106.000000
MCM_98023_1275_6410_3600	30-JUN-1998	10-JUL-1999	56.727170	-52.480500	756.000000
MCM_98023_1275_8695_3600	30-JUN-1998	10-JUL-1999	56.727170	-52.480500	2506.000000
MCM_98023_1275_8696_3600	30-JUN-1998	04-JUL-1998	56.727170	-52.480500	3472.000000
MCM_98023_1276_9328_3600	27-JUN-1998	02-JUL-1999	55.122670	-54.095800	1082.000000
MCM_98047_1277_2663_3600	21-SEP-1998	13-JUN-1999	44.839790	-55.833840	152.000000
MCM_98047_1277_3300_3600	21-SEP-1998	13-JUN-1999	44.839790	-55.833840	402.000000
MCM_98047_1277_4208_3600	21-SEP-1998	13-JUN-1999	44.839790	-55.833840	682.000000
MCM_98047_1277_4600_3600	21-SEP-1998	13-JUN-1999	44.839790	-55.833840	52.000000
MCM_98047_1278_4406_3600	22-SEP-1998	12-JUN-1999	44.874408	-55.833520	161.000000
MCM_98047_1278_4998_3600	22-SEP-1998	12-JUN-1999	44.874408	-55.833520	411.000000
MCM_98047_1278_7134_3600	22-SEP-1998	12-JUN-1999	44.874408	-55.833520	61.000000
MCM_98047_1289_6401_3600	25-SEP-1998	25-MAY-1999	46.7614	-48.7696	75.0
MCM_98047_1289_7127_3600	25-SEP-1998	25-MAY-1999	46.7614	-48.7696	68.0
MCM_98077_1290_4355_3600	22-NOV-1998	25-SEP-1999	42.342170	-65.735500	50.000000
MCM_98077_1290_5574_3600	22-NOV-1998	25-SEP-1999	42.342170	-65.735500	100.000000
MCM_98077_1290_7592_3600	22-NOV-1998	25-SEP-1999	42.342170	-65.735500	30.000000
MCM_98077_1290A_7525_3600	22-NOV-1998	25-SEP-1999	42.346170	-65.732500	15.000000
MCM_98077_1291_3196_3600	21-NOV-1998	25-SEP-1999	42.163330	-65.571670	50.000000

MCM_98077_1291_4195_3600	21-NOV-1998	25-SEP-1999	42.163330	-65.571670	100.000000
MCM_98077_1291_6403_3600	21-NOV-1998	25-SEP-1999	42.163330	-65.571670	30.000000
MCM_98077_1291A_7122_3600	21-NOV-1998	29-MAY-1999	42.166500	-65.571830	12.000000
MCM_98077_1292_7013_3600	22-NOV-1998	26-SEP-1999	42.295810	-65.840130	24.000000
MCM_98077_1293_4342_3600	22-NOV-1998	26-SEP-1999	42.294330	-65.844670	35.000000
MCM_98077_1293_4602_3600	22-NOV-1998	26-SEP-1999	42.294330	-65.844670	105.000000
MCM_98077_1293_5577_3600	22-NOV-1998	26-SEP-1999	42.294330	-65.844670	155.000000
MCM_98077_1293_9355_3600	22-NOV-1998	26-SEP-1999	42.294330	-65.844670	55.000000
MCM_98077_1294_5359_3600	23-NOV-1998	24-SEP-1999	42.129830	-66.015167	23.000000
MCM_98077_1295_2664_3600	23-NOV-1998	24-SEP-1999	42.126830	-66.014000	103.000000
MCM_98077_1295_6411_3600	23-NOV-1998	24-SEP-1999	42.126830	-66.014000	153.000000
MCM_98077_1295_7131_3600	23-NOV-1998	24-SEP-1999	42.126830	-66.014000	33.000000
MCM_98077_1295_9607_3600	23-NOV-1998	24-SEP-1999	42.126830	-66.014000	53.000000

The following instruments are still moored.

Hibernia 99012. These current meters are due to be recovered in May 2000.

Mooring #	Latitude	Longitude	Instrument Serial #	Mooring Date	Instrument Depth	Sounding Depth
1324	46° 45.6901	48° 46.1732	786	May 25, 1999	68 meters	78 meters
1324	“	“	7650	“	48 meters	“
1324	“	“	8697	“	75 meters	“

Labrador Current 99018. These current meters are due to be recovered in April 2000.

Mooring #	Latitude	Longitude	Instrument Serial #	Mooring Date	Instrument Depth	Sounding Depth
1321	44° 52.5365	55° 49.7993	1607	June 12, 1999	141 meters	411 meters
1321	“	“	4349	“	41 meters	“
1321	“	“	4603	“	391 meters	“
1320	44° 50.3831	55° 50.0494	4271	June 13, 1999	50 meters	700 meters
1320	“	“	5575	“	680 meters	“
1320	“	“	5578	“	400 meters	“
1320	“	“	6405	“	150 meters	“

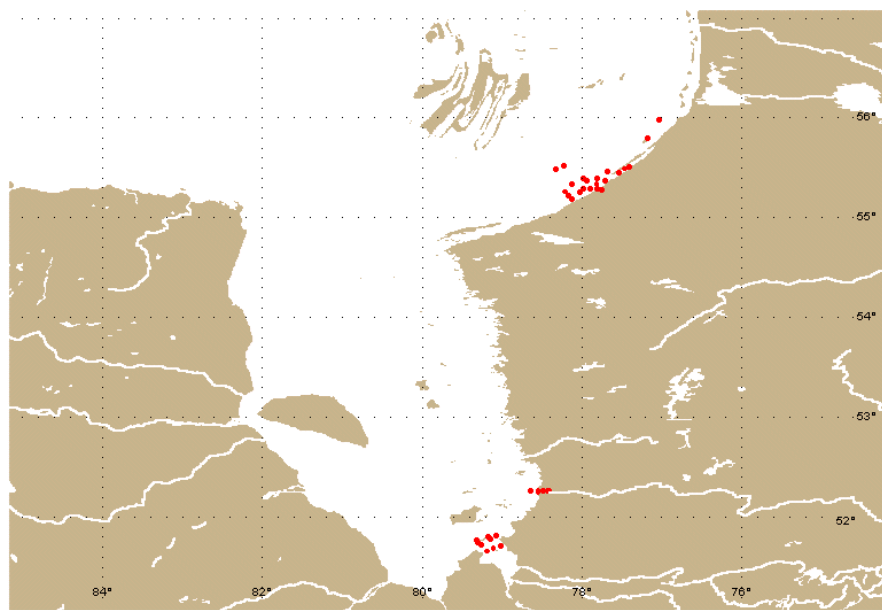
Labrador Sea 99022. These current meters are due to be recovered in April 2000.

Mooring #	Latitude	Longitude	Instrument Serial #	Mooring Date	Instrument Depth	Sounding Depth
1325	56° 41.36	52° 29.73	2663	July 10, 1999	111 meters	3511 meters
1325	“	“	3300	“	761 meters	“
1325	“	“	4406	“	1261 meters	“
1325	“	“	4600	“	1761 meters	“
1325	“	“	4998	“	2511 meters	“
1325	“	“	7134	“	3477 meters	“
1326	55° 07.337	54° 05.617	4208	July 12, 1999	1096 meters	1116 meters

Data Rescue of Historical Current Meter Data.

MEDS is currently in the process of recovering and archiving current meter data from the work of Dr. Grant Ingram, formerly of McGill University. Dr. Ingram, collected current meter data as well as tidal and nutrient data from the Hudson Bay/James Bay area from 1976 to 1986. We have recovered a major portion of his current meter work and have stored it in the ODF format of BIO (Bedford Institute of Oceanography). Our intention is to produce a CD-ROM of these data and make the data available to the public as soon as possible

Current meter data collected in the Hudson Bay/James Bay Area from 1976 to 1986 by Dr. Grant Ingram



Wave Data

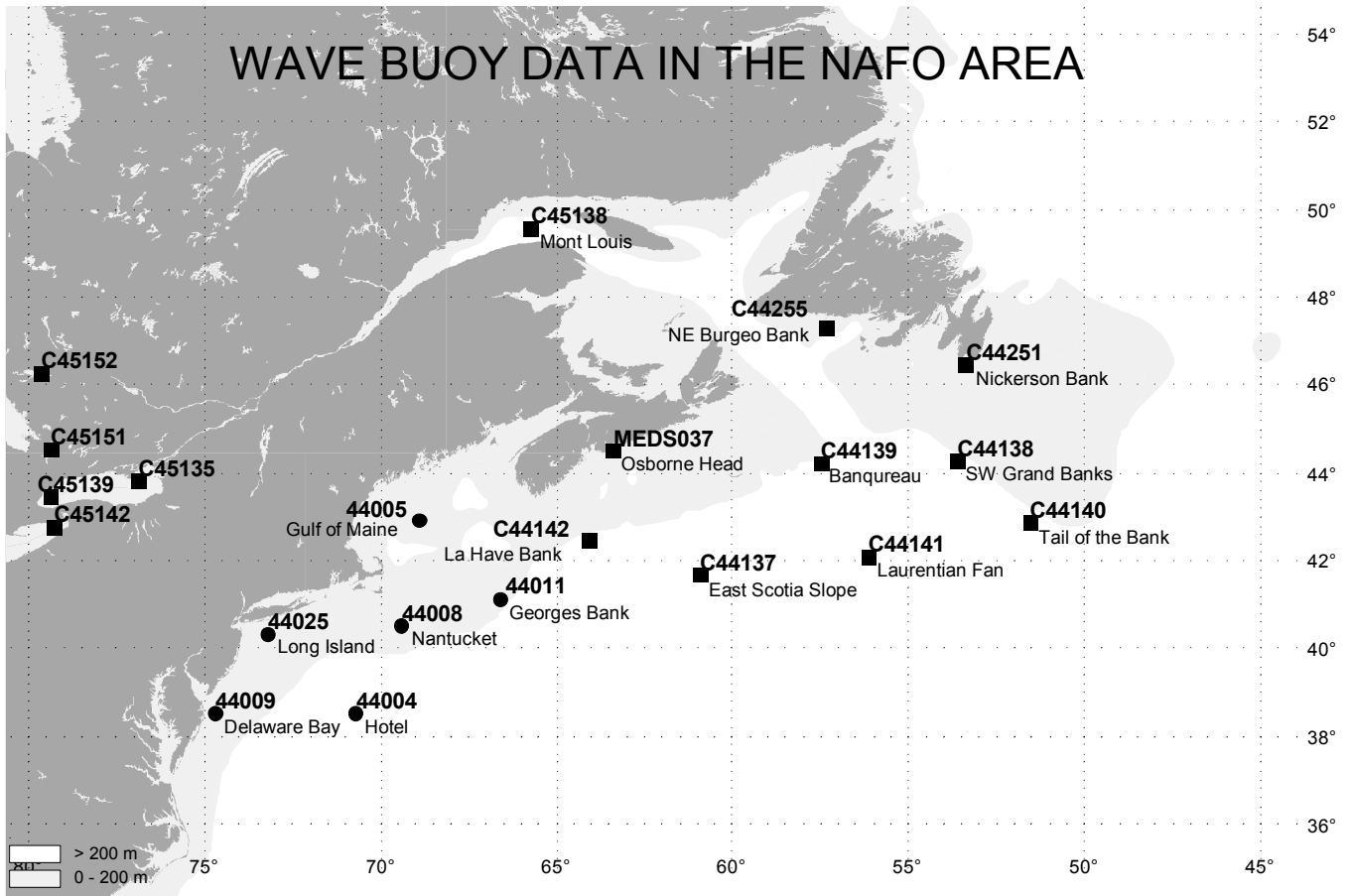
MEDS continued to process and archive operational surface wave data on a daily basis around Canada. One-dimensional and directional wave spectra, calculated variables such as the significant wave height and peak period, concurrent wind observations if reported, and the raw digital time series of water surface elevations are stored. The data are quality controlled with a visual inspection and with MEDS software to set flags on data showing instrument failures.

Table 7 lists wave measurement data in the NAFO area for 1999. Historical wave data are available on a CD-Rom.

Table 7: Wave spectra in the NAFO area for 1999 Total Spectra = 106172

STATION	STATION NAME	LATITUDE	LONGITUDE	INST TYPE	WATER DEPTH (M)	NUMBER OF GOOD SPECTRA	NAFO SUBAREA
44004	Hotel	38.5000	70.7000	US	3231.0	7937	6B

44005	Gulf of Maine	42.9000	68.9000	US	29.0	7331	5Y
44008	Nantucket	40.5000	69.4000	US	55.0	7609	5ZE
44009	Delaware Bay	38.5000	74.7000	US	28.0	7907	6B
44011	Georges Bank	41.1000	66.6000	US	88.0	6814	5ZE
44025	Long Island	40.3000	73.2000	US	40.0	6076	6A
C44137	East Scotia Slope	41.6480	60.9400	AE	4500.0	5645	4W
C44138	SW Grand Banks	44.2580	53.6230	AE	1470.0	2408	3O
C44139	Banquereau	44.2000	57.5000	AE	1500.0	3414	4VS
C44140	Tail of the Bank	42.8520	51.5670	AE	1500.0	7851	3O
C44141	Laurentian Fan	42.0670	56.1520	AE	4500.0	6696	4VS
C44142	La Have Bank	42.4450	64.1000	AE	1500.0	6987	4X
C44251	Nickerson Bank	46.4400	53.3900	AE	69.0	5999	3L



C44255	NE Burgeo Bank	47.2820	57.3520	AE	185.0	5427	3Ps
C45135	Prince Edward Pt.	43.7900	76.8730	AE	68.0	3133	5Y
C45138	Mont Louis	49.5550	65.7450	AE	335.0	3588	4S
C45139	West Lake Ontario	43.4270	79.3820	AE	126.0	148	5Y
C45142	Point Colborne	42.7370	79.2900	AE	27.0	2855	5Y
C45151	Lake Simcoe	44.5000	79.3670	AE	22.0	82	
C45152	Lake Nipissing	46.2500	79.6670	AE	12.0	82	
MEDS037	Osborne Head	44.4903	63.4042	WR	57.0	8183	4W

WAVE STATIONS IN THE NAFO AREA FOR 1999

Tide and Water level Data

MEDS continued to process and archive operational tides and water level data that are reported on a daily to monthly basis from the Canadian water level network. MEDS archives observed 15-minute heights, hourly heights and monthly instantaneous extremes collected around Canada. Approximately 70,000 new readings are updated every month from

the network. The historical tides and water level data archives presently hold over 30 million records with the earliest dating back before the turn of the century.

Table 8 lists tide and water level data in the NAFO area for 1999. These data are quality controlled using MEDS software. A complete inventory of tide and water level data holdings is available on our website: www.meds-sdmm.dfo-mpo.gc.ca

TIDE AND WATER LEVEL STATIONS IN THE NAFO AREA FOR 1999

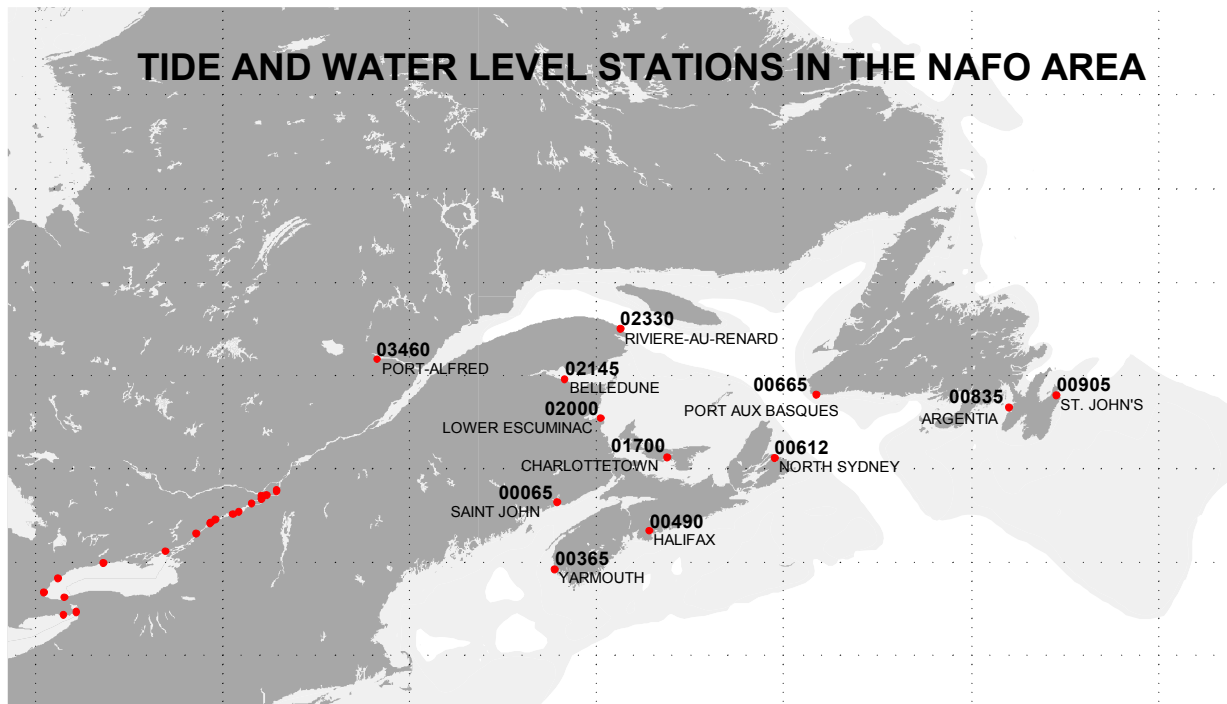


Table 8: Tide and Water level data in the NAFO area for 1999
Total Stations = 31

STATION NUMBER	STATION NAME	LATITUDE	LONGITUDE	15-MINUTE HEIGHTS # OF DAYS	HOURLY HEIGHTS # OF DAYS
00065	SAINT JOHN	45.27	66.06	307	307
00365	YARMOUTH	43.84	66.12	365	365
00490	HALIFAX	44.66	63.59	365	365
00612	NORTH SYDNEY	46.22	60.25	363	363
00665	PORT AUX BASQUES	47.57	59.14	348	350
00835	ARGENTIA	47.30	53.98	355	355
00905	ST. JOHN'S	47.56	52.71	362	362
01700	CHARLOTTETOWN	46.23	63.12	363	363
02000	LOWER ESCUMINAC	47.08	64.89	341	341
02145	BELLEDUNE	47.90	65.85	32	32
02330	RIVIERE-AU-RENARD	48.98	64.37		88
03460	PORT-ALFRED	48.33	70.87		108
12865	PORT COLBORNE	42.87	79.25	365	365
12954	PEACE BRIDGE BELOW	42.92	78.90	182	178
13030	PORT WELLER	43.24	79.22	365	365
13150	BURLINGTON	43.34	79.77	341	341
13320	TORONTO	43.64	79.38	365	365
13590	COBOURG	43.96	78.17	365	365

13988	KINGSTON (PORTSMOUTH)	44.22	76.52	365	365
14400	BROCKVILLE	44.59	75.68	365	365
14600	IROQUOIS ABOVE/AMONT	44.82	75.32	365	365
14602	IROQUOIS BELOW/AVAL	44.84	75.31	365	365
14660	MORRISBURG	44.90	75.18	365	365
14870	CORNWALL	45.02	74.71	365	365
14940	SUMMERSTOWN	45.06	74.55	365	365
15110	COTEAU-LANDING	45.25	74.21		8
15220	POINTE-DES-CASCADES	45.34	73.95		123
15330	POINTE-CLAIRE	45.43	73.82	151	363
15520	MONTREAL JETTY NO 1	45.50	73.55	363	363
15540	MONTREAL FRONTENAC ST.	45.53	73.54	32	32
16005	SAINTE-ANNE-DE-BELLEVUE	45.41	73.96		356