Northwest Atlantic Fisheries Organization

Serial No. N7520 **NAFO SCR Doc. 24/015**

SCIENTIFIC COUNCIL MEETING – JUNE 2024

Inventory of Environmental Data in the NAFO Convention Area - Report 2023

Jenny Chiu
Oceans Science Branch
Ocean and Regulatory Sciences Directorate
Ecosystems and Oceans Science Sector
Fisheries and Oceans Canada (DFO)
200 Kent Street, Ottawa, ON, Canada K1A 0E6

Abstract

The Marine Environmental Data Section (MEDS) of the Oceans Science Branch of Fisheries and Oceans Canada serves as the Regional Environmental Data Center for NAFO. As part of this role, MEDS provides an annual inventory of environmental data collected in the NAFO Convention Area to the NAFO subcommittee for the environment (STACFEN), including inventories and maps of physical oceanographic observations such as ocean profiles, near surface thermosalinographs, drifting buoys, currents, waves, tides and water level measurements for the 2023 calendar year. Reporting includes data and information from NAFO member countries where these are provided to the data center.

Introduction

The Marine Environmental Data Section (MEDS) of the Oceans Science Branch of Fisheries and Oceans Canada (DFO) acts as Regional Environmental Data Center for NAFO. This role began in 1965 when the Canadian Oceanographic Data Centre started providing data management functions to the International Commission for the Northwest Atlantic (ICNAF), and was subsequently formalized in 1975, by which time the Canadian Oceanographic Data Centre (CODC) had become the Marine Environmental Data Service (MEDS). MEDS underwent several name changes from 2005 to 2017, it was known in the interim under acronyms such as ISDM and OSD.

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 yearly meetings in May and June requires the submission to MEDS of a completed oceanographic inventory form for data collected in the previous calendar year, and oceanographic data pertinent to the NAFO Convention Area, for all stations occupied in the years prior to the meetings. 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.

Data that have been formatted and archived at MEDS are available to all members on request, and are available from DFO institutes. Requests can be made by e-mail to dfo.meds-sdmm.mpo@dfo-mpo.gc.ca, by completing an on-line order form on the MEDS web site at https://meds-sdmm.dfo-mpo.gc.ca/isdm-gdsi/program/index-

eng.html or by writing to Oceans Science Branch, Fisheries and Oceans Canada, 12th Floor, 200 Kent St., Ottawa, Ont. Canada K1A 0E6.

Data Processing and Management

A variety of oceanographic surface, near-surface, and subsurface observations are made every day in the NAFO Convention Area by ship-borne instruments and autonomous devices, including vertical profiles of parameters such as temperature, salinity, oxygen, nutrients and other chemical and biological variables. The Marine Environmental Data Section (MEDS) of the Oceans Science Branch of DFO receives these data either in real-time or delayed mode.

Real-time or near real-time data are acquired directly from instruments (for instance, Argo Canada profilers), from research ships or ships of opportunity, from universities, from DFO research institutes, from the Global Telecommunication System (GTS) of the World Meteorological Organization Information System, and from NOAA's Geostationary Operational Environmental Satellite (GOES) system. Some real-time data transmitted over satellite or low bandwidth communications are pre-formatted in a way that reduces their vertical resolution or significant figures. Such data receive some form of quality control but generally do not benefit from the calibration made possible after a cruise or an instrument's recovery (in the case of moored equipment or remote controlled devices).

Delayed mode data are acquired through exchanges with research institutes, universities and other ocean databases, such as the World Ocean Database (WOD, NOAA) and the ICES Oceanographic database. The delayed mode data generally take months to years to process from the time a cruise is completed or an instrument has been recovered. For this reason, MEDS continually receives delayed mode data from years preceding the previous observation years and must also query the aforementioned international databases (ICES, WOD) for observational periods covering a number of years. Most real-time data are subject to be replaced with a delayed mode version when available, and even delayed mode data are sometimes subject to recalibration, at which point they must be updated in the archives.

Data processing at MEDS begins by reformatting files from their original formats into a common 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, units are standardized, and parameter range checks are performed. The second is to identify any duplication, and select the best version based on data type, source of the data, and general qualities in analysis and reporting of the observations. The third is to identify and correct date/time and geographical positioning errors 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 or series of subsurface measurements. These algorithms depend on data, platform and/or observation program type.

Data Summary

and Table 2 below summarize data received by MEDS for the NAFO Convention Area (NCA) in 2023. These refer to the more detailed platform-specific figures and tables at the end of this report. Table and figure numbers in these two tables differ for some platform types, as slightly different groupings of data (e.g., by variable type, sampling type, platform type, real-time vs. delayed mode, or source) are used to maximize clarity in the platform-specific figures and tables.

Table 1. Data observed in NAFO Convention Area in 2023

Data Type	Platform Type	Counts/Duration	Table #	Figure #
Oceanographic profiles	Autonomous drifting (Argo)	4965* profiles from 174 platforms	3	1
	Moorings (Viking)	776* profiles from 6 platforms**	3	1
	Gliders	13403* profiles from 9 platforms	3	1
	Marine mammals	1018* profiles from 5 animal tags	3	1
	Ship	8704 profiles (4599 CTD; 1347 CTD RT*; 2390 Bottle ; 188 XBT; 180 XBT RT*)	4	2
Surface/near-surface observations	Ship (thermosalinograph)	70689 obs. from 11 ships	4	4
	Drifting buoys	282106* obs. from 122 buoys	6	4
	Moored buoys	601583* obs. from 21 buoys**	6	4
	Fixed platforms	100364* obs. from 3 platforms	6	4
	Water level gauges	35 sites, avg. ~1 year each	7	4

*Data formatted for real-time transmission on the GTS
**all Canadian wave buoys described in this report measure waves, and the moorings measuring CTD oceanographic profiles in this table are also equipped with surface buoys measuring waves

Table 2. Data observed prior to 2023 in NAFO Convention Area and acquired or processed between January 2023 and May 2024

Data Type	Platform Type	Counts/Duration	Table #	Figure #
Oceanographic profiles	Ship	12376 profiles (9513 CTD + 2402 bottle + 461 XBT profiles) from 329 cruises	5	3

Description

Oceanographic profiles

Argo (Figure 1, Table 3)

Argo is an international program which started in 2000 and which aims to deploy profiling floats on a 3 by 3 degree grid in the oceans of the world. Each profiling float samples and reports temperature and salinity from 2000 m to the surface every 10 days; pilots are also currently underway for deep Argo floats capable of

sampling to 6000 m. Additionally, biogeochemical (BGC)Argo floats report oxygen, nitrate, pH, chlorophyll-a, suspended particles, and downwelling irradiance in addition to temperature and salinity. Data are distributed on the GTS within 12 hours of collection for floats reporting on the Iridium satellite and made available on two mirrored Global servers located in France and in the USA.

MEDS carries out data management for Argo Canada profilers, from instrument to publication to the GTS and global servers. MEDS also decodes and stores all Argo data circulating on the GTS. Over 4000 Argo profiling floats owned by multiple countries are currently sampling the world's oceans.

Gliders (Figure 1, Table 3)
Underwater gliders are autonomous underwater vehicles following saw tooth-like profiles in the ocean while measuring various parameters, during missions that can last months and extend over thousands of kilometers. MEDS regularly acquires data from the gliders owned by Fisheries and Oceans Canada (DFO), and creates messages for transmission on the GTS after performing an automatic quality control. The full data set can be accessed from the Glider Global Data Assembly Center (GDAC).

Mammals (Figure 1, Table 3)
Among data decoded and acquired from the GTS by MEDS are real-time data transmitted by the Sea Mammal Research Units of University of St Andrews (Scotland). These data are measured by tags featuring miniaturized CTD sensors attached to marine mammals and transmitting oceanographic data in real-time when the animals surface. These devices are used by a variety of researchers worldwide.

Ships (Figures 2 and 3, Table 4)
MEDS receives real-time (within 30 days of observation) messages containing temperature and salinity profile data (either from CTD or XBT) from various Canadian Coast Guard ships, helicopters or opportunity vessels performing research or monitoring activities. The messages are sometimes sent from the ships or shortly after the ship's return. The data are quality controlled (see reference, GTSPP QC manual) prior to transmission on the GTS (if within 30 days of observation) and ingestion in the MEDS archives.

MEDS decodes and stores all ship based data circulating on the GTS, either CTD or XBT, including data sampled by ships of opportunity. MEDS further receives delayed mode data from DFO institutes: Northwest Atlantic Fisheries Centre (NAFC), Bedford Institute of Oceanography (BIO), Maurice-Lamontagne Institute (MLI), St. Andrews' Biological Station, Gulf Fisheries Center (GFC, indirectly through BIO or MLI), Institute of Ocean Sciences (IOS) and the Freshwater Institute (FWI). MEDS ingests the data after conversion and visual quality assurance.

MEDS also receives delayed mode data from foreign institutes, for example the Spanish Institute of Oceanography, either directly or through BIO. MEDS also periodically queries the World Ocean Database and ICES Oceanographic Database for additional data in the NAFO Convention Area (NCA).

Near-surface observations

Moored buoys and fixed stations (Figure 4, Table 6)
MEDS continuously acquires data from meteorological buoys in Canadian waters equipped with ocean data acquisition systems. These buoys belong to Environment and Climate Change Canada (Meteorological Service

of Canada) and measure wind velocity, air and water temperature, pressure and wave spectral energy with estimated period and significant wave height. Most buoys are now reporting on the Iridium satellite, with a few buoy data still acquired via the Geostationary Operational Environmental Satellite (GOES), on which the buoys transmit. In some situations the data is acquired in delayed-mode or from the GTS. MEDS also acquires, in delayed mode, data from wave measuring buoys deployed near offshore oil and gas sites as per NEB Guidelines.

BIO, NAFC, and MLI maintain surface buoys, most of which are equipped with subsurface moored instruments such as ADCPs (see mooring section) and a CTD profiler. Those buoys are informally known as "Viking" buoys. MEDS has been transmitting data from the CTD profiler those buoys on the GTS since 2022. The data can otherwise be requested from MLI, NAFC, BIO.

A number of U.S. moored buoys and fixed stations in the NCA transmit data on the GTS, and those are also acquired by MEDS. The stations belong to various institutions, such as the National Estuarine Research Reserve System, the University of North Carolina (including the Coastal Ocean Research and Monitoring Program) and the Chesapeake Bay Interpretive Buoy System. Their data management is coordinated by NOAA's National Data Buoy Center. Their positions are typically near the coast.

Drifting buoys (Figure 4, Table 6)
MEDS decodes and stores all drifting buoy data circulating on the GTS. These buoys are deployed by various countries. Most buoys are designed for the Surface Velocity Program and are drogued at 15 m depth. The data reported are temperature and sometimes salinity. The buoy-calculated displacement, over time, provides an estimation of currents at the drogued depth.

Thermosalinographs(TSG) (Figure 4, Table 5)
MEDS decodes and stores all ship thermosalinograph data circulating on the GTS.

Water level gauges (Figure 4, Table 7)
MEDS processes and archives observed water level data collected from the gauge network maintained by the Canadian Hydrographic Service (CHS). Over 2 million new observations are archived every month.

Other Activities

Atlantic Zone Monitoring Program

Activities under the DFO Atlantic Zone Monitoring Program (AZMP) include regular sampling at 5 fixed stations and 16 standard sections, various monitoring and survey activities, and research cruises in the AZMP area to collect physical, chemical and biological data. MEDS archives physical oceanographic data from the AZMP (as outlined in the preceding sections). Program information and publications are available here: https://www.dfo-mpo.gc.ca/science/data-donnees/azmp-pmza/index-eng.html.

Offshore Oil and Gas Environmental Monitoring Data

As mentioned in the near-surface observations section, MEDS acquires, in delayed mode, monitoring physical oceanographic data collected near offshore oil and gas sites as per NEB Guidelines. No data submissions were received in 2023.

Data Access

- *Argo:* Real-time data are sent to the global data centers within 12 hours of collection; data are also updated in delayed mode. Global Argo data can be downloaded from various sources, as described at https://argo.ucsd.edu/data/.
- *Real-time oceanographic data:* Real-time oceanographic profiles from the GTS and other sources, as well as US coastal mooring and fixed platform data from the GTS, are forwarded three times a week to the Global Temperature Salinity Profile Programme's Continuously Managed Database (https://www.ncei.noaa.gov/products/global-temperature-and-salinity-profile-programme) and to the Copernicus Marine Environment Monitoring Service (CMEMS) where they are made available in "near real time in situ" products (http://www.marineinsitu.eu/dashboard/). GTS thermosalinograph data are forwarded to the Global Ocean Surface Underway Data archive (http://www.gosud.org). The latter two databases are harvested by the EMODnet Physics portal (https://emodnet.ec.europa.eu/geoviewer/).
- *Canadian bottle and plankton data:* Data are available from the BioChem Database (https://www.dfo-mpo.gc.ca/science/data-donnees/biochem/index-eng.html).
- *Delayed-mode Canadian oceanographic profiles:* Data are exchanged bilaterally with the World Ocean Database (https://www.ncei.noaa.gov/products/world-ocean-database). Synchronization is however a work in progress and one may need to allow from months to more than a year for Canadian data to become available from these databases after it has been collected.
- *Drifting buoy equatorial moored buoy data from the GTS:* These are sent to the US NOAA National Centers for Environmental Information Ocean Archive System on a yearly basis (https://www.ncei.noaa.gov/archive/archive-management-system/OAS/bin/prd/jquery/text/query).
- *Canadian moored buoys:* Data are made available on a national website within days of collection (updates on business days): https://www.meds-sdmm.dfo-mpo.gc.ca/isdm-gdsi/waves-vagues/index-eng.htm. Data since 2021 are also available from the Canadian Integrated Ocean Observing System (CIOOS) ERDDDAP: ERDDAP - Realtime data from Environment and Climate Change Canada buoys (Meteorological Service of Canada) - Data Access Form (cioospacific.ca)
- *Canadian water levels:* Data are available from two national websites: https://www.tides.gc.ca/ (last 24 hours) and https://www.meds-sdmm.dfo-mpo.gc.ca/isdm-gdsi/twl-mne/index-eng.htm (validated, historical). Relevant stations data are shared with international initiatives such as the Permanent Service for Mean Sea Level, Global Sea Level Observing System and IOC Sea Level Station Monitoring facility.
- *Canadian moorings:* Data are available from BIO (https://www.bio.gc.ca/science/data-donnees/base/index-en.php) and MLI (https://slgo.ca/en/home-slgo/) depending on the site locations.
- *Gliders:* Full resolution of DFO glider data can be accessed from: https://co.ifremer.fr/co//ego/ego/v2/. Information on DFO glider deployments can be accessed from the "Everyone's Glider Observations" website: https://www.ego-network.org/dokuwiki/doku.php
- *Marine mammals:* Observations from sensors mounted on marine mammals can be accessed from the MEOP website : https://www.meop.net/meop-portal/

- *Other MEDS data:* Canadian oceanographic data and global drifting buoy data can be requested through this form: https://www.meds-sdmm.dfo-mpo.gc.ca/isdm-gdsi/request-commande/form-eng.asp.

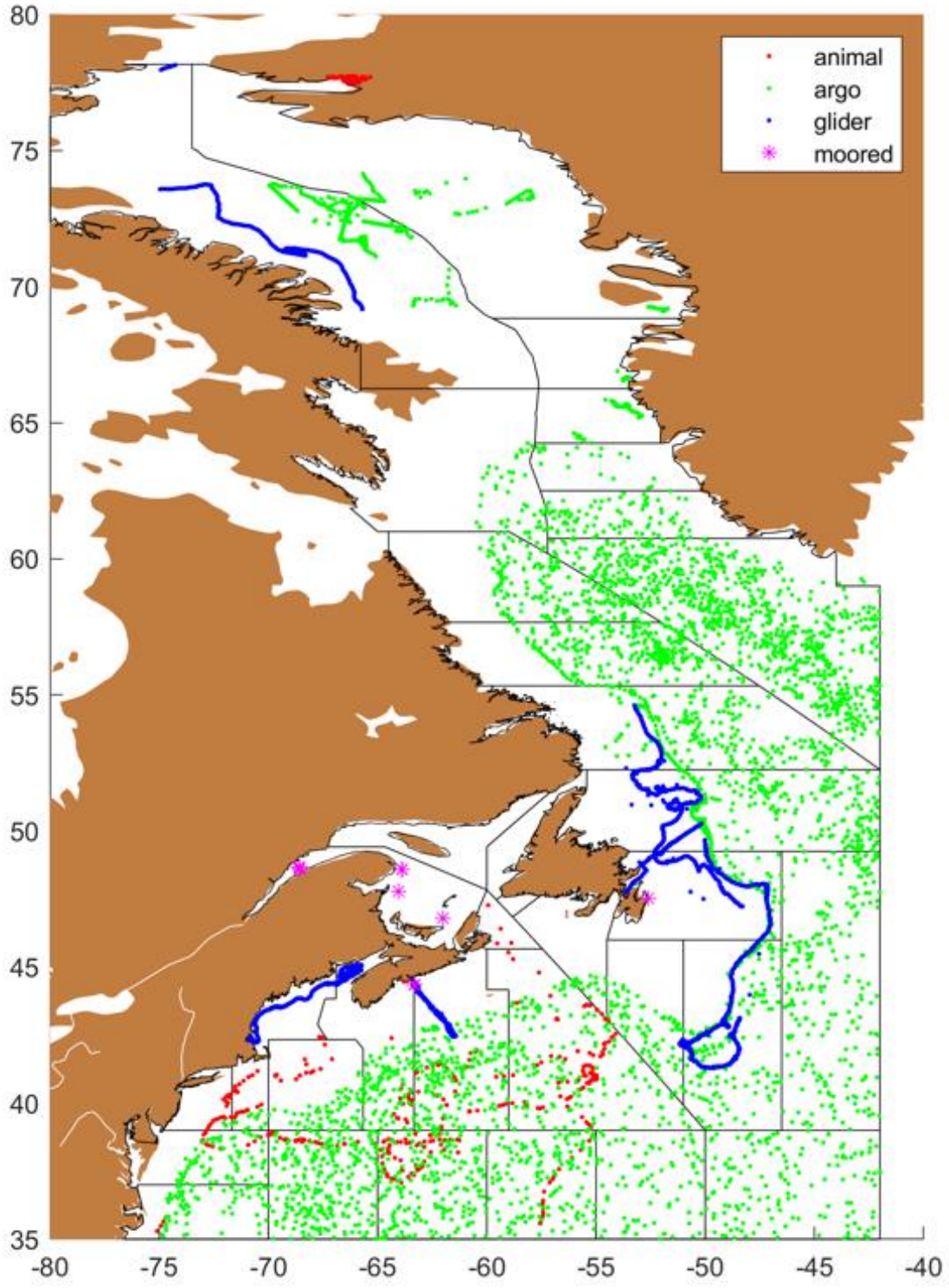
References

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.

GTSPP Real-Time Quality Control Manual First Revised Edition. UNESCO-IOC 2010. (IOC Manuals and Guides No. 22, Revised Edition.) (IOC/2010/MG/22Rev.)

Boyer, T.P., J. I. Antonov, O. K. Baranova, C. Coleman, H. E. Garcia, A. Grodsky, D. R. Johnson, R. A. Locarnini, A. V. Mishonov, T.D. O'Brien, C.R. Paver, J.R. Reagan, D. Seidov, I. V. Smolyar, and M. M. Zweng, 2013: World Ocean Database 2013, NOAA Atlas NESDIS 72, S. Levitus, Ed., A. Mishonov, Technical Ed.; Silver Spring, MD, 209 pp., http://doi.org/10.7289/V5NZ85MT

Figures and Tables



3

Figure 1. Positions of profiles sampled by autonomous platforms in 2023

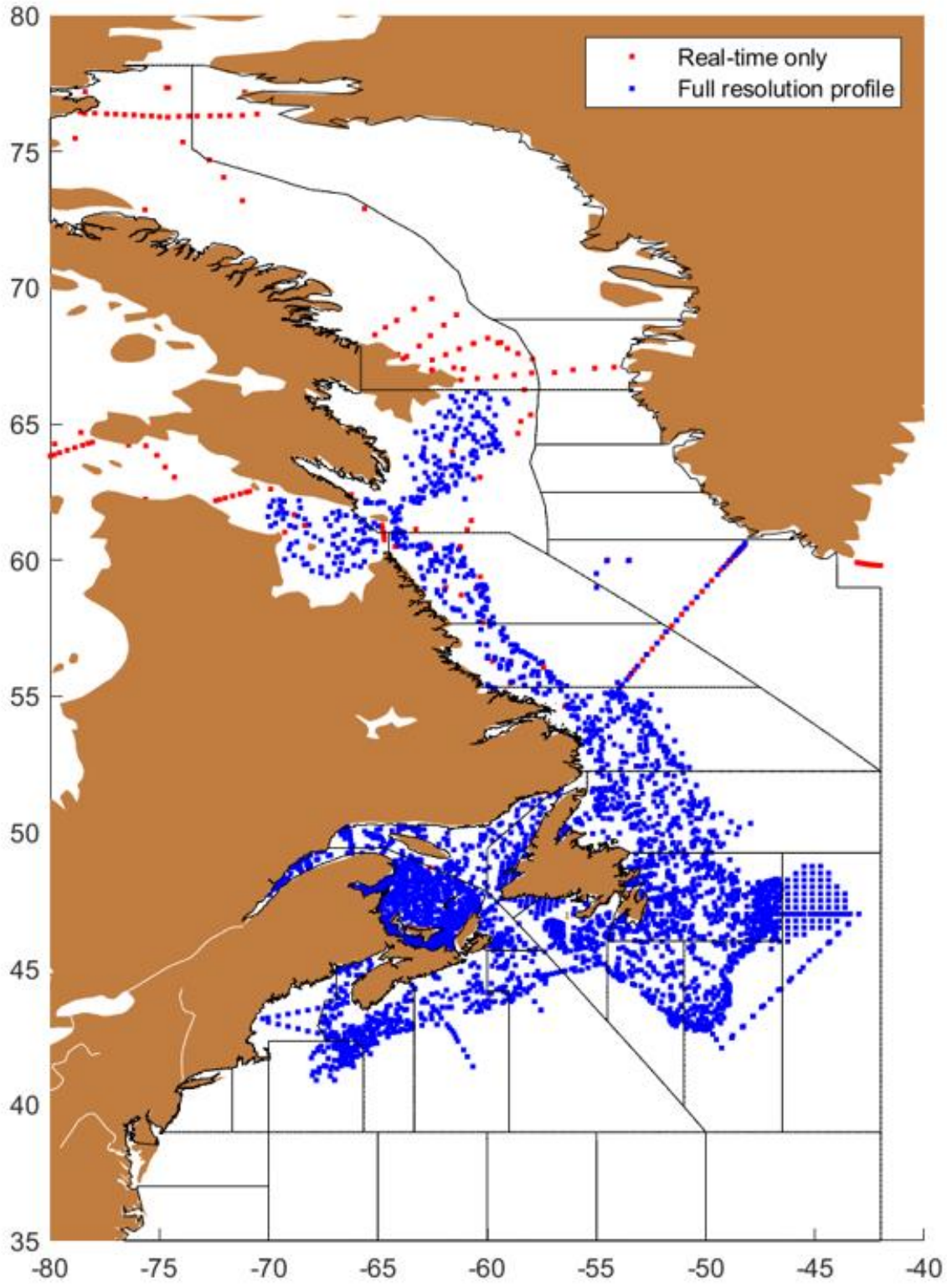


Figure 2. Positions of profiles sampled by ships in 2023

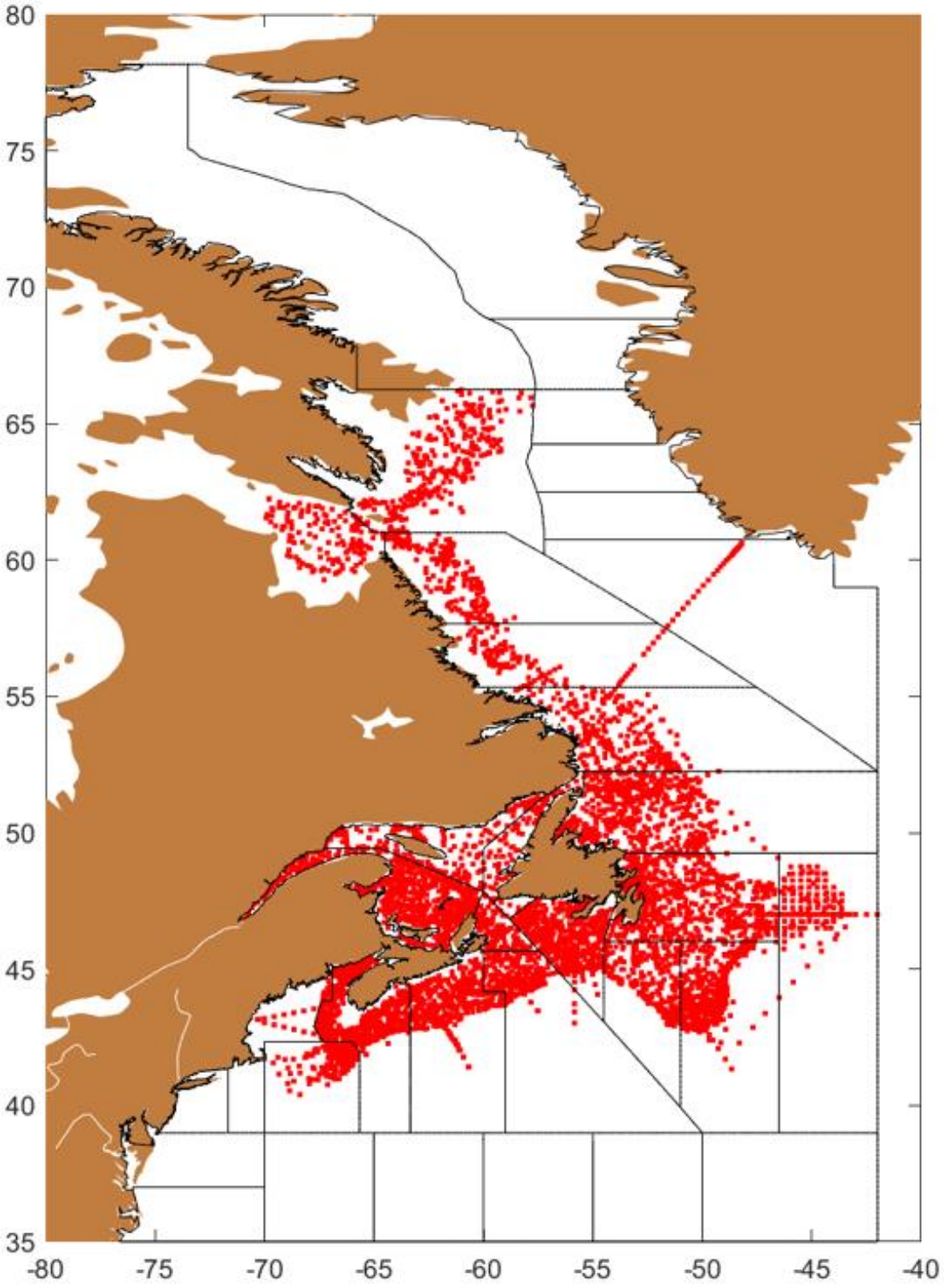


Figure 3. Positions of profiles sampled by ships before 2023 and acquired/processed in 2023/2024

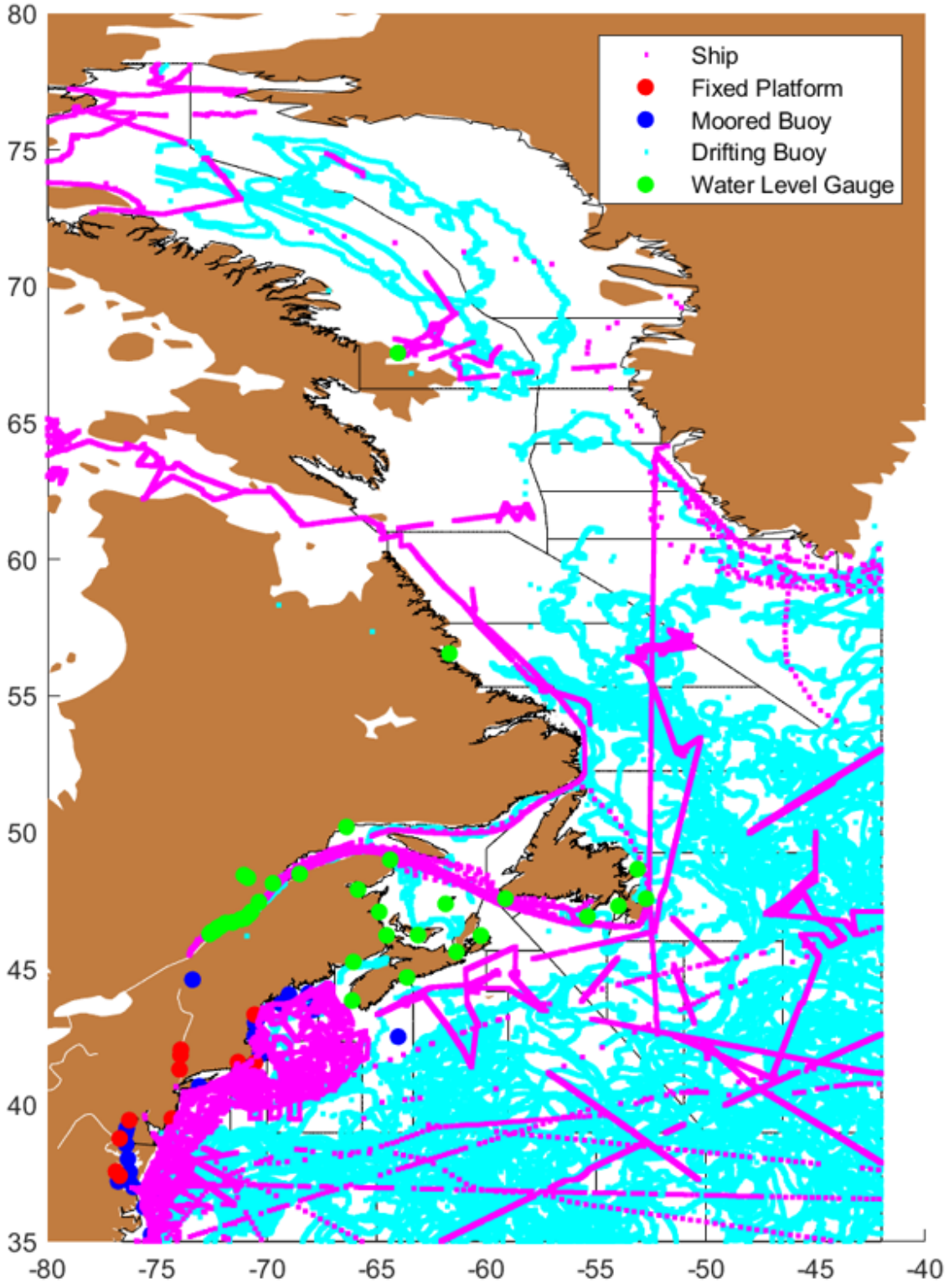


Figure 4. Positions of near surface observations made in 2023

Table 3. Real-time temperature and/or salinity profiles from autonomous platforms collected and processed in 2023

Platform Type	Platform Name	Country	WMO ID	Reporting Period(months)	Profiles	NAFO Subareas
moored	Rimouski	Canada	4400481	May-Oct	369	4T
moored	BancAmericains	Canada	4400483	May-Jul	23	4T
moored	AZMP-ESG	Canada	4400484	May-Sep	55	4T
moored	AZMP-ShediacValley	Canada	4400485	Jul-Sep	130	4T
moored	AZMP-S27	Canada	4400486	Jun-Jun	1	3L
moored	AZMP-HLX	Canada	4400487	Jun-Oct	198	4W
glider	SEA019	Canada	4800925	Sep-Sep	445	4W
glider	SEA021	Canada	4800926	Feb-Oct	609	4W
glider	SEA032	Canada	4800937	May-Jun	425	4W 4X
glider	SEA022	Canada	4800993	Mar-Jul	990	4W 4X
glider	SEA024	Canada	4800994	Jun-Jul	750	3K 3L
glider		Canada	5801965	Jan-Aug	5192	4X 5Y
glider		USA	5801972	Oct-Dec	1990	2J 3K 3L
glider		USA	5801976	Oct-Dec	1895	3K 3L 3N 3O
glider			6801906	Oct-Dec	1107	0A
argo		USA	1902392	Jan-Dec	36	4Vs4W 4X 5Ze6D 6E 6F
argo		USA	1902444	Jan-Dec	36	4W 4X 5Ze6D 6E 6F
argo		France	1902578	Jan-Mar	9	1F
argo		USA	1902655	Jul-Nov	28	1A
argo		USA	3901219	Jan-Dec	37	3M 3N 3O 4Vs6H
argo		Germany	3901601	Jan-Dec	34	4Vs4W 4X 5Ze6D 6E
argo		Germany	3901602	Jan-Dec	30	4Vs4W 6F 6G
argo		Germany	3901603	May-Dec	20	4W 4X 5Ze6D 6E
argo		Germany	3901687	Sep-Dec	10	3N 6G 6H
argo		Poland	3901851	Jan-Feb	3	6H
argo			3901970	Jan-Dec	7	3M 6H
argo			3902001	Nov-Nov	2	6H
argo		France	3902458	Jun-Dec	13	3M
argo		UK	3902495	Aug-Dec	14	2J 3K
argo		USA	4902104	Jan-Dec	32	4Vs4W 4X 6D 6E 6F
argo		USA	4902107	Jan-Mar	8	3M
argo		USA	4902111	Jan-Dec	37	4W 4X 5Ze5Zw6B 6C 6D 6E
argo		USA	4902117	Jan-Dec	37	0B 1E 1F 2G 2H
argo		USA	4902119	Jan-Dec	37	1F
argo		USA	4902120	Jan-Jan	3	6D
argo		USA	4902121	Jan-Dec	35	4W 4X 5Ze6D 6E
argo		USA	4902337	Jan-Dec	34	4W 4X 5Ze6D 6E 6F
argo		USA	4902344	Jan-Dec	37	3N 3O 3Ps4Vs4W 4X 6G

argo	USA	4902345	Jan-Dec	37	4Vs4W 4X 6E 6F
argo	Canada	4902437	Jan-Nov	102	0A
argo	Canada	4902441	Jan-Jan	1	6D
argo	Canada	4902442	Jan-Dec	24	3M 6H
argo	Canada	4902467	Mar-Dec	28	4Vs4W 4X 6B 6C 6D 6E 6F
argo	Canada	4902469	Jan-Dec	34	1F 2G
argo	Canada	4902470	Jan-Dec	34	4Vs4W 4X 5Ze5Zw6B 6D 6E
argo	Canada	4902471	Jan-Dec	36	2H
argo	Canada	4902477	Jan-Dec	34	1F 2G 2H
argo	Canada	4902478	Jan-Dec	35	2G 2H 2J 3K 3L 3M
argo	Canada	4902479	Jan-Dec	34	0B 1E 1F 2G
argo	Canada	4902481	Jan-Dec	34	2J 3K 3L 3M 3N 3O 3Ps
argo	Canada	4902487	Jan-Dec	32	0B 1E 1F 2G 2H 2J
argo	Canada	4902488	Jul-Jul	1	3K
argo	Canada	4902489	Jan-Dec	35	3M
argo	Canada	4902498	Jan-Dec	34	4X 5Ze5Zw6B 6C 6D
argo	Canada	4902503	Sep-Dec	12	6B 6C 6D
argo	Canada	4902505	Jan-Dec	36	0B 1C 1D 1E 1F
argo	Canada	4902507	Jan-Aug	23	2J 3K
argo	Canada	4902508	Jan-Oct	24	1F
argo	Canada	4902510	Jan-Sep	24	2J 3K
argo	Canada	4902511	Jan-Dec	34	1F 2H
argo	Canada	4902513	Jan-Dec	16	1F
argo	Canada	4902515	Jan-Dec	35	3O 3Ps4Vs4W 4X
argo	Canada	4902518	Jan-Dec	5	6D 6F
argo	Canada	4902519	Jan-Nov	30	3M 3N 6G 6H
argo	Canada	4902523	Jan-Dec	25	4Vs6B 6C 6D 6E 6F
argo	Canada	4902524	Sep-Dec	10	6B 6C 6D
argo	Canada	4902529	Aug-Dec	10	3M 6H
argo	Canada	4902531	Aug-Nov	10	0A
argo	Canada	4902535	Jan-Jan	2	1F
argo	Canada	4902556	Jan-Dec	33	6B 6D 6E 6F 6G
argo	Canada	4902557	Jan-Feb	4	1F
argo	Canada	4902575	Jan-Aug	21	6H
argo	Canada	4902576	Jan-Dec	34	4Vs4W 4X 5Ze6D 6E 6F
argo	Canada	4902577	Jan-Dec	22	6B 6C 6D 6E 6F
argo	Canada	4902578	Jan-Dec	33	3M 3N 4Vs4W 6F 6G
argo	Canada	4902579	Jan-Dec	34	1F 2G 2H
argo	Canada	4902580	Jan-Jul	16	1F
argo	Canada	4902590	Jan-Dec	33	4W 4X 5Ze5Zw6A 6B 6C 6D
argo	Canada	4902591	Jan-Dec	33	1F 2H

argo	Canada	4902592	Jan-Dec	34	1E 1F 2G
argo	Canada	4902593	Jan-Dec	34	1F 2J
argo	Canada	4902594	Jan-Feb	5	1F
argo	Canada	4902595	Feb-Feb	1	3M
argo	Canada	4902598	Jan-Dec	36	5Ze5Zw6B 6C 6D 6E
argo	Canada	4902599	Jan-Dec	36	4Vs4W 4X 5Ze6D 6E 6F
argo	Canada	4902600	Sep-Dec	11	4Vs4W
argo	Canada	4902601	Sep-Dec	9	4W 4X
argo	Canada	4902602	Jan-Aug	66	0A
argo	Canada	4902604	Jun-Dec	22	1F 2G 2H
argo	Canada	4902606	Jun-Dec	21	4W 4X 5Ze6D 6E
argo	Canada	4902608	Oct-Dec	9	3N 3O 4Vs
argo	Canada	4902627	Sep-Dec	22	4Vs
argo	Canada	4902630	Jan-Aug	65	0A 1A
argo	Canada	4902650	Jun-Dec	20	1F
argo	Canada	4902652	Jun-Dec	21	1F
argo	Canada	4902670	Jun-Dec	21	1F 2G
argo	Canada	4902671	Jun-Dec	21	1F 2G 2H
argo	Canada	4902684	Dec-Dec	27	2H
argo	Canada	4902685	Dec-Dec	11	1F 2H
argo	USA	4902909	Jan-Jun	18	3N 3O 4Vs6F
argo	USA	4902927	Jan-Jul	19	3N 4Vs4W 4X 6D 6E 6H
argo	USA	4902928	Nov-Dec	5	6B 6C 6D
argo	USA	4903035	Jan-Dec	14	6D 6E
argo	USA	4903042	Jan-Dec	37	3N 3O 4Vs6E 6F 6G 6H
argo	USA	4903043	Jan-Nov	33	3M 3N 3O 4Vs6G 6H
argo	USA	4903046	May-Jun	3	1F
argo	USA	4903048	Mar-Dec	10	6G 6H
argo	USA	4903049	Jan-Dec	35	5Ze6C 6D 6E
argo	USA	4903050	Jan-Apr	12	6D 6E
argo	USA	4903056	Nov-Dec	5	6E
argo	USA	4903233	Jan-Dec	40	4X 6B 6C 6D 6E
argo	USA	4903252	Jan-Dec	36	4Vs4W 6B 6D 6E
argo	USA	4903256	Jan-Dec	33	6B 6C 6D 6E
argo	USA	4903258	Jan-Dec	36	3O 4Vs4W
argo	USA	4903260	Mar-Dec	30	3N 3O 4Vs6F 6G 6H
argo	USA	4903273	Apr-Dec	16	6B 6C 6D
argo	USA	4903277	Aug-Dec	17	4Vs4W 6B 6C 6D 6F 6G
argo	USA	4903280	Jan-Dec	37	4W 4X 5Ze6B 6C 6D
argo	USA	4903363	Jan-Dec	73	1F
argo	USA	4903364	Jan-Nov	19	1F
argo	USA	4903377	Apr-Dec	235	0B 2G 2H 2J 3K 3L 3N 3O
argo	USA	4903455	Jan-Dec	306	1B 1C

argo	USA	4903456	Jan-Dec	36	4Vs4W 6D 6E 6F
argo	France	4903634	Jan-Dec	37	1F 2G 2H
argo	Germany	4903668	Dec-Dec	1	3N
argo	France	4903774	Aug-Nov	14	0A
argo	USA	5904774	Jan-Dec	35	2H 2J 3K
argo	USA	5906342	Jul-Oct	5	6D
argo	USA	5906438	Jan-Dec	27	3M 3N 3O 4Vs6F 6G
argo	USA	5906440	Jan-Sep	24	3M 3N 6H
argo	UK	5906966	Aug-Nov	10	6B 6C
argo	France	5906994	Dec-Dec	3	1F
argo	UK	6901169	Jan-Apr	11	2G 2H
argo	UK	6901170	Jan-Dec	36	3K 3L 3M 3N 3O
argo	UK	6901190	Apr-May	2	3M
argo	UK	6901194	Jan-Sep	25	3O 3Ps4Vs
argo	UK	6901199	Jan-Dec	35	0B 1D 1E 1F 2G 2H 2J
argo	UK	6901200	Jan-Jan	1	3M
argo	France	6901589	Oct-Nov	15	6B 6C
argo	Ireland	6901925	Jan-Dec	46	1F 2J
argo	Ireland	6901930	Jan-Dec	36	3N 4Vs6G 6H
argo	Netherlands	6901997	Jan-Apr	9	3M 6H
argo	France	6902727	Jan-Nov	45	0A
argo	France	6902752	Jan-Oct	29	1D 1E 1F
argo	France	6902786	Jan-Aug	21	1F 2G 2H
argo	France	6902787	Jan-Nov	32	3M 3N
argo	France	6902791	Jan-Nov	33	2J
argo	France	6902792	Jan-Apr	11	0B 1D
argo	France	6902793	Jan-Dec	31	3K 3L 3M
argo	France	6902800	Jan-Oct	29	1F
argo	France	6902863	Jan-Sep	25	2H 2J 3K 3L 3M
argo	France	6902865	Jan-Dec	34	1F 2J 3K 3M
argo	France	6902886	Jan-Dec	37	0B 1E 1F 2G 2H 2J
argo	France	6902888	Jan-Dec	35	1F
argo	France	6902895	Jan-Dec	37	1F 2G 2H
argo	France	6902952	Jan-Nov	44	1A
argo	France	6902973	Jan-Sep	25	2J 3K
argo	France	6902976	Jan-Nov	32	1F 2H
argo	France	6903006	Jan-Dec	35	0B 1E 2G 2H 2J 3K
argo	France	6903029	Jan-Aug	24	2J 3K 3M
argo	France	6903030	Jan-May	11	2J 3K 3M
argo	France	6903032	Jan-Oct	30	1F 2G 2H
argo	France	6903034	May-Dec	23	3M 3N
argo	France	6903039	Jan-Dec	37	0B 1E 1F 2G 2H 2J
argo	France	6903042	Jan-Sep	22	3K 3M

argo	France	6903083	Jan-Dec	28	3M 3N
argo	France	6903121	Jun-Dec	21	6F 6G 6H
argo	France	6903122	Jan-Dec	18	6E 6F 6G 6H
argo	France	6903127	Jan-Nov	104	0A
argo	France	6903131	Oct-Dec	7	1E 1F
argo	Norway	6903545	Jan-Dec	37	1F 2H 2J
argo	Norway	6903579	Jan-Nov	137	0B 1E 1F 2G 2H 2J 3K 3L 3M 3N
argo		6903873	Mar-Nov	12	3K 3M
argo	Germany	6904085	Oct-Dec	9	1E 1F
argo	Germany	6904112	Feb-Jun	20	3K 3M
argo	Germany	6904114	Dec-Dec	4	1F
argo	Germany	6904231	Jan-Dec	52	1E 1F 2G
argo	France	6904240	Jan-Sep	27	1F
argo	France	6904241	Jan-Dec	34	1F
argo	Germany	6990501	Jan-Dec	34	3O 4Vs4W 6F
argo	UK	6990520	Nov-Dec	6	3M 6H
argo	Germany	6990526	Dec-Dec	13	1F 2H
argo	USA	6990591	Aug-Dec	42	1A
argo	Germany	7900538	Oct-Nov	2	6H
argo	UK	7901008	Jun-Dec	26	4W 4X 5Ze6B 6C 6D 6E
argo	Germany	7901027	Dec-Dec	14	2H
argo	France	7901036	Jul-Dec	17	1F
argo	France	7901037	Oct-Dec	5	1F
argo	France	7901124	Aug-Nov	12	0A
animal		9901776	Sep-Nov	57	3O 3Ps4Vn4Vs4W 4X
animal		9901778	Aug-Dec	353	4Vs4W 4X 5Y 5Ze5Zw6A 6B 6C 6D 6E 6F
animal		9901779	Aug-Oct	106	1A
animal		9901780	Aug-Dec	365	1A
animal		9901781	Sep-Nov	137	1A

*Dates are of first and last data reports within the NAFO Convention Area
**Moorings equipped with fixed profiling CTDs, mounted with Viking buoys. Deployments were seasonal and the full data are available at the MLI.

Table 4. Oceanographic profiles collected by ships in 2023

Country	Mission/ Ship	Start Date	End Date	CTD	CTD RT*	XBT	XBT RT*	Bottle	TSG**	NAFO Subareas
CAN	SHIP	20230620	20231220	0	25	0	0	0	0	4T 4W
CAN	184123007	20230310	20230322	97	0	0	0	97	0	3Pn4R 4S 4T 4Vn
	187F23001	20230512	20231027	0	0	0	0	119	0	4T
	189023052	20231123	20231220	3	0	0	0	0	0	4T
CAN	18AV23006	20230223	20230223	1	0	0	0	1	0	3L
	18BP23002	20230307	20231123	27	0	0	0	92	0	4T
	18BW23001	20230216	20230925	0	0	0	0	22	0	4T
	18CR23002	20230224	20230329	0	0	0	0	166	0	4X 5Y 5Ze
	18CR23573	20230524	20230612	0	0	0	0	39	0	1F 2G 2H 2J 3L 4W
	18CR23011	20230629	20230814	0	0	0	0	244	0	4Vn4Vs4W 4X 5Y 5Ze
	18CR23300	20230907	20230929	0	0	0	0	16	0	4T
CAN	CGDT	20230702	20231025	0	179	0	0	0	1823	0A 0B 1A 1B 2G 2H 2J 4T
CAN	18E023118	20230719	20230817	200	134	0	0	0	0	0B 2G
CAN	18K823001	20230620	20231023	57	0	0	0	0	0	4T
CAN	18K823029	20230718	20230720	13	0	0	0	0	0	4T
CAN	18KF23034	20230413	20230416	16	9	2	2	1	0	3L 3O
CAN	18KF23035	20230429	20230511	43	30	0	0	1	0	3L 3N 3O
CAN	18KF23036	20230512	20230531	74	53	1	0	3	0	3L 3N
CAN	18KF23032	20230517	20230517	0	0	0	0	1	0	3L
CAN	18KF23037	20230601	20230611	52	34	1	1	0	0	3L 3Ps
CAN	18KF23038	20230614	20230619	33	22	0	0	0	0	3Ps
CAN	18KF23041	20230720	20230801	57	26	30	30	44	0	2J 3K 3L
CAN	18KF23027	20230805	20230904	45	0	0	0	45	0	4R 4S 4T 4Vn
CAN	18KF23042	20230919	20231001	67	39	1	1	0	0	2G 2H 2J
CAN	18KF23043	20231004	20231016	65	39	2	2	0	0	2H 2J 3K
CAN	18KF23044	20231018	20231029	36	22	0	0	0	0	3K 3L 3N
CAN	18KF23045	20231104	20231113	32	19	3	3	0	0	3L
CAN	18KF23046	20231117	20231125	20	12	0	0	0	0	3L
CAN	18KF23047	20231201	20231205	19	14	1	1	0	0	3K
	18LO23010	20230506	20230514	10	0	0	0	0	0	4S
	18LO23019	20230520	20230610	16	0	0	0	7	0	4T
	18LO23032	20230612	20230623	22	0	0	0	0	0	4S 4T
	18LO23030	20230702	20230710	10	0	0	0	0	0	4T
	18LO23036	20230724	20230728	37	0	0	0	0	0	4S
	18LO23045	20230831	20230901	4	0	0	0	0	0	4T
CAN	18MU23757	20230421	20230421	4	0	0	0	0	0	4W
CAN	18MU23545	20230430	20230512	3	0	0	0	5	0	4T
CAN	18MU23588	20230517	20230527	1	0	0	0	8	0	4T

CAN	18MU23305	20230601	20230602	0	0	0	0	2	0	4T
CAN	18MU23303	20230628	20230801	123	10	0	0	38	0	4T
CAN	18MU23767	20230811	20230823	44	0	0	0	0	0	4Vn4Vs4W
CAN	18MU23568	20230901	20230911	23	1	0	0	20	0	4T
CAN	18MU23918	20230921	20231010	45	0	0	0	7	0	4T
CAN	18OL23016	20230608	20230616	69	0	0	0	114	0	3Pn4R 4S 4T 4Vn
CAN	18OL23020	20230617	20230627	52	0	0	0	142	0	4S 4T
CAN	18OL23026	20230718	20230727	41	0	0	0	41	0	4S
CAN	18OL23049	20231017	20231030	90	1	0	0	125	0	3Pn4R 4S 4T 4Vn
CAN	18QL23002	20230224	20230329	146	0	0	0	0	0	4W 4X 5Y 5Ze
CAN	18QL23031	20230403	20230417	56	24	41	41	42	0	3L 3M 3N 3O 3Ps
CAN	18QL23032	20230503	20230521	33	22	26	25	1	0	3K 3L
CAN	CFA3098	20230524	20230606	0	52	0	0	0	0	1F 2G 2H 2J 3L
CAN	18QL23011	20230629	20230814	203	0	0	0	0	0	4Vn4Vs4W 4X 5Y 5Ze
CAN	18QL23300	20230907	20231002	129	0	0	0	129	0	4T
CAN	18QL23033	20231008	20231016	53	34	0	0	1	0	3L 3O
CAN	18QL23034	20231018	20231029	54	30	1	1	2	0	3L 3N 3O
CAN	18QL23035	20231103	20231113	35	26	1	1	1	0	3L
CAN	18QL23036	20231115	20231125	31	0	2	0	1	0	3K 3L
CAN	18QL23037	20231129	20231215	45	28	0	0	2	0	2H 2J 3K 3L
CAN	18QQ23118	20230910	20231004	129	80	0	0	0	0	0B 2G
CAN	18TL23238	20230108	20230108	1	0	0	0	1	0	3L
CAN	18TL23239	20230429	20230510	52	29	6	6	0	0	3N 3O
CAN	18TL23240	20230512	20230528	70	50	4	0	0	0	3L 3N
CAN	18TL23241	20230601	20230611	52	31	1	1	1	0	3L 3O 3Ps
CAN	18TL23242	20230614	20230620	35	28	1	1	1	0	3L 3Ps
CAN	18TL23243	20230830	20230911	59	35	1	1	2	0	3L 3Ps
CAN	18TL23244	20230922	20231001	47	29	0	0	0	0	2H 2J
CAN	18TL23245	20231005	20231015	72	40	0	0	0	0	2J 3K
CAN	18TL23246	20231018	20231029	57	33	0	0	1	0	3K 3L
CAN	18TL23247	20231105	20231114	21	15	1	1	1	0	3K 3L
CAN	18TL23248	20231116	20231125	26	19	0	0	1	0	3L
CAN	18TL23249	20231201	20231212	32	19	1	1	0	0	3K 3L
CAN	18VA23667	20230105	20231220	271	0	0	0	139	0	3L 3O 3Pn3Ps4R 4T 4Vs4W 4X
CAN	18VA23666	20230112	20231206	270	0	0	0	133	0	3L 3O 3Pn3Ps4R 4T 4Vs4W 4X
CAN	18VA23669	20230112	20231212	271	0	0	0	135	0	3L 3O 3Pn3Ps4R 4T 4Vs4W 4X
CAN	18VA23301	20230415	20230422	4	0	0	0	1	0	4T 4W
CAN	18VA23002	20230527	20230611	74	0	0	0	2	0	3L 3O 4W

CAN	18VA23001	20230710	20230904	179	0	0	0	82	0	3Pn3Ps4R 4T 4Vs4W 4X
CAN	18VA23025	20230712	20230718	28	0	0	0	73	0	3Pn3Ps4R 4T 4Vs4W
CAN	18VD23185	20230520	20230525	6	0	0	0	0	0	3Ps
CAN	18VD23186	20230530	20230603	14	0	0	0	0	0	3L
CAN	18VD23187	20230611	20230611	1	0	0	0	1	0	3L
CAN	18VD23188	20230627	20230710	6	0	0	0	1	0	3L
CAN	18VD23189	20230720	20230726	6	0	0	0	0	0	3L
CAN	18VD23190	20230731	20230805	8	0	0	0	0	0	3L
CAN	18VD23191	20230813	20230813	1	0	0	0	1	0	3L
CAN	18VD23192	20230816	20230820	10	0	0	0	0	0	3L
CAN	18VD23193	20230827	20230903	13	0	0	0	0	0	3K
CAN	18VD23194	20230911	20230912	3	0	0	0	0	0	3K
CAN	18VD23195	20230920	20230923	9	0	0	0	0	0	3L
CAN	18VD23196	20230929	20231008	10	0	0	0	0	0	3L
FRA	EAKF	20230704	20230705	0	12	0	0	0	0	
ESP	29VE230615	20230615	20230701	81	0	0	0	0	0	3N 3O
ESP	29VE230706	20230706	20230801	74	0	0	0	0	0	3L 3M 3N
ESP	29VE230809	20230809	20230827	95	0	0	0	0	0	3L
CAN	74EQ23902	20230913	20231001	84	0	0	0	163	0	3Pn3Ps4Vn4Vs4W 4X 5Y 5Ze
CAN	74EQ23001	20231006	20231027	92	42	61	61	72	0	2J 3K 3L 3M 3N 3O 3Ps
	D5LS3	20230218	20231226	0	0	0	0	0	301	3M 3N 3O 3Ps4Vs4W 4X 5Ze5Zw6A 6B 6C 6D 6E 6F 6G 6H
	DBBT	20230621	20231217	0	0	0	0	0	21838	0B 1D 1E 1F 2G 2H 2J 3K 3L 3M 3N 3O 3Ps4Vn4Vs4W 4X 6G
	FMNB	20230913	20230919	0	0	0	0	0	53	0A 1A 1B 1C 1D 1E 1F
	FNCM	20230620	20230627	0	0	0	0	0	2046	3L 3M 3N 3O 6H
	FNHO	20230505	20230720	0	0	0	0	0	319	3M 3N 3O 4Vs4W 6B 6C 6D 6E 6F 6G 6H
	OYTR2	20230112	20231207	0	0	0	0	0	305	1D 1E 1F
	WTDF	20230414	20231111	0	0	0	0	0	31190	4X 5Y 5Ze5Zw6A 6B 6C
	WTEC	20230523	20230527	0	0	0	0	0	1410	3M 3N 4Vs6E 6F 6G

	WTEO	20230322	20230420	0	0	0	0	0	5239	6B 6C
CAN	XJBI	20230101	20231113	0	0	0	0	0	6165	3K 3L 3Pn3Ps4R 4S 4T 4Vn

* Messages formatted for transmission on the GTS. These messages are of lower vertical resolution and uncalibrated versions of the data, to be replaced in the future.
** TSG counts are not number of profiles, but number of point thermosalinograph observations
*** Dates are of first and last data reports within the NAFO Convention Area

Table 5. Pre-2023 temperature (XBT) and/or salinity (CTD,bottle) profile data collected aboard ships, entered or updated in 2023/2024

Mission	Country	Start Date	End Date	CTD	Bottle	XBT	NAFO_Subareas
181C99234	CAN	19990329	19990329	0	1	0	3L
181C99237	CAN	19990507	19990507	0	1	0	3L
181C99238	CAN	19990510	19990521	0	2	0	3L
181C99239	CAN	19990526	19990604	0	2	0	3L
181C99240	CAN	19990605	19990618	0	2	0	3L
181C99241	CAN	19990619	19990629	0	2	0	3L
181C99242	CAN	19990907	19990907	0	1	0	3L
181C99243	CAN	19990927	19990927	0	1	0	3L
181C99244	CAN	19991012	19991022	0	2	0	3L
181C99245	CAN	19991024	19991105	0	2	0	3L
181C99246	CAN	19991106	19991119	0	2	0	3L
181C99247	CAN	19991121	19991202	0	2	0	3L
181C99248	CAN	19991204	19991214	0	2	0	3L
181C00324	CAN	20000717	20000717	0	1	0	3L
181C01367	CAN	20010517	20010517	0	1	0	3L
181C01372	CAN	20011016	20011016	0	1	0	3L
181C01376	CAN	20011210	20011210	0	1	0	3L
181C02417	CAN	20020401	20020401	0	1	0	3L
181T00007	CAN	20000124	20000124	0	1	0	3L
181T00008	CAN	20000203	20000203	0	1	0	3L
181T00009	CAN	20000221	20000221	0	1	0	3L
181T00010	CAN	20000229	20000229	0	1	0	3L
181T00011	CAN	20000315	20000315	0	1	0	3L
181T00013	CAN	20000523	20000523	0	1	0	3L
181T00016	CAN	20000615	20000615	0	1	0	3L
181T00017	CAN	20000629	20000629	0	1	0	3L
181T00018	CAN	20000901	20000901	0	1	0	3L
181T00020	CAN	20000915	20000915	0	1	0	3L
181T00021	CAN	20001002	20001002	0	1	0	3L
181T00022	CAN	20001130	20001130	0	1	0	3L
181T01-23	CAN	20010109	20010109	0	1	0	3L
181T01-24	CAN	20010202	20010202	0	1	0	3L
181T01025	CAN	20010330	20010330	0	1	0	3L
181T01027	CAN	20010604	20010604	0	1	0	3L
181T01028	CAN	20010620	20010620	0	1	0	3L
181T01029	CAN	20010704	20010704	0	1	0	3L
181T01-30	CAN	20010809	20010809	0	1	0	3L
181T01-31	CAN	20010831	20010831	0	1	0	3L
181T01-32	CAN	20010917	20010917	0	1	0	3L

181T02033	CAN	20020110	20020110	0	1	0	3L
181T02034	CAN	20020226	20020226	0	1	0	3L
181T02035	CAN	20020409	20020409	0	1	0	3L
183621098		20211014	20211015	2	0	0	4T
189022045		20220816	20220825	74	0	0	4T
18BP22001		20220427	20221207	20	0	0	4T
18E015110	CAN	20150819	20150921	317	0	0	0B 2G
18EG19012	CAN	20190801	20190801	0	2	0	3L
18EG19515	CAN	20190926	20191007	0	2	0	3L
18GP22004	CAN	20220818	20220818	1	1	0	3L
18HE22008		20220304	20220314	98	0	0	3Pn4R 4S 4T 4Vn
18HU99003	CAN	19991118	19991127	0	27	0	3K 3L 3M 3N 3O
18HU00302	CAN	20000422	20000507	0	67	0	3K 3L 3M 3N 3O
18HU00305	CAN	20000714	20000730	0	91	0	2G 2H 2J 3K 3L 3M
18HU00004	CAN	20001101	20001111	0	61	0	3K 3L 3M 3N 3O
18HU00343	CAN	20001218	20001218	0	1	0	3L
18HU01001	CAN	20011114	20011125	0	56	0	3K 3L 3M 3N 3O
18HU11111	CAN	20111120	20111210	0	75	0	2J 3K 3L 3M 3N 3O 3Ps
18HU12112	CAN	20121120	20121209	0	71	0	2J 3K 3L 3M 3N 3O 3Ps
18HU14007	CAN	20140516	20140516	0	1	0	3L
18HU14114	CAN	20141116	20141207	0	69	0	2J 3K 3L 3M 3N 3O
18HU15004	CAN	20150417	20150427	57	0	0	3Ps4Vn4Vs4W 4X 5Ze
18HU15115	CAN	20151115	20151206	120	93	36	2J 3K 3L 3M 3N 3O 3Ps
18HU16003	CAN	20160409	20160425	55	0	0	4Vn4Vs4W 4X 5Ze
18HU16027	CAN	20160915	20161006	100	0	0	3Pn3Ps4Vn4Vs4W 4X 5Y 5Ze
18HU18004	CAN	20180406	20180423	85	0	0	3Pn3Ps4Vn4Vs4W 4X 5Y 5Ze
18HU18027	CAN	20180707	20180716	9	0	0	3Ps
18HU18030	CAN	20180915	20181005	105	0	0	3Pn3Ps4Vn4Vs4W 4X 5Y 5Ze
18HU18118	CAN	20181111	20181202	0	74	0	3K 3L 3M 3N 3O 3Ps
18HU20208	CAN	20200806	20200806	0	1	0	3L
18HU20066	CAN	20200830	20200830	1	0	0	4W
18HU20063	CAN	20201004	20201014	52	0	0	3Pn3Ps4Vn4Vs4W 4X 5Ze
18HU20120	CAN	20201110	20201201	0	60	0	3K 3L 3M 3N 3O 3Ps
18HU21127	CAN	20210520	20210601	14	0	0	3Pn4Vn4Vs4W
18HU21185	CAN	20210917	20211003	106	0	0	3Pn3Ps4Vn4Vs4W 4X 5Y 5Ze
18K822001		20220705	20221017	25	0	0	4T
18KF21001	CAN	20210925	20210925	0	1	0	3L

18KF22020	CAN	20220327	20220331	7	1	0	3L
18KF22998	CAN	20220403	20220422	53	1	0	3L 3O 3Ps
18KF22021	CAN	20220405	20220417	46	1	0	3L 3O 3Ps
18KF22022	CAN	20220407	20220502	105	0	1	3O 3Ps
18KF22023	CAN	20220505	20220517	70	1	0	3L 3O 3Ps
18KF22024	CAN	20220522	20220531	21	1	1	3L 3O 3Ps
18KF22025	CAN	20220602	20220614	41	1	0	3L 3N 3O
18KF22026	CAN	20220615	20221009	122	1	1	2J 3K 3L 3N
18KF22027	CAN	20220923	20221003	42	0	0	2J 3K
18KF22028	CAN	20221006	20221017	68	1	0	3K 3L
18KF22029	CAN	20221020	20221029	49	2	1	3L 3N 3O
18KF22030	CAN	20221104	20221115	29	0	2	3L 3N 3O
18KF22031	CAN	20221116	20221128	17	0	1	3K 3L
18KF22032	CAN	20221130	20221213	29	0	0	2J 3K 3L
18LL01344	CAN	20010108	20010108	0	1	0	3L
18LL01002	CAN	20010221	20010221	0	1	0	3L
18LL01351	CAN	20010411	20010419	0	2	0	3L
18LL01352	CAN	20010421	20010504	0	60	0	3K 3L 3M 3N 3O
18LL01353	CAN	20010518	20010524	0	2	0	3L
18LL01355	CAN	20010621	20010621	0	1	0	3L
18LL01356	CAN	20010713	20010729	0	58	0	2G 2H 2J 3K 3L
18LL01357	CAN	20011005	20011005	0	1	0	3L
18LO22018		20220514	20220521	38	0	0	4S
18LO22015		20220527	20220604	19	0	0	4S
18LO22025		20220625	20220704	27	0	0	4S 4T
18LO22037		20220715	20220801	41	0	0	4R 4S 4T
18LO22040		20220805	20220812	8	0	0	4T
18LO22016		20220820	20220828	9	0	0	4T
18LO22051		20220903	20220912	8	0	0	4T
18LO22053		20220923	20220925	7	0	0	4T
18MU22233		20220908	20220908	2	0	0	4T
18MU22022		20220928	20220930	7	0	0	4T
18NE97026	CAN	19970703	19970716	108	0	0	4W 4X 5Y
18NE97034	CAN	19970721	19970731	94	0	0	4Vn4Vs4W
18NE00012	CAN	20000404	20000404	0	1	0	3L
18NE11403	CAN	20110517	20110517	0	1	0	3L
18NE11404	CAN	20110531	20110531	0	1	0	3L
18NE11405	CAN	20110614	20110614	0	1	0	3L
18NE11406	CAN	20110623	20110623	0	1	0	3L
18NE11408	CAN	20110927	20110927	0	1	0	3L
18NE11409	CAN	20111002	20111002	0	1	0	3L
18NE11410	CAN	20111018	20111018	0	1	0	3L
18NE11413	CAN	20111128	20111128	0	1	0	3L

18NE12417	CAN	20120501	20120501	0	1	0	3L
18NE12420	CAN	20120612	20120612	0	1	0	3L
18NE12421	CAN	20120620	20120620	0	1	0	3L
18NE12425	CAN	20121030	20121030	0	1	0	3L
18NE14447	CAN	20140619	20140619	0	1	0	3L
18NE15451	CAN	20150407	20150426	110	0	3	3Ps
18NE15450	CAN	20150411	20150414	20	0	1	3Ps
18NE15452	CAN	20150430	20150512	76	0	0	3L 3O 3Ps
18NE15453	CAN	20150513	20150526	100	1	1	3L 3N 3O
18NE15454	CAN	20150528	20150607	80	0	1	3L 3N
18NE15455	CAN	20150613	20150619	21	1	1	3L
18NE15456	CAN	20150909	20150915	40	0	0	3L 3Ps
18NE15457	CAN	20150918	20150920	4	1	0	3L
18NE15458	CAN	20150924	20151002	38	1	2	3L 3O
18NE15459	CAN	20151004	20151010	39	1	0	3L 3N 3O
18NE15460	CAN	20151013	20151027	72	0	5	3L 3N 3O
18NE15461	CAN	20151028	20151109	44	0	1	3L 3N
18NE15462	CAN	20151113	20151123	58	0	1	3L
18NE15463	CAN	20151125	20151203	26	0	1	3L
18NE16016	CAN	20160628	20160815	250	0	0	4Vn4Vs4W 4X 5Y 5Ze
18NE17020	CAN	20170628	20170805	201	0	0	4Vn4Vs4W 4X 5Y 5Ze
18NE18497	CAN	20180606	20180618	0	2	0	3L
18NE18499	CAN	20180910	20180910	0	1	0	3L
18NE18500	CAN	20180925	20180925	0	1	0	3L
18NE19102	CAN	20190212	20190318	96	0	0	4W 4X 5Y 5Ze
18NE19002	CAN	20190219	20190307	48	0	0	4X 5Ze
18NE19506	CAN	20190330	20190330	0	1	0	3L
18NE19508	CAN	20190507	20190507	0	1	0	3L
18NE19509	CAN	20190508	20190521	0	2	0	3L
18NE19510	CAN	20190522	20190604	0	2	0	3L
18NE19511	CAN	20190616	20190616	0	1	0	3L
18NE19512	CAN	20190619	20190622	0	2	0	3L
18NE19030	CAN	20190703	20190810	236	0	0	4Vn4Vs4W 4X 5Y 5Ze
18NE19513	CAN	20190915	20190915	0	1	0	3L
18NE19514	CAN	20190924	20190924	0	1	0	3L
18NE19516	CAN	20191010	20191021	0	3	0	3L
18NE19124	CAN	20191015	20191015	0	1	0	3L
18NE19517	CAN	20191025	20191105	0	3	0	3L
18NE19518	CAN	20191110	20191110	0	1	0	3L
18NE19519	CAN	20191130	20191130	0	1	0	3L
18NE19250	CAN	20191211	20191211	0	1	0	3L

18NE20025	CAN	20200705	20200808	163	0	0	4Vn4Vs4W 4X 5Y 5Ze
18NE20015	CAN	20200811	20200811	0	1	0	3L
18NE20528	CAN	20200828	20200907	0	2	0	3L
18NE20529	CAN	20200909	20200909	0	1	0	3L
18NE20530	CAN	20200924	20201005	0	2	0	3L
18NE20531	CAN	20201012	20201020	0	2	0	3L
18NE20533	CAN	20201110	20201110	0	1	0	3L
18NE20534	CAN	20201118	20201130	0	2	0	3L
18NE20535	CAN	20201203	20201212	0	2	0	3L
18NE22547	CAN	20220513	20220516	27	0	0	3Ps
18NE22549	CAN	20220608	20220612	10	0	0	3N
18NE22558	CAN	20220701	20220702	3	3	2	3L
18NE22551	CAN	20220912	20220919	8	2	4	3L 3Ps
18NE22552	CAN	20220921	20221003	17	1	0	3K 3L
18NE22553	CAN	20221006	20221018	69	1	2	3K 3L
18NE22554	CAN	20221021	20221027	29	0	0	3N 3O
18NE22556	CAN	20221117	20221117	2	0	0	3L
18OK11600	CAN	20110816	20110816	0	1	0	3L
18OK12611	CAN	20120618	20120618	0	1	0	3L
18OK16619	CAN	20160815	20160815	0	1	0	3L
18OL17001	CAN	20170418	20170503	100	0	0	3Pn3Ps4Vn4Vs4W 4X 5Ze
18OL18011	CAN	20180715	20180802	0	81	0	2G 2H 2J 3K 3L 3M
18OL19001	CAN	20190406	20190425	76	0	0	3Pn4Vn4Vs4W 4X 5Y 5Ze
18OL22033	CAN	20220712	20220721	31	0	0	4S 4T
18OL22054	CAN	20221025	20221110	92	0	0	3Pn4R 4S 4T 4Vn
18QL21102	CAN	20210604	20210622	14	0	0	4W 4X 5Ze
18QL21221	CAN	20210829	20210929	144	0	0	4T 4Vn4W
18QL21010	CAN	20211013	20211013	0	1	0	3L
18QL22102	CAN	20220328	20220412	53	0	0	4W 5Ze
18QL22031	CAN	20220501	20221128	198	4	3	2H 2J 3K 3L 4T 4Vn4W
18QL22025	CAN	20220912	20220930	79	0	0	4T 4Vn4W
18QL22026	CAN	20221009	20221017	39	0	2	3K 3L
18QL22027	CAN	20221022	20221031	37	1	0	2J 3K 3L
18QL22028	CAN	20221106	20221112	25	0	0	2H
18QL22030	CAN	20221115	20221218	59	3	1	2J 3K 3L
18QL22029	CAN	20221120	20221123	6	0	1	3K
18QQ22017	CAN	20220730	20220905	298	0	0	0B 2G
18TL99077	CAN	19990104	19990117	0	2	0	3L
18TL99078	CAN	19990513	19990528	0	13	0	3K 3L
18TL99079	CAN	19990530	19990530	0	1	0	3L
18TL99080	CAN	19990716	19990801	0	58	0	2H 2J 3K 3L 3M

18TL99081	CAN	19990823	19990917	0	2	0	3L
18TL99084	CAN	19991009	19991009	0	1	0	3L
18TL99088	CAN	19991204	19991204	0	1	0	3L
18TL02406	CAN	20020623	20020623	0	1	0	3L
18TL11090	CAN	20110405	20110405	0	1	0	3L
18TL11091	CAN	20110426	20110502	0	24	0	3L 3M 3N 3O
18TL11092	CAN	20110527	20110527	0	1	0	3L
18TL11093	CAN	20110708	20110725	0	51	0	2G 2H 2J 3K 3L 3M
18TL11098	CAN	20111213	20111213	0	1	0	3L
18TL12100	CAN	20120107	20120107	0	1	0	3L
18TL12111	CAN	20120304	20120304	0	1	0	3L
18TL12101	CAN	20120411	20120430	0	82	0	3K 3L 3M 3N 3O 3Ps
18TL12102	CAN	20120509	20120509	0	1	0	3L
18TL12103	CAN	20120529	20120529	0	1	0	3L
18TL12104	CAN	20120709	20120727	0	71	0	2H 2J 3K 3L 3M
18TL12112	CAN	20121221	20121221	0	1	0	3L
18TL14127	CAN	20140203	20140203	0	1	0	3L
18TL14129	CAN	20140411	20140429	0	66	0	3K 3L 3M 3N 3O 3Ps
18TL14130	CAN	20140511	20140511	0	1	0	3L
18TL14131	CAN	20140525	20140525	0	1	0	3L
18TL14140	CAN	20140623	20140623	0	1	0	3L
18TL14132	CAN	20140709	20140728	0	72	0	2H 2J 3K 3L 3M
18TL14141	CAN	20141221	20141221	0	1	0	3L
18TL15142	CAN	20150107	20150121	85	1	2	3L 3N
18TL15143	CAN	20150121	20150202	67	2	0	3K 3L
18TL15155	CAN	20150320	20151215	635	151	154	2H 2J 3K 3L 3M 3N 3O 3Ps
18TL15156	CAN	20150320	20150320	1	1	0	3L
18TL15144	CAN	20150410	20150427	111	71	36	3L 3M 3N 3O 3Ps
18TL15145	CAN	20150429	20150505	49	0	0	3L 3Ps
18TL15146	CAN	20150507	20150511	9	1	0	3L
18TL15147	CAN	20150512	20150526	28	0	38	3K 3L
18TL15148	CAN	20150709	20150727	103	78	65	2H 2J 3K 3L 3M
18TL15150	CAN	20151007	20151012	15	0	0	2J 3L
18TL15151	CAN	20151015	20151026	87	0	4	2H 2J
18TL15152	CAN	20151029	20151107	64	0	0	2J
18TL15153	CAN	20151113	20151123	72	0	5	2J 3K
18TL15154	CAN	20151116	20151206	103	0	8	3K
18TL18185	CAN	20180406	20180424	0	55	0	3K 3L 3M 3N 3O 3Ps
18TL18186	CAN	20180501	20180501	0	1	0	3L
18TL18187	CAN	20180522	20180522	0	1	0	3L
18TL18193	CAN	20181218	20181218	0	1	0	3L
18TL19197	CAN	20190412	20190418	0	26	0	3L 3M

18TL19198	CAN	20190429	20190429	0	1	0	3L
18TL19199	CAN	20190520	20190520	0	1	0	3L
18TL19200	CAN	20190627	20190713	0	68	0	2H 2J 3K 3L 3M
18TL19202	CAN	20191009	20191009	0	1	0	3L
18TL20002	CAN	20200301	20200313	36	0	0	4W 4X 5Ze
18TL20102	CAN	20200308	20200320	47	0	0	4W 4X 5Y 5Ze
18TL20210	CAN	20200714	20200731	0	65	0	2H 2J 3K 3L 3M
18TL20212	CAN	20201013	20201013	0	1	0	3L
18TL21002	CAN	20210317	20210401	29	0	0	4W 5Ze
18TL21218	CAN	20210423	20210423	0	1	0	3L
18TL21220	CAN	20210629	20210719	0	77	0	2H 2J 3K 3L 3M
18TL21222	CAN	20211006	20211006	0	1	0	3L
18TL21228	CAN	20211220	20211220	0	1	0	3L
18TL22229	CAN	20220110	20220110	1	1	0	3L
18TL22227	CAN	20220113	20220120	23	1	7	3L 3Ps
18TL22230	CAN	20220523	20220531	22	1	1	3L
18TL22021	CAN	20220606	20220616	65	0	0	3Pn4R 4S 4T 4Vn
18TL22024	CAN	20220617	20220626	39	0	0	4R 4S 4T
18TL22010	CAN	20220707	20220806	153	0	0	4W 4X 5Y 5Ze
18TL22039	CAN	20220812	20220914	92	0	0	4R 4S 4T 4Vn
18TL22233	CAN	20221010	20221017	37	0	1	3K
18TL22234	CAN	20221022	20221031	44	0	0	2J 3K
18TL22235	CAN	20221106	20221112	23	0	0	2G 2H
18TL22236	CAN	20221120	20221128	16	0	0	3K 3L
18TL22237	CAN	20221202	20221218	53	0	0	2J 3K
18VA99001	CAN	19990326	19990326	0	1	0	3L
18VA99002	CAN	19990416	19990416	0	1	0	3L
18VA99003	CAN	19990504	19990504	0	1	0	3L
18VA99004	CAN	19990617	19990617	0	1	0	3L
18VA99005	CAN	19990706	19990706	0	1	0	3L
18VA99006	CAN	19990812	19990812	0	1	0	3L
18VA99000	CAN	19991221	19991221	0	1	0	3L
18VA19667	CAN	20190109	20191218	59	0	0	4W
18VA19666	CAN	20190114	20191217	57	0	0	4W
18VA20667	CAN	20200109	20201222	27	0	0	4W
18VA20666	CAN	20200114	20201214	24	0	0	4W
18VA21668	CAN	20210508	20210713	2	0	0	4T
18VA22667	CAN	20220107	20221221	226	0	0	4S 4T 4W 4X
18VA22669	CAN	20220113	20221219	223	0	0	4S 4T 4W 4X
18VA22362	CAN	20220421	20220429	3	0	0	4T 4W
18VA22666	CAN	20220503	20221205	202	0	0	4S 4T 4W 4X
18VA22001	CAN	20220713	20220907	165	0	0	4S 4T 4W 4X
18VA22036	CAN	20220727	20220728	10	0	0	4S 4W

18VA22461	CAN	20221005	20221017	9	0	0	4T 4W 4X
18VD14033	CAN	20140814	20140814	0	1	0	3L
18VD15040	CAN	20150504	20150504	1	0	0	3L
18VD15041	CAN	20150516	20150516	1	0	0	3L
18VD15042	CAN	20150530	20150607	14	0	0	3Ps
18VD15043	CAN	20150615	20150621	13	0	0	3L
18VD15044	CAN	20150712	20150719	2	0	0	3K 3L
18VD15045	CAN	20150727	20150809	16	0	0	3K 3L
18VD15046	CAN	20150813	20150813	2	1	1	3L
18VD15047	CAN	20150815	20150820	17	0	0	3L
18VD15048	CAN	20150825	20150913	41	0	0	3K
18VD15049	CAN	20150919	20150920	15	0	0	3L
18VD15050	CAN	20150926	20151004	22	0	0	3L
18VD15051	CAN	20151104	20151104	1	0	0	3L
18VD18105	CAN	20181015	20181015	0	1	0	3L
18VD19118	CAN	20190812	20190812	0	3	0	3L
18VD20136	CAN	20200812	20200812	0	1	0	3L
18VD20141	CAN	20200929	20200929	0	1	0	
18VD20143	CAN	20201014	20201014	0	1	0	3L
18VD21157	CAN	20210821	20210821	0	1	0	3L
18VD21166	CAN	20211122	20211122	0	1	0	3L
18VD22165	CAN	20220428	20220428	1	0	0	3Ps
18VD22168	CAN	20220520	20220525	16	0	0	3Ps
18VD22169	CAN	20220531	20220607	13	0	0	3L
18VD22170	CAN	20220613	20220613	1	1	0	3L
18VD22171	CAN	20220705	20220709	4	0	0	3K 3L
18VD22173	CAN	20220723	20220729	12	0	0	3L
18VD22174	CAN	20220731	20220813	24	0	0	3L
18VD22176	CAN	20220817	20220819	10	0	0	3L
18VD22177	CAN	20220827	20220903	12	0	0	3K
18VD22178	CAN	20220907	20220915	6	0	0	3K
18VD22179	CAN	20220921	20220926	10	0	0	3L
18VD22180	CAN	20220929	20221012	19	0	0	3L
29VE210529	ESP	20210605	20210624	114	0	0	3N 3O
29VE210712	ESP	20210712	20210808	81	0	0	3L 3M
29VE220605	ESP	20220613	20220630	114	0	0	3N 3O
29VE220704	ESP	20220705	20220815	75	0	0	3L 3M 3N
33AT22002	CAN	20220322	20220404	79	0	0	3Pn4Vn4Vs4W 4X 5Y 5Ze
33AT22001	CAN	20220410	20220501	0	81	0	3K 3L 3M 3N 3O 3Ps
33AT22005	CAN	20220504	20220527	75	0	0	1F 2H 2J 3L 4R 4W 4X
740H19001	CAN	20191117	20191210	0	69	0	3K 3L 3M 3N 3O 3Ps
740H22243	CAN	20221002	20221018	71	0	0	3Pn3Ps4Vn4Vs4W 4X 5Ze
740H22002	CAN	20221021	20221108	69	69	64	2J 3K 3L 3M 3N 3O

* Dates are of first and last data reports within the NAFO Convention Area

Table 6. Real-time surface water, air, atmospheric parameters and wave* data from buoys, collected and processed in 2023

Country	Platform Type	Name	ID	Reporting Period	Profiles	NAFO Subareas
USA	Fixed Platform	Buoy 126, Jacques Cousteau Reserve, NJ	JCTN4	Jan-Dec	34914	6A
USA	Fixed Platform	Wharf Bottom, Narragansett Bay Reserve, RI	NAQR1	Jan-Dec	34124	5Zw
USA	Fixed Platform	Menauhant, Waquoit Bay Reserve, MA	WAQM3	MA	31326	5Zw
CAN	Moored Buoy	C44150 - La Have Bank	4400150	Jan-Jan	13	4X
USA	Moored Buoy	Cape Hatteras East	4100120	Jan-Dec	13978	6C
USA	Moored Buoy	Massachusetts Bay	4400029	Jan-Dec	8426	5Y
USA	Moored Buoy	Western Maine Shelf	4400030	Jan-Dec	8576	5Y
USA	Moored Buoy	Central Maine Shelf	4400032	Jan-Dec	7664	5Y
USA	Moored Buoy	Penobscot Bay	4400033	Feb-Dec	7697	5Y
USA	Moored Buoy	Eastern Maine Shelf	4400034	Jan-Dec	8521	5Y
USA	Moored Buoy	Jordan Basin	4400037	Jan-Dec	6047	5Y
USA	Moored Buoy	Potomac, MD	4400042	Jan-Dec	76560	6B
USA	Moored Buoy	Patapsco, MD	4400043	Aug-Dec	25482	6B
USA	Moored Buoy	Stingray Point, VA	4400058	Jan-Dec	84456	6B
USA	Moored Buoy	Gooses Reef, MD	4400062	Jan-Dec	76597	6B
USA	Moored Buoy	Annapolis, MD	4400063	Jan-Dec	80931	6B
USA	Moored Buoy	First Landing, VA	4400064	Jan-Dec	74344	6B
USA	Moored Buoy	Great South Bay	4400069	May-Dec	10180	6A
USA	Moored Buoy	York Spit, VA	4400072	Jan-Dec	73064	6B
USA	Moored Buoy	CO2 Gulf of Maine Buoy	4400073	Sep-Nov	1618	5Y
USA	Moored Buoy	Buzzards Bay, MA	4400085	Jan-Sep	5010	5Zw
USA	Moored Buoy	Virginia Beach Offshore, VA	4400088	Jan-Dec	16108	6C
USA	Moored Buoy	Cape Cod Bay, MA	4400090	Jan-Dec	15779	5Y
USA	Moored Buoy	Duck FRF 26m, NC	4400100	Nov-Dec	532	6C
	Drifting Buoy		1301608	Sep-Nov	1136	6E 6F
	Drifting Buoy		1301619	Jan-Feb	1399	3M 3N 3O 4Vs6E 6F 6G 6H
USA	Drifting Buoy		1301697	Jul-Nov	2339	6E 6F 6G
	Drifting Buoy		1301774	Aug-Oct	608	6G
	Drifting Buoy		1301775	Aug-Aug	60	6F
USA	Drifting Buoy		1501725	Jan-Mar	1360	3M 3N 4Vs6G
USA	Drifting Buoy		1801671	Oct-Dec	1890	3K 3L 3M
USA	Drifting Buoy		1801678	Oct-Dec	1483	3K 3L 3M

	Drifting Buoy	1801759	Apr-May	199	3M
	Drifting Buoy	1801810	Nov-Dec	4918	4T
CAN	Drifting Buoy	2802045	Jul-Oct	2275	2J 3K
CAN	Drifting Buoy	2802046	Jul-Dec	3348	1F 2H 2J 3K
CAN	Drifting Buoy	2802074	Jul-Nov	2686	2H 2J
CAN	Drifting Buoy	2802075	Jul-Dec	4225	2J 3K 3L 3N 3O 4R
CAN	Drifting Buoy	2802112	Nov-Nov	939	4T
CAN	Drifting Buoy	3801561	Jan-Jul	4649	4X 5Y 5Ze5Zw6A
USA	Drifting Buoy	3801569	Oct-Dec	1990	2J 3K 3L 3M 3N
USA	Drifting Buoy	3801596	Apr-Dec	2275	3M 3N 6H
CAN	Drifting Buoy	3801659	Jul-Oct	2497	2H 2J 3K 3L 3M
CAN	Drifting Buoy	3801660	Jul-Dec	3654	2J 3K 3L 3M 3N
CAN	Drifting Buoy	3801710	Nov-Dec	6072	4S 4T
USA	Drifting Buoy	4101546	Jan-Mar	1374	4Vs6D 6E 6F 6G
USA	Drifting Buoy	4101618	Oct-Dec	1344	6F
USA	Drifting Buoy	4101656	Jan-May	3103	3K 3M
	Drifting Buoy	4101724	Aug-Dec	2594	6D 6E 6F
	Drifting Buoy	4101753	Jan-Dec	1928	6F 6G 6H
	Drifting Buoy	4101755	Jul-Nov	3154	4Vs6F 6G 6H
	Drifting Buoy	4101844	Feb-Feb	1	6D
	Drifting Buoy	4101848	Nov-Dec	1047	4Vs4W 4X 6B 6C 6D 6E
USA	Drifting Buoy	4101856	Jan-Jan	434	6D
	Drifting Buoy	4101858	Jul-Dec	3378	3L 3N 4Vs4W 6B 6C 6D 6E 6F 6G 6H
	Drifting Buoy	4101884	Oct-Dec	1697	6B 6C 6D
	Drifting Buoy	4101885	Oct-Dec	1503	4X 6B 6C 6D 6E
USA	Drifting Buoy	4102559	Apr-Dec	4765	4Vs4W 4X 5Ze5Zw6B 6C 6D 6E
USA	Drifting Buoy	4102632	Jan-Feb	1247	4W 6E 6F
USA	Drifting Buoy	4102665	Aug-Dec	506	4X 6B 6C 6D 6E
	Drifting Buoy	4400503	Jan-Feb	935	3M 3N
	Drifting Buoy	4401581	Sep-Dec	1424	6D 6E
USA	Drifting Buoy	4401867	Jan-Jul	2060	6F 6G 6H
USA	Drifting Buoy	4402609	Apr-Dec	6533	1F 2G 2H
USA	Drifting Buoy	4402613	May-May	1	4X
USA	Drifting Buoy	4402623	Aug-Aug	1	1F
USA	Drifting Buoy	4402640	May-May	1	0B
	Drifting Buoy	4402729	Jul-Dec	3215	3K 3L 3M 3N
	Drifting Buoy	4402730	Jul-Oct	1688	3K 3L 3M 3N 3O
	Drifting Buoy	4402731	Apr-Dec	4434	2J 3K 3L 3M 3N 3Ps

	Drifting Buoy	4402732	Jan-Feb	884	3M 3N 3O
USA	Drifting Buoy	4402733	Jan-Dec	8548	3K 3L 3N 3O 3Ps4Vs
	Drifting Buoy	4402735	Jan-Jul	3982	3K 3L 3M 3N
	Drifting Buoy	4402736	Jan-Jan	332	3M 3N
USA	Drifting Buoy	4402737	May-Dec	4844	1F 2J 3K 3M
	Drifting Buoy	4402738	Jul-Dec	3247	2J 3K 3L
	Drifting Buoy	4402739	Jul-Dec	2977	3K 3L 3M
	Drifting Buoy	4402740	Jul-Dec	3781	2J 3K 4R 4S 4T
	Drifting Buoy	4402741	Jul-Sep	1300	1F 2J 3K
	Drifting Buoy	4402743	Jan-Aug	4958	3M 3N 3O 3Ps4Vs
	Drifting Buoy	4402744	Jan-Dec	8110	3M 3N 3O 3Ps4Vs4W 4X 6H
	Drifting Buoy	4402746	Jan-Jan	88	3M
USA	Drifting Buoy	4402747	Jan-Aug	1375	3K 3M 3N
	Drifting Buoy	4402749	Jan-Feb	766	1F 2J
	Drifting Buoy	4402750	Mar-Apr	234	1F
	Drifting Buoy	4402751	Jan-Mar	1588	6H
USA	Drifting Buoy	4402752	Jan-Sep	2597	3M 3N 3O 4Vs4W 4X 6B 6D 6E 6F 6H
USA	Drifting Buoy	4402753	Jan-Sep	5500	3N 4Vs4W 5Ze6D 6E 6F 6G 6H
USA	Drifting Buoy	4402877	Jan-Apr	1158	4W 4X 6A 6B 6C 6D 6E
USA	Drifting Buoy	4402878	Jan-Dec	7696	4Vs4W 4X 5Ze5Zw6A 6B 6C 6D 6E 6F
USA	Drifting Buoy	4402879	Apr-Dec	5220	3N 4Vs4W 4X 6B 6C 6D 6E 6F 6G 6H
USA	Drifting Buoy	4402880	Jan-May	2672	3M 3N 3O 4Vs4W 6H
USA	Drifting Buoy	4402882	Mar-Dec	318	6D 6G
USA	Drifting Buoy	4402883	Feb-Apr	728	3M 3N
USA	Drifting Buoy	4402884	Feb-Mar	420	6B 6C
USA	Drifting Buoy	4402885	Aug-Oct	1254	3M 3N 4Vs4W 6B 6C 6D 6E 6G 6H
CAN	Drifting Buoy	4403568	Jan-Jun	4176	3M 3N 3O 4Vs4W 6H
CAN	Drifting Buoy	4403569	Jan-Feb	787	3M
USA	Drifting Buoy	4602592	Mar-Mar	2	0A 0B
CAN	Drifting Buoy	4701738	Jan-Aug	5511	0A
USA	Drifting Buoy	4801658	Jun-Aug	534	0A 1A
CAN	Drifting Buoy	4801771	Feb-Dec	7587	0A 1A 1B
CAN	Drifting Buoy	4802506	Apr-May	513	1F 2J

CAN	Drifting Buoy	4802663	Feb-Dec	6492	0A 0B 1A
CAN	Drifting Buoy	4804079	Jul-Nov	2976	2J 3K
CAN	Drifting Buoy	4804080	Jul-Nov	2739	2J 3K 3L 3M
CAN	Drifting Buoy	4804123	Nov-Dec	3816	4T
	Drifting Buoy	5301663	Jun-Dec	3765	5Ze5Zw6A 6B 6C 6D
	Drifting Buoy	5301666	Jun-Dec	4106	3M 3N 3O 4Vs4W 5Ze5Zw6A 6B 6C 6D 6E 6H
CAN	Drifting Buoy	5802068	Jul-Dec	4220	2J 3K 3L 3O 3Ps4R
CAN	Drifting Buoy	5802105	Nov-Nov	1992	4T
USA	Drifting Buoy	6202597	Apr-May	409	3M
USA	Drifting Buoy	6202598	Apr-May	234	3M
USA	Drifting Buoy	6202613	Jan-Feb	1310	3M 3N 4Vs6H
USA	Drifting Buoy	6202632	Jan-Apr	1867	1B
USA	Drifting Buoy	6202644	Jan-Dec	2003	3M 3N 6H
USA	Drifting Buoy	6203507	Jan-Jan	18	6H
USA	Drifting Buoy	6203516	Jan-Feb	432	3M
	Drifting Buoy	6203612	Dec-Dec	375	6F 6G
	Drifting Buoy	6203613	Jan-Feb	1147	3M 3N 3O 4Vs6H
	Drifting Buoy	6203624	Jan-Dec	6124	4Vs4W 6D 6E 6F 6G
USA	Drifting Buoy	6203753	May-Dec	5706	1F 2H
USA	Drifting Buoy	6203772	Jan-Jan	336	6D 6E
USA	Drifting Buoy	6203773	Sep-Dec	974	4W 6E 6F
USA	Drifting Buoy	6203778	Jan-Aug	5050	2G 2H 2J 3K 3L 3M
USA	Drifting Buoy	6203797	Jan-Jan	208	3K
	Drifting Buoy	6203848	Jan-Feb	809	3M 3N 4Vs6G 6H
	Drifting Buoy	6203854	Oct-Dec	1503	1F
	Drifting Buoy	6203865	Jan-Dec	830	1F
	Drifting Buoy	6301575	Jan-Jun	1581	1F 2J 3K
	Drifting Buoy	6401583	Jan-May	454	1F
	Drifting Buoy	6401598	Nov-Dec	1302	0B 1C 1D 1E 1F
USA	Drifting Buoy	6401824	Jan-Jan	1	1C
USA	Drifting Buoy	6402528	Mar-Mar	1	1F
USA	Drifting Buoy	6402551	Jan-Jan	573	3K 3M
USA	Drifting Buoy	6402573	Oct-Oct	1	2J
USA	Drifting Buoy	6402587	Jan-Mar	1672	3L 3M
	Drifting Buoy	6402594	Jan-Jul	1428	2G 2J 3K
	Drifting Buoy	6402596	Jan-May	260	1F
USA	Drifting Buoy	6402599	Aug-Aug	1	3K
USA	Drifting Buoy	6402729	Jan-Dec	7824	1E 1F 2G 2H 2J 3K 3L 3M
USA	Drifting Buoy	6501697	Feb-Feb	1	0B
USA	Drifting Buoy	6801791	Apr-Sep	2137	3M 3N 6H

CAN	Drifting Buoy	6801852	Jul-Dec	1983	2H 2J 3K
CAN	Drifting Buoy	6801853	Jul-Nov	2738	2H 2J 3K 3L 3M
CAN	Drifting Buoy	7801563	Jan-Dec	8652	4X 5Y

* Dates are of first and last data reports within the NAFO Convention Area
* Viking buoys are not shown in this table. See Table3.

Table 7. Water level data collected in 2023

Station ID	Name	Reporting period (months)	Longitude (W)	Latitude (N)	NAFO Sub-Area
65	Saint John	Jan-Dec	66.063	45.251	4X
365	Yarmouth	Jan-Dec	66.117	43.833	-
491	Bedford Institute	Jan-Dec	63.617	44.683	4W
575	Port Hawkesbury	Jan-Dec	61.367	45.617	-
612	North Sydney	Jan-Dec	60.250	46.217	-
665	Port aux Basques	Jan-Dec	59.133	47.567	-
755	St. Lawrence	Jan-Dec	55.390	46.917	-
835	Argentia	Jan-Dec	53.983	47.300	3Ps
905	St. John's	Jan-Dec	52.717	47.567	-
990	Bonavista	Jan-Dec	53.115	48.651	-
1430	Nain	Oct-Dec	61.683	56.550	-
1700	Charlottetown	Jan-Dec	63.117	46.233	4T
1805	Shediac Bay	Jan-Dec	64.546	46.227	4T
1970	Cap-aux-Meules	Mar-Dec	61.857	47.379	-
2000	Lower Escuminac	Jan-Dec	64.883	47.083	4T
2145	Belledune	Jan-Dec	65.850	47.900	-
2330	Rivière-au-Renard	Jan-Dec	64.381	48.997	4T
2780	Sept-Îles	Jan-Dec	66.377	50.195	-
2985	Rimouski	Jan-Dec	68.514	48.478	4T
3057	Saint-Joseph-de-la-Rive	Jan-Dec	70.366	47.449	4T
3075	Banc du Cap Brûlé	Mar-Jun	70.711	47.090	4T
3100	Saint-Francois Île d'Orléans	Jan-Dec	70.808	46.997	4T
3110	Saint-Laurent île d'Orléans	Jan-Jun	71.003	46.858	4T
3248	Vieux-Québec	Jan-Dec	71.202	46.811	-
3280	Neuville	Jan-Dec	71.573	46.697	-
3300	Portneuf	Jan-Dec	71.877	46.681	-
3335	Deschaillons-sur-Saint-Laurent	Jan-Dec	72.106	46.561	-
3345	Batiscan	Jan-Dec	72.246	46.500	-
3353	Bécancour	Jan-Dec	72.380	46.400	-
3360	Trois-Rivières	Jan-Dec	72.539	46.341	-
3365	Port-Saint-François	Jun-Dec	72.619	46.273	-
3424	Baie-Sainte-Catherine	Jan-Jun	69.730	48.126	-
3460	Port-Alfred	Jan-Dec	70.869	48.334	-
3480	Chicoutimi	Jan-Jun	71.055	48.431	-
3980	Qikiqtarjuaq	Jan-Dec	64.032	67.561	0A