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Inventory of environmental data in the NAFO convention area - Report 2021

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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 previous 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 completing an on-line order form on the MEDS web site at http://www.meds-sdmm.dfo-mpo.gc.ca/isdm-gdsi/request-commande/form-eng.asp or by writing to MEDS-SDMM.XNCR@dfo-mpo.gc.ca.

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 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

Table 1 and Table 2 below summarize data received by MEDS for the NAFO Convention Area (NCA) in 2021. 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 2021

Data Type	Platform Type	Counts/Duration	Table #	Figure #
Oceanographic profiles	Autonomous drifting (Argo)	6131* profiles from 189 platforms	3	1
	Moorings (Viking)	990* profiles from 6 platforms**	3	1
	Gliders	3191* profiles from 5 platforms	3	1
	Ship	1662 profiles (133 CTD; 1196 CTD RT*; and 248 XBT RT* profiles)	4	2
Surface/near-surface observations	Ship (thermosalinograph)	(none reported)	4	4
	Drifting buoys	969242* obs. from 374 buoys	6	4
	Moored buoys	342760* obs. from 16 buoys**	6	4
	Fixed platforms	87966* obs. from 4 platforms	6	4
	Water level gauges	35 sites, avg. ~1 year each	7	4

*Data formatted for real-time transmission
**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 2021 in NAFO Convention Area and acquired between January 2021 and May 2022

Data Type	Platform Type	Counts/Duration	Table #	Figure #
Oceanographic profiles	Ship	2174 profiles (1390 CTD + 693 bottle + 91 XBT profiles) from 76 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-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 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.

Autonomous profiling floats programmed with sampling patterns other than a maximum sampling depth of 2000 m (or deeper for Deep Argo) and reporting interval of 10 d are often designated Argo-equivalent.

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 the Coastal Environmental Observation Technology and Research (CEOTR) group (headquartered at Dalhousie University) and creates messages for transmission on the GTS after performing automatic quality control. The full data set can be accessed from CEOTR.

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 archive.

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 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. All data are currently acquired via the Geostationary Operational Environmental Satellite (GOES), on which the buoys transmit, but 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 transmitted data from the CTD profiler those buoys on the GTS in 2021. 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 (Figure 4, Table 5)

MEDS decodes and stores all thermosalinograph data circulating on the GTS. In 2019, no thermosalinograph data were reported in the NCA.

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), plus a few stations operated by Environment and Climate Canada (Water Survey of Canada). 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), and also maintains program information and publications at http://www.meds-sdmm.dfo-mpo.gc.ca/isdm-gdsi/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 2021.

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 http://www.argo.ucsd.edu/Argo_data_and.html.
- *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.nodc.noaa.gov/GTSPP/access_data) and to the Copernicus Environment Monitoring Service where they are made available in "near real time in situ" products (http://marine.copernicus.eu/services-portfolio/access-to-

products/?option=com_csw&view=details&product_id=INSITU_GLO_NRT_OBSERVATIONS_013_030) . 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 (http://emodnet-physics.eu/Map).

- *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.nodc.noaa.gov/OC5/WOD/pr_wod.html). 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.nodc.noaa.gov/cgi-bin/OAS/prd/text/query).
- *Canadian moored buoys:* Data are made available on a national website within days of collection (updates on business days): http://www.meds-sdmm.dfo-mpo.gc.ca/isdm-gdsi/waves-vagues/index-eng.htm.
- *Canadian water levels:* Data are available from two national websites: http://waterlevels.gc.ca/ (last 24 hours) and http://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 (http://www.bio.gc.ca/science/data-donnees/base/index-en.php) and MLI (https://slgo.ca/app-sgdo/en/accueil.html) depending on the site locations.
- *Gliders:* Full resolution glider data from measured by CEOTR can be accessed from their website: http://ceotr.ocean.dal.ca/. Information on DFO glider deployments can be accessed from the "Everyone's Glider Observations" website: https://www.ego-network.org/dokuwiki/doku.php and the data can be accessed from : https://www.ego-network.org/dokuwiki/doku.php?id=public:dataaccess.
- *Marine mammals:* Observations from sensors mounted on marine mammals can be accessed from the MEOP website: http://www.meop.net/
- *Other MEDS data:* Canadian oceanographic data and global drifting buoy data can be requested through this form: http://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

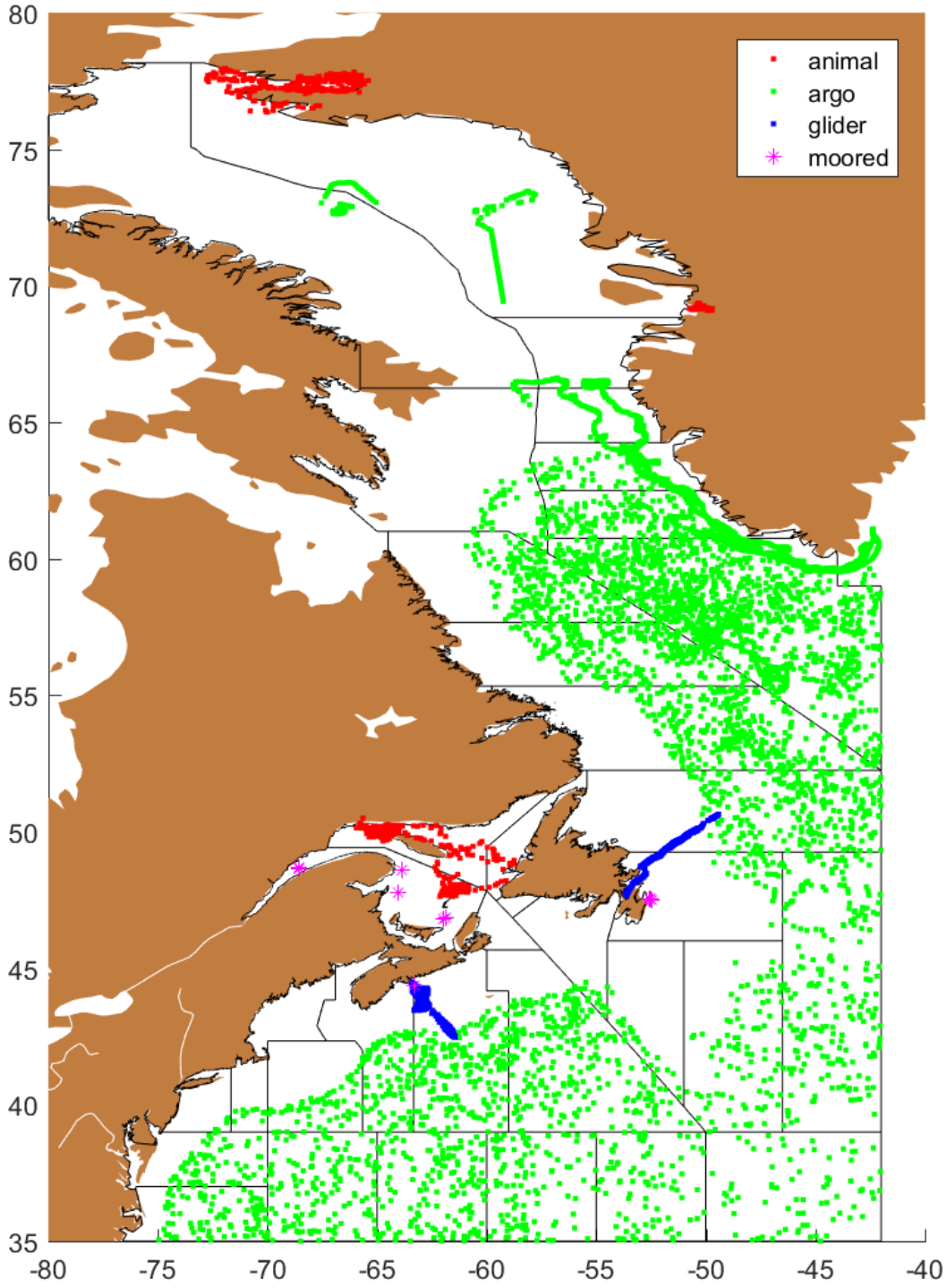

Figure 1. Position of profiles sampled by autonomous platforms in 2021

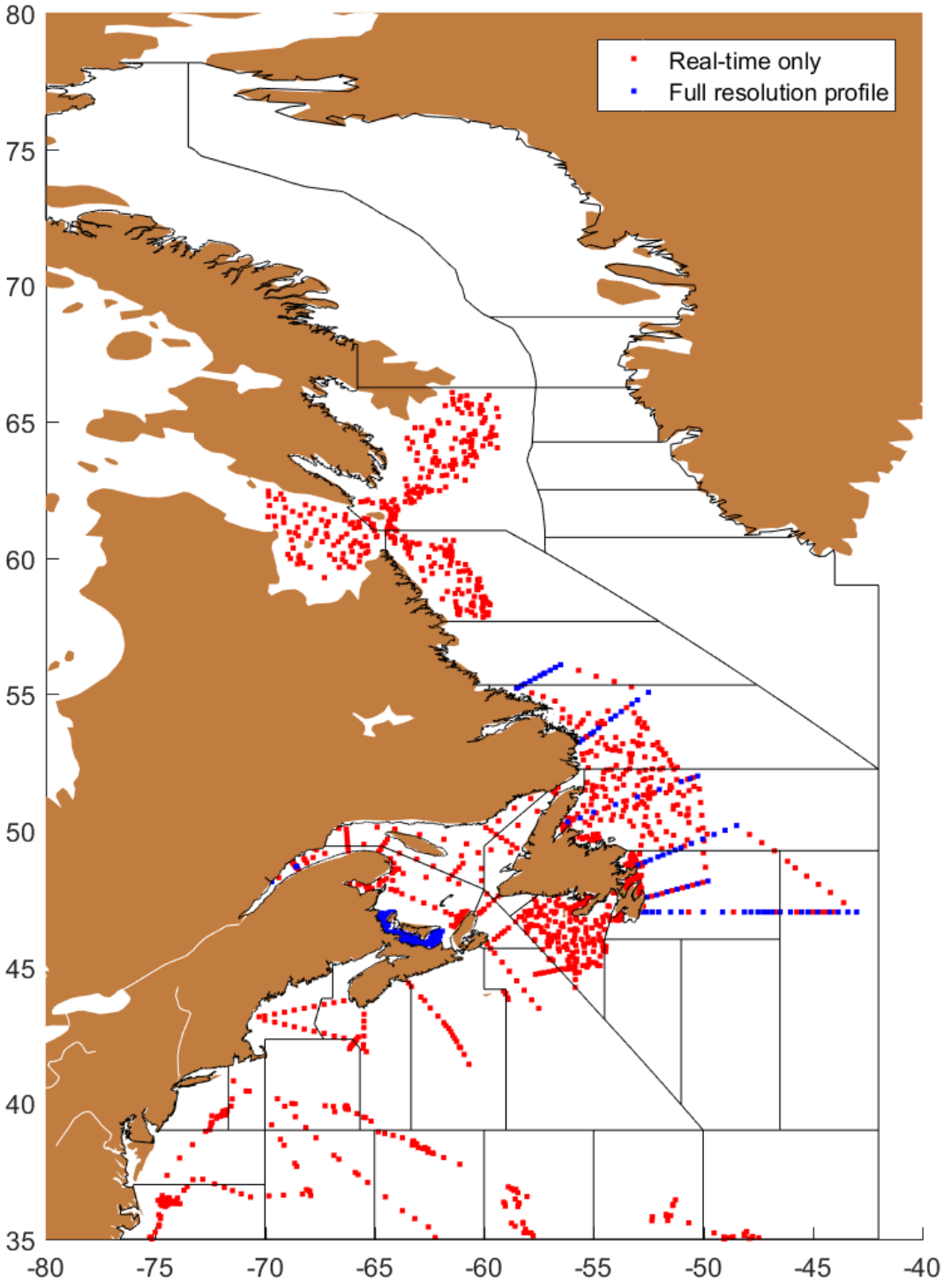

Figure 2. Position of profiles sampled by ships in 2021.

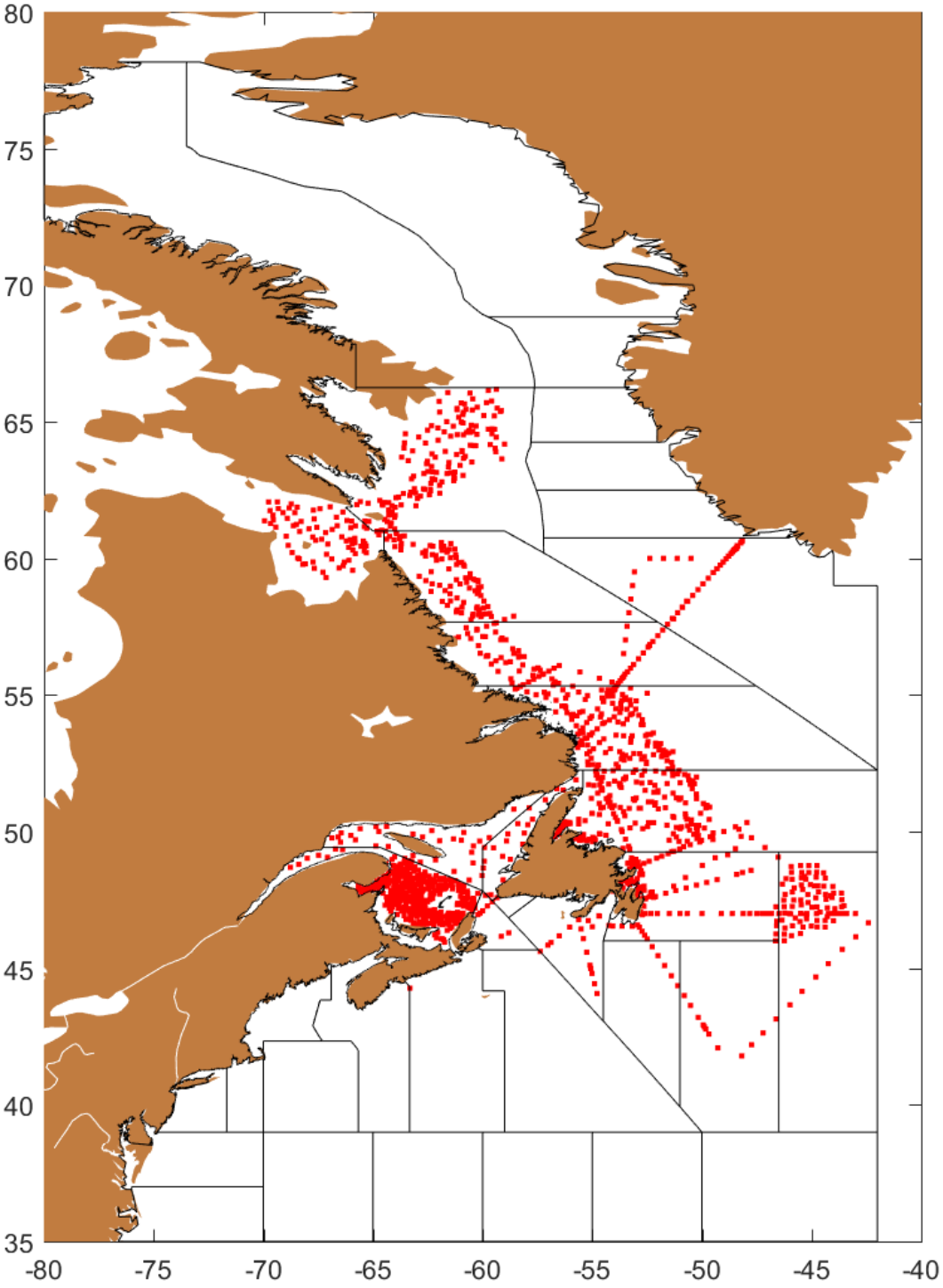

Figure 3. Position of profiles sampled by ships before 2021 and acquired in 2021/2022.

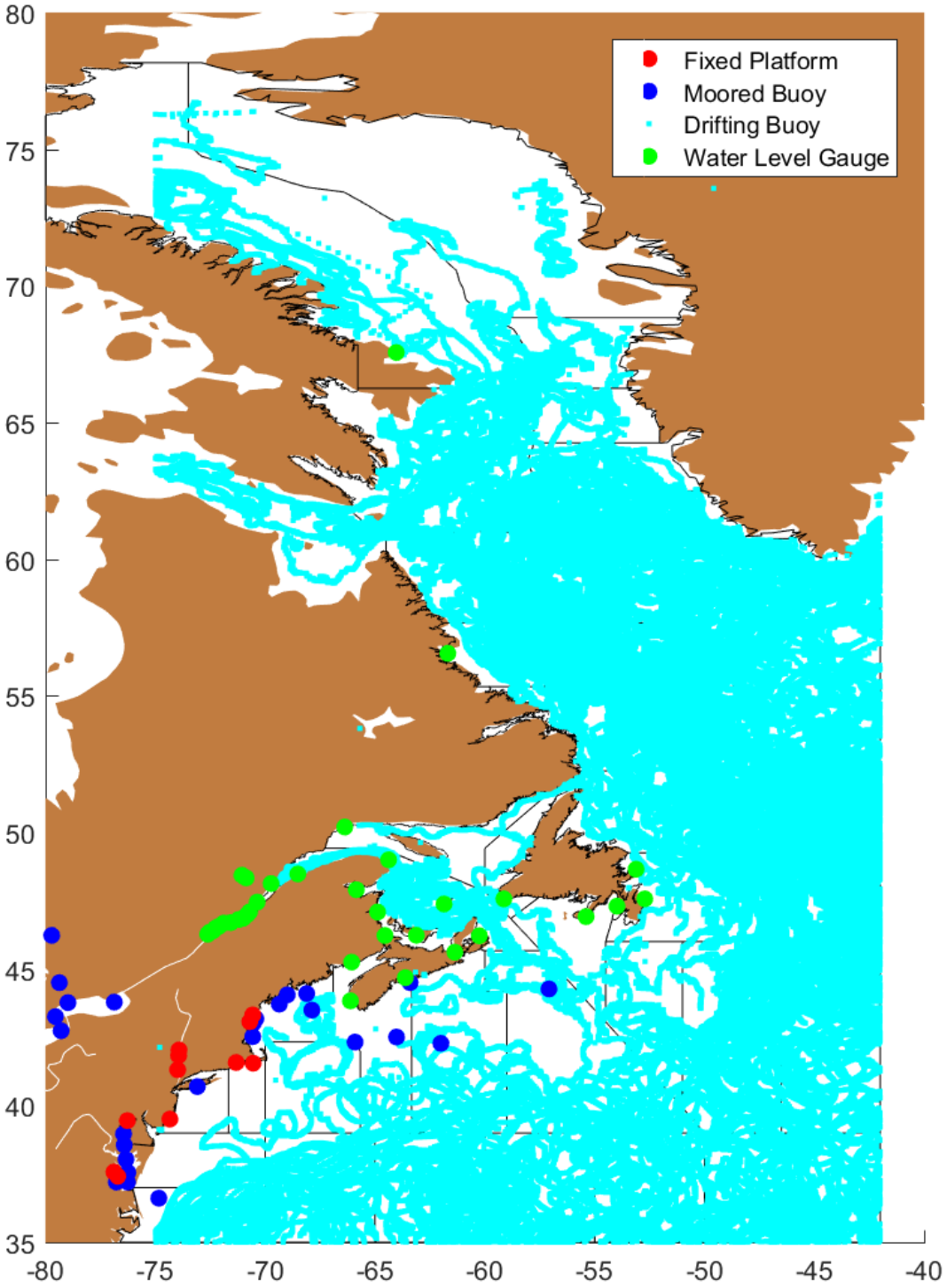

Figure 4. Position of near surface observations made in 2021

Table 3. Real-time temperature and /or salinity profiles from autonomous platforms collected and processed in 2021

Platform Type	Platform Name	Country	WMO ID	Reporting Period (months)	Profiles	NAFO Subareas
moored	PMZA-RIKI	Canada	4400481	May-Nov	152	4T
moored	IML-BA	Canada	4400483	May-Nov	239	4T
moored	AZMP-ESG	Canada	4400484	May-Aug	176	4T
moored	AZMP-VAS	Canada	4400485	May-Oct	247	4T
moored	AZMP-STA27	Canada	4400486	Apr-Sep	160	3L
moored	AZMP-HLX	Canada	4400487	Sep-Sep	16	4W
glider	SEA019	Canada	4800925	May-Oct	119	4W 4X
glider	SEA021	Canada	4800926	Feb-Apr	558	4W
glider	SEA032	Canada	4800937	Jun-Oct	427	4W 4X
glider	SEA022	Canada	4800993	Mar-Oct	799	4W 4X
glider	SEA024	Canada	4800994	Jun-Oct	1288	3K 3L
argo		USA	1902392	Dec-Dec	6	5Ze6D
argo		USA	1902444	Dec-Dec	4	4W 6D 6E
argo		USA	3901219	Jun-Dec	16	4W 6D 6E 6F
argo		Germany	3901601	Jan-Dec	36	4Vs4W 4X 5Ze6D 6E
argo		Germany	3901602	Jan-Dec	36	4Vs4W 4X 5Ze
argo		Germany	3901604	Jan-Dec	36	4W 4X 5Ze5Zw6A 6B 6D 6E 6F
argo		Germany	3901654	Jun-Dec	10	6D 6E
argo		Germany	3901656	Jan-Aug	19	6B 6C 6D 6E
argo		Germany	3901668	Jan-Nov	48	1F 2H
argo		Germany	3901669	Jan-Jul	29	2J 3K 3L 3M
argo		Poland	3901851	Jan-Dec	36	2J 3K 3L 3M 3N
argo			3901856	Sep-Dec	11	4X 6B 6C 6D 6E
argo		USA	4901594	Jan-Sep	6	3K 3M
argo		USA	4901596	Jul-Aug	5	4Vs4W 6D 6G
argo		USA	4901621	Jan-Dec	37	4Vs4W 4X
argo		USA	4901631	Jan-Oct	11	6E
argo		USA	4901702	Jan-Dec	37	4Vs4W 4X 6C 6D 6E
argo		Canada	4901779	Jan-May	14	1E 1F 2G
argo		Canada	4901788	Feb-Aug	4	3N 3O 6H
argo		Canada	4901809	Jan-Dec	36	0B 1D 1E 2G 2H 2J 3K
argo		Canada	4901817	Jan-Dec	37	1F
argo		USA	4902102	Jan-Nov	31	4W 4X 5Ze5Zw6B 6C 6D 6E
argo		USA	4902104	Sep-Sep	1	6F
argo		USA	4902108	Jan-Dec	37	3M 3N 4Vs6G
argo		USA	4902109	Feb-Oct	24	6C 6D 6E
argo		USA	4902111	Jan-Dec	37	3Ps4Vs4W 6E 6F
argo		USA	4902112	Mar-May	4	6G

argo	USA	4902114	Jan-Dec	25	6B 6C 6D 6E 6F
argo	USA	4902118	Jan-Mar	8	3K 3L 3M
argo	USA	4902119	Jan-Dec	37	1F 2G 2H
argo	USA	4902120	Jan-Nov	20	6G 6H
argo	USA	4902121	Jan-Dec	37	4Vs4W 4X 5Ze5Zw6A 6B 6C
argo	USA	4902337	Jan-Dec	37	3Ps4Vs
argo	USA	4902344	Jan-Dec	28	4W 4X 5Ze6B 6C 6D
argo	USA	4902348	Jan-Dec	23	4X 5Ze6D 6E
argo	Canada	4902392	Jan-May	12	6H
argo	Canada	4902394	Jan-Dec	35	3O 3Ps4Vs4W 4X
argo	Canada	4902395	Jan-Dec	37	2G 2H 2J 3K 3L 3M 3N
argo	Canada	4902409	Jan-Mar	9	1F 2J
argo	Canada	4902424	Jan-Mar	4	3M
argo	Canada	4902439	Jan-Dec	36	1F 2H 2J 3K
argo	Canada	4902441	Jan-Dec	36	4W 4X 5Ze6B 6C 6D 6E
argo	Canada	4902442	Jan-Dec	36	4Vs4W 6E 6F
argo	Canada	4902455	Jan-Mar	6	6H
argo	Canada	4902456	Jan-Dec	29	3M 3N
argo	Canada	4902467	Jan-Jul	10	6C 6D 6E 6F
argo	Canada	4902468	Jan-Mar	5	3K
argo	Canada	4902469	Jan-Dec	36	1F 2G 2H
argo	Canada	4902471	Jan-Dec	36	1F 2G 2H 2J
argo	Canada	4902477	Jan-Dec	37	1F 2H 2J
argo	Canada	4902478	Jan-Dec	36	1F 2G 2H
argo	Canada	4902479	Jan-Dec	37	2J 3K
argo	Canada	4902481	Sep-Dec	10	1C 1D 1E 1F
argo	Canada	4902487	Jan-Jan	2	1F
argo	Canada	4902488	Jan-Dec	14	3M 3N
argo	Canada	4902489	Jan-Dec	36	2J 3K 3L 3M
argo	Canada	4902495	Jan-Dec	34	1F
argo	Canada	4902496	Jan-Feb	4	3M
argo	Canada	4902497	Jan-Mar	7	3M
argo	Canada	4902498	Jan-Dec	36	3O 3Ps4Vs4W 6E 6F
argo	Canada	4902499	Jan-Jan	2	3M
argo	Canada	4902500	Jan-Dec	37	3M 3N 3O 4Vs6G 6H
argo	Canada	4902501	Jan-Jul	12	4Vs6G
argo	Canada	4902502	Jan-Dec	37	4Vs4W 4X 5Ze5Zw
argo	Canada	4902503	Jan-Sep	25	4Vs4W 6F
argo	Canada	4902504	Jan-Dec	37	0B 1E 1F 2G 2H 2J 3K 3L
argo	Canada	4902505	Jan-Dec	36	1F
argo	Canada	4902506	Jan-Dec	36	1F 2G
argo	Canada	4902507	Jan-Dec	32	2G 2H 2J 3K 3L 3M
argo	Canada	4902508	Jan-Dec	35	1F 2H

argo	Canada	4902509	Jan-Dec	36	1F 2G 2H
argo	Canada	4902510	Jan-Dec	36	1E 1F 2G 2H
argo	Canada	4902511	Jan-Dec	37	1F 2H
argo	Canada	4902512	Jan-Dec	36	1F 2H
argo	Canada	4902513	Jan-Dec	36	0B 1E 1F 2G
argo	Canada	4902515	Sep-Dec	10	4Vs4W 6F
argo	Canada	4902518	Sep-Dec	10	4W 4X 5Ze
argo	Canada	4902519	Sep-Dec	10	4Vs4W
argo	Canada	4902523	Jan-Dec	30	4W 4X 5Ze6C 6D 6E
argo	Canada	4902524	Jan-Aug	22	4Vs6E 6F 6G
argo	Canada	4902526	Jan-Dec	15	3M 6H
argo	Canada	4902527	Apr-Nov	22	2J 3K
argo	Canada	4902529	Jan-Jun	18	3M 3N
argo	Canada	4902531	Oct-Nov	4	0A
argo	Canada	4902532	Oct-Oct	2	0A
argo	Canada	4902573	Dec-Dec	2	6D 6E
argo	Canada	4902602	Oct-Nov	22	0A
argo	USA	4902910	Aug-Sep	3	6F
argo	USA	4902912	Mar-Sep	22	6B 6C 6D 6E
argo	USA	4902913	Jan-Dec	28	6B 6C 6D
argo	USA	4902927	Jan-Dec	37	3N 3O 4Vs4W 4X 6E 6F
argo	USA	4902928	Jan-Dec	37	6A 6B 6C 6D 6E
argo	USA	4903035	Jan-Dec	19	6F 6G
argo	USA	4903036	Jan-Dec	37	4Vs4W 6B 6C 6D 6E 6F
argo	USA	4903042	Jan-Dec	37	4Vs4W 6C 6D 6E 6F
argo	USA	4903043	Jan-Dec	36	4W 4X 6E 6F 6G
argo	USA	4903046	Jan-Oct	23	1F 2J
argo	USA	4903049	Jan-Dec	37	3O 3Ps4Vs4W 6F 6G
argo	USA	4903050	Jan-Dec	37	4Vs4W 6E 6F 6G
argo	USA	4903051	May-Sep	12	6D 6E 6F
argo	USA	4903252	Jun-Dec	28	4W 4X 5Ze5Zw6A 6B 6C 6D
argo	USA	4903258	Dec-Dec	4	4W 6B 6C 6D
argo	USA	4903260	Jan-Dec	37	3M 3N 4Vs4W 6D 6E 6G 6H
argo	USA	4903280	Feb-Dec	26	6E 6F 6G 6H
argo	USA	4903329	Mar-Apr	5	6H
argo	USA	4903359	Aug-Sep	118	1E 1F
argo	USA	4903360	Aug-Dec	439	0A 0B 1B 1C 1D 1E 1F
argo	USA	4903361	Aug-Dec	563	1B 1C 1D 1E 1F
argo	USA	4903362	Aug-Oct	282	1C 1D 1E 1F
argo	USA	4903363	Aug-Dec	35	2J
argo	USA	4903364	Aug-Dec	24	1F
argo	USA	4903365	Oct-Dec	5	1F

argo	USA	5904173	Jan-Dec	36	0B 1E 1F 2G 2H
argo	USA	5904771	Jan-Dec	36	2J 3K
argo	USA	5906342	Mar-Dec	19	4Vs6F 6G
argo	USA	5906438	May-Dec	23	3N 4Vs4W 4X 6D 6E 6F 6G
argo	UK	6901169	Jan-Dec	30	1E 1F
argo	UK	6901170	Jan-Dec	36	0B 1D 1E 1F 2G
argo	UK	6901171	Jan-Dec	17	1F
argo	UK	6901173	Jan-Dec	37	2J
argo	UK	6901178	Jan-Dec	10	3M 3N
argo	UK	6901190	Sep-Oct	3	3M
argo	UK	6901191	Jan-Dec	37	1F 2J
argo	UK	6901194	Jan-Dec	36	1E 1F 2G 2H 2J
argo	UK	6901200	Jan-Dec	36	1E 1F 2G 2H 2J 3K
argo	UK	6901202	Jan-Dec	35	0B 1E 1F 2G
argo	UK	6901207	Jan-Jan	3	3L
argo	France	6901719	Jan-May	15	3K 3M
argo	France	6901720	Jan-Oct	28	1F
argo	France	6901721	Jan-Mar	7	3K
argo	Ireland	6901921	Jan-Aug	28	2H 2J 3K 3L 3M
argo	Ireland	6901923	Jan-Dec	46	0B 1E 1F 2G 2H
argo	Ireland	6901925	Jan-Dec	45	1F 2G 2H 2J
argo	Ireland	6901930	Jun-Dec	22	1E 1F 2G
argo	Netherlands	6901997	Nov-Dec	4	6H
argo	France	6902684	Jan-Dec	37	1F 2H
argo	France	6902694	Jan-Dec	36	0B 2G 2H 2J 3K 3L
argo	France	6902695	Jan-Dec	37	1F 2G 2H 2J 3K 3L 3M
argo	France	6902696	Feb-Dec	27	3M 3N
argo	France	6902727	Jan-Oct	58	0A 1A
argo	France	6902749	Feb-Dec	32	0B 1E 1F 2G 2H 2J 3K
argo	France	6902751	Jan-Dec	36	1E 1F
argo	France	6902752	Sep-Dec	12	1F
argo	France	6902754	Jan-Sep	23	2J 3K 3L 3M
argo	France	6902755	Jan-Aug	18	2J 3K 3L 3M
argo	France	6902756	Jan-Dec	32	2H 2J 3K 3L 3M
argo	France	6902772	Oct-Dec	9	3M 3N 4Vs4W 4X 6B 6D
argo	France	6902786	Nov-Dec	5	1F
argo	France	6902787	Jan-Dec	37	0B 1D 1E 1F 2G 2H
argo	France	6902791	Dec-Dec	2	1F
argo	France	6902793	May-Dec	23	0B 1D 1E 1F
argo	France	6902800	Jan-Dec	36	1E 1F
argo	France	6902802	Jul-Dec	18	1C 1D 1E 1F
argo	France	6902805	Jan-May	13	0B 1D 1E 2G
argo	France	6902818	May-Dec	22	1E 1F 2G 2H

argo	France	6902863	Jan-Dec	37	1F 2H 2J 3K
argo	France	6902865	Jan-Oct	30	1F 2J
argo	France	6902881	Mar-Dec	30	1E 1F 2G 2H
argo	France	6902886	Jan-Dec	37	1E 1F 2G 2H 2J
argo	France	6902888	Jan-Dec	37	1F 2G 2H 2J 3K
argo	France	6902952	Feb-Nov	88	1A
argo	France	6902970	Jan-May	14	3K
argo	France	6902974	Jul-Jul	1	3M
argo	France	6902976	Jan-Dec	36	1F 2G 2H
argo	France	6902978	Jan-Dec	35	2J 3K
argo	France	6903029	Jan-Dec	36	2J 3K
argo	France	6903030	Jan-Dec	35	1F
argo	France	6903032	Jan-Dec	36	1E 1F 2G 2H 2J 3K
argo	France	6903034	Jan-Dec	36	1E 1F 2G
argo	France	6903040	Aug-Dec	16	0B 1E 1F
argo	France	6903041	Jul-Dec	18	1F
argo	France	6903042	Jul-Dec	18	1E 1F 2G 2H
argo	France	6903083	Dec-Dec	1	1F
argo	France	6903123	Nov-Dec	5	6H
argo	France	6903125	Oct-Nov	23	0A
argo	France	6903126	Oct-Nov	18	0A
argo	France	6903127	Oct-Nov	22	0A
argo	Norway	6903545	Mar-Dec	31	1F 2G 2H
argo		6903873	Aug-Dec	14	0B 1E 1F 2G
argo	Germany	6904112	Sep-Dec	16	3K
argo	Germany	6904113	Aug-Dec	68	1F
argo	Germany	6904114	Aug-Dec	23	1F 2G 2H
argo	Germany	6904115	Aug-Dec	31	1F
argo	Germany	6904126	Nov-Dec	4	6H
argo	Germany	7900527	Aug-Dec	13	3K 3M
argo	Germany	7900566	Jan-Jun	25	2G 2H
argo	Germany	7900589	Aug-Dec	69	1F
animal		9901388	Jan-Jan	18	1A
animal		9901389	Jan-Feb	137	1A
animal		9901490	Jun-Dec	530	4R 4S 4T
animal		9901491	Aug-Aug	4	1A
animal		9901492	Jul-Aug	9	1A
animal		9901493	Aug-Oct	246	1A
animal		9901494	Aug-Dec	524	1A
animal		9901495	Aug-Dec	399	1A
animal		9901496	Aug-Nov	429	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 2021

Country	Mission	First Date	Last Date	CTD	CTD RT*	XBT	XBT RT*	Bottle	TSG**	NAFO_Subareas
	18BP21011	20210408	20211216	25	0	0	0	0	0	4T
CAN		20210520	20211027	0	212	0	0	0	0	3Pn3Ps4R 4S 4T 4Vn4Vs4W 4X 5Y 5Ze
	18K821028	20210713	20210721	12	0	0	0	0	0	4T
CAN	18MU21151	20210706	20210802	89	0	0	0	0	0	4T
CAN		20210830	20211004	0	32	0	0	0	0	4T
CAN		20210521	20211122	0	494	0	0	0	0	0B 2G 3K 3L 3Ps
CAN	18TL21218	20210423	20210423	0	1	0	0	1	0	3L
CAN		20210424	20210612	0	215	0	0	0	0	3O 3Pn3Ps4R 4S 4T 4Vn
CAN	18TL21220	20210629	20210719	0	109	0	52	77	0	2H 2J 3K 3L 3M
CAN	18TL21222	20211006	20211006	0	0	0	0	1	0	3L
CAN		20211103	20211215	0	132	0	0	0	0	2J 3K
CAN	18TL21228	20211220	20211220	0	1	0	0	1	0	3L
CAN	18VA21001	20210925	20210925	0	0	0	0	1	0	3L
CAN	18VA21262	20211007	20211020	6	0	0	0	1	0	3L 4T
CAN	18VA21010	20211013	20211013	1	0	0	0	1	0	3L 4T
CAN	18VD21157	20210821	20210821	0	0	0	0	1	0	3L
CAN	18VD21166	20211122	20211122	0	0	0	0	1	0	3L
USA		20210526	20210817	0	0	0	196	0	0	4X 5Ze5Zw6A 6B 6C 6D 6E 6F 6G 6H

* 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-2021 temperature (XBT) and/or salinity (CTD, bottle) profile data collected aboard ships, entered or updated in 2021/2022.

Mission Number	First Date	Last Date	CTD	Bottle	XBT	NAFO_Subareas
18DL19001	20190601	20190621	64	0	0	1F 2G 2H 2J 4R 4T 4Vn4W
18HU16006	20160430	20160518	60	0	0	1F 2H 2J 3L 3Pn4Vn4W
18HU20120	20201110	20201201	19	0	30	3K 3L 3M 3N 3O 3Ps
18MU20001	20200916	20201008	35	0	0	4T
18NE17480	20170603	20170603	0	1	0	3L
18NE17481	20170617	20170617	0	1	0	3L
18NE17482	20170622	20170622	0	1	0	3L
18NE17484	20170925	20170925	0	1	0	3L
18NE17486	20171023	20171023	0	1	0	3L
18NE17487	20171025	20171106	0	2	0	3L
18NE17488	20171121	20171121	0	1	0	3L
18NE18497	20180606	20180618	0	2	0	3L
18NE18500	20180925	20180925	0	1	0	3L
18NE19506	20190330	20190330	0	1	0	3L
18NE19508	20190507	20190507	0	1	0	3L
18NE19509	20190508	20190521	0	2	0	3L
18NE19510	20190522	20190604	0	2	0	3L
18NE19511	20190616	20190616	0	1	0	3L
18NE19512	20190619	20190622	0	2	0	3L
18NE19012	20190801	20190801	0	2	0	3L
18NE19513	20190915	20190915	0	1	0	3L
18NE19514	20190924	20190924	0	1	0	3L
18NE19515	20190926	20191007	0	2	0	3L
18NE19516	20191010	20191021	0	3	0	3L
18NE19124	20191015	20191015	0	1	0	3L
18NE19517	20191025	20191105	0	3	0	3L
18NE19518	20191110	20191110	0	1	0	3L
18NE19001	20191117	20191210	0	70	0	3K 3L 3M 3N 3O 3Ps
18NE19519	20191130	20191130	0	2	0	3L
18NE19250	20191211	20191211	0	1	0	3L
18NE20015	20200811	20200811	0	1	0	3L
18NE20528	20200828	20200907	0	2	0	3L
18NE20529	20200909	20200909	0	1	0	3L
18NE20530	20200924	20201005	0	2	0	3L
18NE20531	20201012	20201020	0	2	0	3L
18NE20533	20201106	20201110	10	4	0	3K 3L 3Ps
18NE20120	20201110	20201201	41	63	0	3K 3L 3M 3N 3O 3Ps
18NE20534	20201118	20201130	40	52	0	3K 3L 3M 3N 3O

18NE20535	20201203	20201212	19	2	1	3K 3L
18OL18011	20180715	20180802	0	81	0	2G 2H 2J 3K 3L 3M
18TL17173	20170406	20170423	0	77	0	3K 3L 3M 3N 3O 3Ps
18TL17174	20170501	20170501	0	1	0	3L
18TL17176	20170708	20170728	0	80	0	2G 2H 2J 3K 3L 3M
18TL18186	20180501	20180501	0	1	0	3L
18TL18187	20180522	20180522	0	1	0	3L
18TL18193	20181218	20181218	0	1	0	3L
18TL19197	20190412	20190418	0	26	0	3L 3M
18TL19198	20190429	20190429	0	1	0	3L
18TL19199	20190520	20190520	0	1	0	3L
18TL19200	20190627	20190713	0	68	0	2H 2J 3K 3L 3M
18TL19202	20191009	20191009	0	1	0	3L
18TL20210	20200714	20200731	17	65	60	2H 2J 3K 3L 3M
18TL20208	20200801	20200806	6	1	0	3L
18TL20012	20200813	20200905	66	0	0	4R 4S 4T 4Vn
18TL20212	20201013	20201020	35	1	0	2J 3L
18TL20213	20201022	20201031	46	0	0	2H 2J
18TL20214	20201106	20201116	38	0	0	2J
18TL20215	20201121	20201129	24	0	0	3K
18TL20216	20201203	20201215	55	0	0	2J 3K
18VA19001	20190712	20190922	328	0	0	4T
18VD18105	20181015	20181015	0	1	0	3L
18VD19118	20190812	20190812	0	3	0	3L
18VD20125	20200725	20200731	11	0	0	3L
18VD20135	20200802	20200808	9	0	0	3L
18VD20136	20200812	20200812	1	1	0	3L
18VD20137	20200815	20200818	10	0	0	3L
18VD20138	20200827	20200903	20	0	0	3K
18VD20139	20200906	20200916	19	0	0	3K
18VD20140	20200921	20200925	10	0	0	3L
18VD20141	20200929	20200929	1	1	0	3L
18VD20142	20201001	20201013	16	0	0	3L
18VD20143	20201014	20201014	3	1	0	3L
18VD20144	20201018	20201026	5	0	0	3K 3L 3Ps
29VE200624	20200630	20200729	75	0	0	3L 3M
PADS17009	20171111	20171216	0	44	0	2J 3K 3L 3M
VAAI20115	20200722	20200823	307	0	0	0B 2G

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 2021

Country	Type	Name	ID	Reporting Period	Profiles	NAFO Subareas
USA	Fixed Platform	Coastal Marine Lab, New Castle, NH	CMLN3	Jan-Dec	5023	5Y
USA	Fixed Platform	Buoy 126, Jacques Cousteau Reserve, NJ	JCTN4	Jan-Dec	33180	6A
USA	Fixed Platform	T-Wharf Bottom, Narragansett Bay Reserve, RI	NAQR1	Jan-Dec	19395	5Zw
USA	Fixed Platform	Menauhant, Waquoit Bay Reserve, MA	WAQM3	Jan-Dec	30368	5Zw
Canada	Moored Buoy*	East Scotia Slope	4400137	Jan-Jan	37	4W
USA	Moored Buoy	Buoy N01 – Northeast Channel	4400024	Jan-Nov	2490	4X
USA	Moored Buoy	Buoy A01 - Massachusetts Bay	4400029	Jan-Dec	7455	5Y
USA	Moored Buoy	Buoy B01 - Western Maine Shelf	4400030	Jan-Dec	7478	5Y
USA	Moored Buoy	Buoy E01 - Central Maine Shelf	4400032	Jan-Dec	8090	5Y
USA	Moored Buoy	Buoy F01 - Penobscot Bay	4400033	Jan-Dec	8083	5Y
USA	Moored Buoy	Buoy I01 - Eastern Maine Shelf	4400034	Jan-Dec	8104	5Y
USA	Moored Buoy	Buoy M01 - Jordan Basin	4400037	Jan-Dec	4447	5Y
USA	Moored Buoy	Potomac, MD	4400042	Jan-Dec	59480	6B
USA	Moored Buoy	Stingray Point, VA	4400058	May-Dec	46439	6B
USA	Moored Buoy	Gooses Reef, MD	4400062	Jan-Dec	62880	6B
USA	Moored Buoy	Annapolis, MD	4400063	Jan-Dec	63443	6B
USA	Moored Buoy	Great South Bay	4400069	Apr-Nov	7636	6A
USA	Moored Buoy	York Spit, VA	4400072	Jan-Dec	37698	6B
USA	Moored Buoy	CO2 Gulf of Maine Buoy	4400073	Jan-Dec	3246	5Y
	Moored Buoy		4400088	Jan-Dec	15754	6C
USA	Drifting Buoy		1301511	Feb-Feb	7	6H
USA	Drifting Buoy		1301525	Aug-Aug	632	3O 4Vs

USA	Drifting Buoy	1301548	Aug-Dec	3126	3M 3N 3O 4Vs4W 4X 5Ze5Zw6A 6B 6C 6D 6E
USA	Drifting Buoy	1301567	Jan-Jan	458	3M 3N
USA	Drifting Buoy	1301575	Oct-Dec	579	6B 6C 6D
USA	Drifting Buoy	1301579	Sep-Dec	1701	3M 6H
	Drifting Buoy	1301603	Aug-Dec	911	6E 6F 6G
	Drifting Buoy	1301610	Jan-Jan	391	3M 3N
	Drifting Buoy	1301612	Jan-Feb	1002	3M 3N 6H
	Drifting Buoy	1402559	Jan-Feb	444	6F 6G 6H
USA	Drifting Buoy	1501670	Oct-Dec	2050	3N 3O 4Vs4W 6C 6D 6E 6F 6G 6H
USA	Drifting Buoy	1501723	Aug-Aug	1	6G
USA	Drifting Buoy	1501725	Sep-Dec	496	6B 6C 6D 6E
	Drifting Buoy	2501510	Feb-Mar	251	1F 2H 2J 3K
USA	Drifting Buoy	2501513	Jan-Mar	1081	1F 2J 3K 3L 3M
USA	Drifting Buoy	2501514	Oct-Oct	17	1F
	Drifting Buoy	2501538	Jul-Jul	136	1F
USA	Drifting Buoy	3101515	Sep-Dec	2505	4Vs6B 6C 6D 6E 6F 6G
USA	Drifting Buoy	3101555	Jan-Feb	844	3N 3O 4Vs4W 4X 6E 6G 6H
USA	Drifting Buoy	3201560	Jan-Jan	373	6H
USA	Drifting Buoy	4101529	Jan-Feb	255	3M 6H
USA	Drifting Buoy	4101556	Aug-Sep	504	6D 6E
USA	Drifting Buoy	4101557	Jul-Dec	3083	3M 3N 4Vs4W 4X 5Ze6B 6C 6D 6F 6G 6H
USA	Drifting Buoy	4101565	Jan-Feb	223	6F 6G
USA	Drifting Buoy	4101573	Jan-Jan	92	6G 6H
USA	Drifting Buoy	4101574	Jan-Jan	119	6H
USA	Drifting Buoy	4101575	Dec-Dec	1	6E
USA	Drifting Buoy	4101577	Jan-Oct	4979	6A 6C 6E

USA	Drifting Buoy	4101627	Jan-Jul	5071	1F 2H 2J 3K 3L
USA	Drifting Buoy	4101630	Jan-Mar	962	6H
USA	Drifting Buoy	4101642	Aug-Nov	2176	6D 6E
USA	Drifting Buoy	4101643	Jan-Aug	4857	3M 3N 3O 4Vs6F 6G 6H
USA	Drifting Buoy	4101663	Jan-Oct	2194	3M 3N 3O 6H
USA	Drifting Buoy	4101664	Jan-Dec	8760	1F 2H 2J 3K 3L 3M
France	Drifting Buoy	4101702	Jan-Oct	5124	3M 3N 4Vs6C 6D 6E 6F 6G 6H
	Drifting Buoy	4101714	Sep-Oct	704	6E 6F
	Drifting Buoy	4101715	Jan-Feb	734	6H
	Drifting Buoy	4101718	Nov-Dec	1280	6E 6F
France	Drifting Buoy	4101742	Jan-May	2999	3M 3N 6G 6H
France	Drifting Buoy	4101743	May-Oct	1271	6E 6F
USA	Drifting Buoy	4101786	Jan-Mar	476	4Vs4W 4X 5Ze6E 6F 6G
USA	Drifting Buoy	4101806	Jan-Jan	71	3M
USA	Drifting Buoy	4101813	Jan-Jan	222	6C
USA	Drifting Buoy	4101814	Jan-Jan	634	6C 6D
USA	Drifting Buoy	4101817	Jan-Nov	94	6D
USA	Drifting Buoy	4101818	Jan-Mar	1749	6G 6H
USA	Drifting Buoy	4101821	Mar-Mar	11	6H
USA	Drifting Buoy	4101823	Jan-Jan	65	3M 6H
USA	Drifting Buoy	4101825	Jan-May	189	6D 6E 6F 6G
USA	Drifting Buoy	4101852	Feb-Sep	386	6B 6C 6D
USA	Drifting Buoy	4101853	Feb-Sep	683	6B 6C 6D 6E 6F 6G
USA	Drifting Buoy	4101854	Mar-Sep	1466	4Vs4W 6B 6C 6D 6E 6F 6G
	Drifting Buoy	4102526	Aug-Dec	2349	4Vs4W 6E 6F 6G
	Drifting Buoy	4102529	Sep-Dec	1996	6C 6D
	Drifting Buoy	4102531	Sep-Dec	4025	4Vs4W 4X 6B 6C 6D 6G

	Drifting Buoy	4102532	Sep-Dec	2516	3N 3O 4Vs4W 6B 6C 6D 6E 6G 6H
	Drifting Buoy	4102533	Oct-Dec	1880	3N 3O 4Vs4W 4X 6B 6C 6D 6E 6G 6H
	Drifting Buoy	4102534	Oct-Dec	1811	4Vs4W 4X 6B 6C 6D 6E 6F
USA	Drifting Buoy	4102621	Jun-Dec	3545	3M 4Vs6F 6G 6H
USA	Drifting Buoy	4102622	May-Aug	1314	6G 6H
USA	Drifting Buoy	4102626	May-Jun	19	6H
USA	Drifting Buoy	4102627	Jul-Dec	1178	3M 3N 4Vs6F 6G 6H
USA	Drifting Buoy	4102628	Oct-Oct	230	6F
USA	Drifting Buoy	4201523	Jun-Dec	3550	4Vs6F 6G
USA	Drifting Buoy	4201545	Aug-Sep	374	6F 6G 6H
USA	Drifting Buoy	4201703	Aug-Dec	2814	4Vs4W 4X 6B 6C 6D 6E
	Drifting Buoy	4400501	Jan-May	3284	3K 3M
	Drifting Buoy	4400777	Jan-Oct	3237	3M 3N 6D 6E 6F 6G 6H
	Drifting Buoy	4401574	Jan-Oct	4842	0B 1E 1F 2G 2H 2J 3K 3L 3M
	Drifting Buoy	4401586	Dec-Dec	62	6C
USA	Drifting Buoy	4401762	Jan-Nov	5741	4Vs6F 6G 6H
USA	Drifting Buoy	4401817	May-Jun	3	6B 6C
USA	Drifting Buoy	4401827	Jan-Jan	98	4X
USA	Drifting Buoy	4401848	Jan-Sep	3956	3M 3N 3O 3Ps
USA	Drifting Buoy	4401850	Jan-Mar	1538	1F 2J 3K 3M 3N
USA	Drifting Buoy	4401867	Oct-Dec	1746	4W 6B 6C 6D 6E 6F
USA	Drifting Buoy	4401896	Jan-Sep	4964	2G 2H 2J 3K
USA	Drifting Buoy	4401897	Jan-Dec	7559	2G 2H 2J 3K 3L 3M 3N
USA	Drifting Buoy	4401901	Jun-Dec	4869	0B 1E 1F 2G 2H 2J 3K 3L 3M
	Drifting Buoy	4402502	Sep-Nov	1407	6C 6D
USA	Drifting Buoy	4402534	Jan-Oct	6345	0B 1D 1E 2G 2H 2J 3K 3L 3M 3N
USA	Drifting Buoy	4402554	Jan-Apr	2082	3K 3M

USA	Drifting Buoy	4402555	Jan-Jan	602	3K 3M
USA	Drifting Buoy	4402559	Jan-Jan	298	3M
USA	Drifting Buoy	4402561	Jan-Aug	5109	1F 2H 2J
USA	Drifting Buoy	4402563	Jan-Jan	195	3K
USA	Drifting Buoy	4402566	Jan-Mar	1750	1F 2G 2H 2J
USA	Drifting Buoy	4402567	Jan-Jan	238	3K 3L
USA	Drifting Buoy	4402584	Jan-Apr	1380	3K 3M
USA	Drifting Buoy	4402585	Jan-Feb	1005	3M 3N 3O
USA	Drifting Buoy	4402586	Jan-May	3180	2H 2J 3K 3L 3M
USA	Drifting Buoy	4402589	Jan-Aug	5264	2J 3K 3L 3M 3N
USA	Drifting Buoy	4402590	Jan-Feb	1180	1A 1B 1C
USA	Drifting Buoy	4402591	Dec-Dec	1	3L
USA	Drifting Buoy	4402592	Jan-Feb	333	3M
USA	Drifting Buoy	4402593	Jan-Feb	703	1A 1B
USA	Drifting Buoy	4402594	Jan-Apr	1612	3K 3L 3M
USA	Drifting Buoy	4402596	Jan-Jan	20	3K
USA	Drifting Buoy	4402601	Jan-May	2584	1F 2J 3K 3M
USA	Drifting Buoy	4402602	Jan-Oct	6067	1F 2J
USA	Drifting Buoy	4402603	Jan-Aug	5303	3K 3M 3N 3O 3Ps4Vs6G
USA	Drifting Buoy	4402604	Jan-Dec	8166	2J 3K 3L 3M 3N
USA	Drifting Buoy	4402606	Jan-Dec	7918	1F 2J 3K
USA	Drifting Buoy	4402607	Jan-Jul	4199	3K 3M
USA	Drifting Buoy	4402608	Jan-Jun	3160	1F 2J 3K
USA	Drifting Buoy	4402609	Jan-Jul	3924	1F 2H 2J 3K
USA	Drifting Buoy	4402610	Jan-Jul	3326	3M 3N
USA	Drifting Buoy	4402611	Jan-Aug	5309	1F 2J 3K 3L 3M
USA	Drifting Buoy	4402612	Jan-Dec	2689	3K 3L 3M 3N

USA	Drifting Buoy	4402613	Jan-Mar	2012	3K 3L 3M 3N
USA	Drifting Buoy	4402614	Jan-Aug	5133	2J 3K 3L 3M
USA	Drifting Buoy	4402615	Jan-Mar	1615	3M 3N
USA	Drifting Buoy	4402616	Jan-May	3430	2J 3K 3L 3M
USA	Drifting Buoy	4402617	Jan-Oct	6903	2H 2J 3K 3L 3M 3N
USA	Drifting Buoy	4402618	Jan-Mar	1893	3L 3M 3N 3O 3Ps4Vs
USA	Drifting Buoy	4402620	Jan-Mar	1464	0B 2G 2H 2J 3K
USA	Drifting Buoy	4402621	Jan-Dec	8080	2H 2J 3K 3L 3M
USA	Drifting Buoy	4402622	Jan-Feb	1307	0B 1C 1D 1E
USA	Drifting Buoy	4402623	Jan-Apr	2160	1F 2G 2H
USA	Drifting Buoy	4402624	Jan-Apr	2698	2H 2J 3K 3L 3M 3N
USA	Drifting Buoy	4402625	Jan-Jul	4684	2J 3K 3L 3M
USA	Drifting Buoy	4402626	Jan-May	3303	2G 2H 2J 3K
USA	Drifting Buoy	4402627	Jan-Dec	8099	1F 2G 2H 2J
USA	Drifting Buoy	4402628	Jan-Jul	4177	2G 2H 2J 3K 3L 3M
USA	Drifting Buoy	4402629	Jan-Jun	3639	2G 2H 2J 3K 3L 3M
USA	Drifting Buoy	4402630	Jan-May	3088	2G 2H 2J 3K 3L 3O 3Ps
USA	Drifting Buoy	4402631	Jan-Jan	584	0A 0B 1B 1C
USA	Drifting Buoy	4402632	Jan-Dec	8255	1F 2G 2H 2J 3K
USA	Drifting Buoy	4402633	Jan-Jan	112	2G
USA	Drifting Buoy	4402634	Jan-Dec	8193	1F 2G 2H 2J
USA	Drifting Buoy	4402635	Jan-Dec	8316	2H 2J 3K 3L 3M
USA	Drifting Buoy	4402636	Jan-Sep	2458	2J 3K 3L 3M 3N
USA	Drifting Buoy	4402637	Jan-Aug	5428	0B 1D 2G 2H 2J 3K 3L 3M
USA	Drifting Buoy	4402638	Jan-Jan	467	2G 2H
USA	Drifting Buoy	4402639	Jan-Feb	1050	1B
USA	Drifting Buoy	4402640	Jan-Dec	8202	2G 2H 2J 3K 3L 3M

USA	Drifting Buoy	4402641	Jan-Feb	1334	2G 2H 2J
USA	Drifting Buoy	4402642	Jan-Mar	1930	0B 1D 2G 2H 2J
USA	Drifting Buoy	4402643	Jan-Dec	7561	1F 2G 2H
USA	Drifting Buoy	4402644	Jan-Dec	8332	0B 1E 1F 2G 2H 2J
USA	Drifting Buoy	4402645	Jan-Dec	8321	0B 1E 1F 2G 2H 2J 3K
USA	Drifting Buoy	4402646	Jan-Jul	4663	2G 2H 2J 3K 3L 3M 3N
USA	Drifting Buoy	4402647	Jan-Dec	8067	0B 1E 1F 2G 2H 2J 3K 3L 3M
USA	Drifting Buoy	4402648	Jan-Dec	8381	1E 1F 2G 2H
USA	Drifting Buoy	4402650	Jan-Oct	6116	2H 2J 3K 3L 3M
USA	Drifting Buoy	4402651	Jan-Jul	4189	2J 3K 3L 3M 3N
USA	Drifting Buoy	4402652	Jan-Dec	8196	0B 1D 1E 2G 2H 2J 3K
USA	Drifting Buoy	4402653	Jan-Nov	5848	3L 3M 3N 3O 6G 6H
USA	Drifting Buoy	4402655	Aug-Oct	1384	4W 4X
USA	Drifting Buoy	4402656	Aug-Dec	3293	4Vs4W 4X
USA	Drifting Buoy	4402657	Jan-Jul	4795	4W
USA	Drifting Buoy	4402659	Jan-Aug	5538	3Pn3Ps4R 4S 4T 4Vn4Vs5Ze
USA	Drifting Buoy	4402660	Jan-Jan	550	3M 3N
USA	Drifting Buoy	4402661	Jan-Mar	1833	0A 0B 2G
USA	Drifting Buoy	4402663	Jan-May	2425	3K 3M 3N 3O 4Vs4W 6G
USA	Drifting Buoy	4402665	Jan-Jan	178	3M 6H
USA	Drifting Buoy	4402667	Jan-Mar	667	1F 2G 2H 2J
	Drifting Buoy	4402675	Dec-Dec	164	3M 6H
	Drifting Buoy	4402709	Oct-Nov	892	0A
	Drifting Buoy	4402711	Oct-Nov	423	0A
	Drifting Buoy	4402712	Oct-Dec	1866	0A
	Drifting Buoy	4402713	Nov-Nov	47	0A
	Drifting Buoy	4402714	Oct-Dec	1684	0A 0B

	Drifting Buoy	4402715	Oct-Dec	1695	0A 0B
	Drifting Buoy	4402716	Oct-Nov	900	0A
	Drifting Buoy	4402717	Oct-Dec	1704	0A
	Drifting Buoy	4402718	Oct-Dec	1622	0A 0B 2G
	Drifting Buoy	4402719	Aug-Aug	681	0B 2G
	Drifting Buoy	4402720	Aug-Dec	3922	0B 2G 2H 2J
	Drifting Buoy	4402721	Jul-Dec	3936	0B 2G 2H 2J 3K 3L 3M
	Drifting Buoy	4402722	Jul-Nov	3008	0B 2G 2H 2J 3K 4R 4S
	Drifting Buoy	4402723	Jul-Dec	3930	0B 2G 2H 2J 3K 3L
	Drifting Buoy	4402725	Aug-Dec	3310	2G 2H 2J
	Drifting Buoy	4402726	Dec-Dec	3874	2G
	Drifting Buoy	4402727	Aug-Dec	3930	0B 2G 2H 2J 3K 3L 3M 3N
	Drifting Buoy	4402728	Aug-Dec	2840	0A
	Drifting Buoy	4403526	Sep-Nov	1357	4T 4Vn
	Drifting Buoy	4403527	Sep-Oct	1440	4T
	Drifting Buoy	4403528	Sep-Dec	2595	4T 4Vn4Vs
	Drifting Buoy	4403529	Sep-Oct	1570	4T
	Drifting Buoy	4403530	Sep-Nov	2131	4T
	Drifting Buoy	4403531	Sep-Dec	2634	4T 4Vn
	Drifting Buoy	4403532	Sep-Dec	2809	3Ps4T 4Vn4Vs
	Drifting Buoy	4403533	Sep-Dec	13479	4T 4Vn4Vs
	Drifting Buoy	4403534	Sep-Nov	1853	4T 4Vn
	Drifting Buoy	4403535	Sep-Oct	990	4T
	Drifting Buoy	4403536	Sep-Dec	2686	4T
	Drifting Buoy	4403537	Sep-Oct	1976	4T
	Drifting Buoy	4403539	Sep-Nov	1445	4T
	Drifting Buoy	4403540	Sep-Oct	1509	4T

	Drifting Buoy	4403541	Sep-Oct	3236	4S 4T
	Drifting Buoy	4403542	Sep-Oct	2682	4S 4T
	Drifting Buoy	4403544	Sep-Oct	1191	4S 4T
	Drifting Buoy	4403545	Sep-Oct	2511	4S 4T
	Drifting Buoy	4403546	Sep-Oct	2216	4S 4T
	Drifting Buoy	4403556	Dec-Dec	610	3L 3M 3N
	Drifting Buoy	4403557	Dec-Dec	601	3L 3N
	Drifting Buoy	4403558	Dec-Dec	590	3N 3O
	Drifting Buoy	4403559	Dec-Dec	604	3L
	Drifting Buoy	4403561	Dec-Dec	579	3M 3N 3O
	Drifting Buoy	4403563	Dec-Dec	472	3L 3M
	Drifting Buoy	4403564	Dec-Dec	585	3M 3N 3O
	Drifting Buoy	4403565	Dec-Dec	74	3L
	Drifting Buoy	4403566	Dec-Dec	586	3M 3N 3O
	Drifting Buoy	4403567	Dec-Dec	503	3L 3M 3N
USA	Drifting Buoy	4601681	Oct-Oct	1	4X
USA	Drifting Buoy	4601782	Aug-Dec	3161	3M 3N 3O 4Vs
USA	Drifting Buoy	4601804	Dec-Dec	1	1D
USA	Drifting Buoy	4601806	Jun-Sep	2	0A 0B
	Drifting Buoy	4700546	Jan-Feb	884	6H
Canada	Drifting Buoy	4700584	Jan-Feb	925	3M 6G 6H
Canada	Drifting Buoy	4701738	Sep-Dec	2494	0A
Canada	Drifting Buoy	4701739	Sep-Dec	2430	0A 0B 1A 1B 1C
Canada	Drifting Buoy	4701740	Sep-Oct	1006	0A 1A
	Drifting Buoy	4802537	Aug-Sep	152	0A 1A
	Drifting Buoy	5301764	Jan-Jul	5009	1F 2H 2J 3K 3L 3M
USA	Drifting Buoy	5501571	May-May	1	4T

USA	Drifting Buoy	6202629	Jul-Nov	1511	3M 3N 6H
USA	Drifting Buoy	6202640	Jul-Nov	2989	3N 3O 4Vs4W 6B 6C 6D 6E 6H
USA	Drifting Buoy	6202643	Mar-Jul	2965	6C 6D 6E
USA	Drifting Buoy	6202660	Jan-Dec	8114	1F 2G 2H
USA	Drifting Buoy	6202662	Jan-Feb	1109	1B
USA	Drifting Buoy	6202663	Jan-May	2496	2J 3K 3L 3M
USA	Drifting Buoy	6202664	Jan-Dec	8312	0B 1E 1F 2G 2H
USA	Drifting Buoy	6202665	Jan-Mar	1680	1B
USA	Drifting Buoy	6202669	Jan-Jan	690	1B
USA	Drifting Buoy	6202678	Jan-Jan	529	3K 3L
USA	Drifting Buoy	6203507	Jun-Dec	4449	4X 5Y 5Ze
USA	Drifting Buoy	6203508	Jun-Dec	4478	4X 5Y
USA	Drifting Buoy	6203513	Jun-Sep	1911	4Vs4W
USA	Drifting Buoy	6203516	Jun-Dec	4381	4Vs4W 4X
USA	Drifting Buoy	6203529	Feb-Mar	826	6H
USA	Drifting Buoy	6203582	Jan-Jul	4623	2G 2H 2J 3K 3L 3M 3N
	Drifting Buoy	6203601	Aug-Dec	2958	6F 6G 6H
	Drifting Buoy	6203607	Sep-Dec	2449	4Vs4W 4X 6B 6C 6D 6E 6F 6G
	Drifting Buoy	6203646	Jan-Jan	4	1A
	Drifting Buoy	6203706	Feb-Mar	694	6C
	Drifting Buoy	6203710	Jun-Aug	1793	1D 1E 1F
USA	Drifting Buoy	6203778	Sep-Dec	1978	0A 0B
USA	Drifting Buoy	6203779	Sep-Dec	2344	0A 0B 1A 1B
USA	Drifting Buoy	6203780	Sep-Oct	536	0A
USA	Drifting Buoy	6203781	Sep-Dec	2290	0A 0B 1B 2G
USA	Drifting Buoy	6203782	Sep-Oct	325	0A
USA	Drifting Buoy	6203783	Sep-Dec	2319	0A 0B

USA	Drifting Buoy	6203784	Sep-Dec	2313	0A 0B 1B 2G 2H
USA	Drifting Buoy	6203785	Sep-Dec	2376	0A 0B 1C 2G 2H
USA	Drifting Buoy	6203786	Sep-Dec	2331	0A 0B 1B 1C 2G 2H
USA	Drifting Buoy	6203787	Sep-Dec	2277	0A 0B 1B 2G 2H 2J
USA	Drifting Buoy	6203788	Sep-Nov	2348	0A 0B
USA	Drifting Buoy	6203789	Sep-Dec	2309	0A 0B 1B 2G 2H 2J
USA	Drifting Buoy	6203790	Sep-Dec	2305	0A 0B 1B 2G 2H
USA	Drifting Buoy	6203791	Sep-Dec	2034	0A 0B
USA	Drifting Buoy	6203792	Sep-Dec	2381	0A 0B
USA	Drifting Buoy	6203793	Sep-Dec	2339	0A 0B 2G 2H
USA	Drifting Buoy	6203794	Aug-Dec	2722	0B 1E 1F 2G 2H
USA	Drifting Buoy	6203795	Aug-Dec	3057	0B 1E 1F 2G 2H 2J
USA	Drifting Buoy	6203796	Aug-Dec	2886	1E 1F
USA	Drifting Buoy	6203797	Sep-Dec	2651	0B 1C 1D 1E 1F
USA	Drifting Buoy	6203799	Aug-Dec	2965	0B 1D 1E 1F 2G
USA	Drifting Buoy	6203800	Aug-Dec	2578	0B 1D 1E 1F 2G 2H 2J 3K
USA	Drifting Buoy	6203801	Aug-Nov	1450	1E 1F 2G
USA	Drifting Buoy	6203802	Aug-Dec	2961	0B 1D 1E 1F 2G 2H 2J
USA	Drifting Buoy	6203803	Aug-Dec	3120	0B 1D 1E 1F 2G 2H 2J 3K
USA	Drifting Buoy	6203804	Aug-Dec	3026	0B 1D 1E 1F 2G
USA	Drifting Buoy	6203805	Aug-Dec	3070	1D 1E 1F
USA	Drifting Buoy	6203806	Aug-Dec	2999	0B 1D 1E 1F 2G 2H 2J 3K
USA	Drifting Buoy	6203807	Aug-Dec	3098	1D 1E 1F
USA	Drifting Buoy	6203808	Aug-Dec	3024	0B 1D 1E 1F 2G 2H
USA	Drifting Buoy	6203809	Aug-Dec	3010	0A 0B 1B 1C 1D 1E 1F
	Drifting Buoy	6204562	May-Jul	659	6H
	Drifting Buoy	6204563	Apr-Nov	2580	6D 6E 6F

	Drifting Buoy	6301511	Apr-Oct	4151	1F 2H 2J 3K
	Drifting Buoy	6301564	May-Jul	1584	1F
	Drifting Buoy	6301567	Feb-Feb	536	1F 2J 3K
	Drifting Buoy	6301570	Oct-Oct	392	1F
	Drifting Buoy	6301571	Jan-Sep	6149	0B 1B 1C 1D 1F 2G 2H 2J 3K
	Drifting Buoy	6301573	Sep-Sep	1	1F
USA	Drifting Buoy	6401531	Jan-Sep	5869	1F 2G 2H 2J 3K
USA	Drifting Buoy	6401539	Jan-Aug	723	2J 3K
	Drifting Buoy	6401573	Mar-Jul	2916	1F 2H 2J
	Drifting Buoy	6401574	May-Dec	5306	1E 1F 2G 2H 2J
	Drifting Buoy	6401758	Oct-Oct	39	1F
	Drifting Buoy	6401759	Sep-Dec	2739	1F
	Drifting Buoy	6401760	Oct-Dec	2016	1E 1F 2G
	Drifting Buoy	6401761	Aug-Dec	3263	0B 1E 1F 2G
USA	Drifting Buoy	6401811	Oct-Nov	918	1F
USA	Drifting Buoy	6401813	Jan-Sep	5504	2H 2J 3K 3L 3M 3N
USA	Drifting Buoy	6401814	Jan-Oct	6373	1F 2J 3K
USA	Drifting Buoy	6401817	Jan-May	3164	1F
USA	Drifting Buoy	6401818	Jan-Jun	3594	2J 3K 3L
USA	Drifting Buoy	6401820	Feb-Feb	152	1F
USA	Drifting Buoy	6401821	Jan-Jan	385	3K 3M
USA	Drifting Buoy	6401822	Jan-Aug	4133	1F 2H 2J
USA	Drifting Buoy	6401832	Dec-Dec	374	1E 1F
USA	Drifting Buoy	6401853	May-Jul	397	1F
USA	Drifting Buoy	6401854	May-Jul	423	1E 1F
USA	Drifting Buoy	6401865	Aug-Sep	164	1F
USA	Drifting Buoy	6401872	Sep-Dec	2002	1F

USA	Drifting Buoy	6401873	Oct-Nov	475	1F
USA	Drifting Buoy	6402505	Jan-May	2415	1F 2J
USA	Drifting Buoy	6402506	Jan-Feb	764	3M 3N
USA	Drifting Buoy	6402508	Jan-May	2410	3M
USA	Drifting Buoy	6402509	Jan-Sep	5587	1F
USA	Drifting Buoy	6402510	Feb-Feb	1	2J
USA	Drifting Buoy	6402512	Jan-Dec	8206	2H 2J
USA	Drifting Buoy	6402513	Feb-Aug	2929	1F 2J 3K 3M
USA	Drifting Buoy	6402515	Jan-Jun	3798	3K 3L 3M
USA	Drifting Buoy	6402516	Jan-Dec	7830	2H 2J 3K 3L 3M 3N
USA	Drifting Buoy	6402518	Jan-Mar	886	3M
USA	Drifting Buoy	6402519	Jan-May	3284	3K 3L 3M
USA	Drifting Buoy	6402520	Jan-Jan	2	3O
USA	Drifting Buoy	6402522	Jan-May	3156	1F 2J
USA	Drifting Buoy	6402523	Dec-Dec	303	1E 1F
USA	Drifting Buoy	6402524	Jan-Jan	434	1F 2J 3K 3M
USA	Drifting Buoy	6402528	Jan-Apr	2091	2G 2H 2J 3K
USA	Drifting Buoy	6402531	Jan-Dec	8116	1E 1F 2G
USA	Drifting Buoy	6402533	Jan-Jun	3988	1F 2H
USA	Drifting Buoy	6402534	Jan-Aug	5283	2H 2J 3K 3L 3M
USA	Drifting Buoy	6402535	Jan-Aug	4964	1F 2H 2J 3K 3L 3M
USA	Drifting Buoy	6402536	Jan-Mar	1776	2J 3K
USA	Drifting Buoy	6402539	Jan-Sep	5882	0B 1F 2G 2H 2J 3K 3L 3M
USA	Drifting Buoy	6402540	Jan-May	3312	1F 2G 2H 2J 3K 3L 3M
USA	Drifting Buoy	6402543	Sep-Nov	1747	1F
USA	Drifting Buoy	6402547	Jan-Dec	7480	0B 1E 1F 2G 2H 2J 3K
USA	Drifting Buoy	6402551	Jan-Dec	8511	1E 1F 2G 2H

USA	Drifting Buoy	6402559	Aug-Dec	2833	0B 1D 1E 1F 2G
USA	Drifting Buoy	6402562	Oct-Dec	2352	1F
USA	Drifting Buoy	6402569	Jan-Mar	1652	1B 1C
USA	Drifting Buoy	6402570	Jan-Dec	8134	2G 2H 2J 3K 3L 3N 3O 3Ps
USA	Drifting Buoy	6402571	Jan-Jul	4263	2G 2H 2J 3K 3L 3M
USA	Drifting Buoy	6402572	Jan-Dec	8216	2J 3K 3L 3M 3N
USA	Drifting Buoy	6402573	Jan-Mar	1739	2J 3K
USA	Drifting Buoy	6402587	Sep-Dec	2281	0A 0B 2G 2H
USA	Drifting Buoy	6402588	Sep-Nov	2393	0A 0B
USA	Drifting Buoy	6402589	Sep-Dec	2309	0A 0B 1B 2G 2H
USA	Drifting Buoy	6402590	Sep-Dec	2279	0A 0B
USA	Drifting Buoy	6402591	Sep-Dec	2376	0A 0B 1B 1C 2G 2H
USA	Drifting Buoy	6402592	Aug-Dec	2952	1E 1F 2G
	Drifting Buoy	6402593	Sep-Dec	3196	0B 1C 1D 1E 1F
	Drifting Buoy	6402594	Aug-Dec	3140	0B 1D 1E 1F 2G
	Drifting Buoy	6402595	Aug-Oct	1285	1E 1F
	Drifting Buoy	6402596	Aug-Dec	2773	1F
	Drifting Buoy	6402597	Aug-Dec	3018	0B 1D 1E 1F 2G
	Drifting Buoy	6402598	Aug-Dec	2768	1D 1E 1F
USA	Drifting Buoy	6402599	Aug-Dec	2969	0B 1D 1E 1F 2G
USA	Drifting Buoy	6402610	Nov-Dec	3047	1F
USA	Drifting Buoy	6402611	Aug-Dec	2727	0B 1E 1F 2G 2H 2J
USA	Drifting Buoy	6402612	Sep-Nov	2419	0A 0B
USA	Drifting Buoy	6402614	Sep-Dec	1792	0A 0B 1B
USA	Drifting Buoy	6402656	Dec-Dec	608	1F
USA	Drifting Buoy	6402673	May-Jul	361	1F
USA	Drifting Buoy	6402680	Oct-Nov	352	1F

USA	Drifting Buoy	6501500	Jan-Mar	2013	0B 1D 1E 1F
USA	Drifting Buoy	6501501	Jan-May	3390	2J 3K 3L 3M
USA	Drifting Buoy	6501502	Jan-Feb	1300	3K 3M
	Drifting Buoy	6501525	Sep-Dec	1971	1A
	Drifting Buoy	6501526	Sep-Nov	920	1A
USA	Drifting Buoy	6501537	Jan-May	2731	2J 3K
USA	Drifting Buoy	6501540	Jan-Mar	1703	2J 3K 3M
USA	Drifting Buoy	6501541	Jan-Nov	3212	3K 3M
USA	Drifting Buoy	6501543	Jan-Jan	440	3M
USA	Drifting Buoy	6501544	Jan-Feb	833	2H 2J
USA	Drifting Buoy	6501695	Jan-Nov	6922	2G 2H 2J 3K 3L 3M 3N
USA	Drifting Buoy	6501696	Jan-Sep	5658	2J 3K 3L 3M 3N
USA	Drifting Buoy	6501697	Jan-Jul	4609	2J 3K 3L 3M
USA	Drifting Buoy	6501698	Jan-Jul	4661	1F 2G 2H 2J 3K 3L 3M
USA	Drifting Buoy	6501699	Jan-May	3463	2G 2H 2J 3K 3L 3M
USA	Drifting Buoy	6501700	Jan-Mar	1758	2H 2J 3K
USA	Drifting Buoy	6501701	Jan-Jun	3822	2H 2J 3K 3L 3M
USA	Drifting Buoy	6501702	Jan-May	3190	2G 2H 2J 3K 3L 3M 3N
USA	Drifting Buoy	6501703	Jan-Dec	7938	0B 1E 1F 2G 2H 2J 3K 3L 3N
USA	Drifting Buoy	6501704	Jan-Feb	867	0B 1D
Canada	Drifting Buoy	6801509	Dec-Dec	8	3L
Canada	Drifting Buoy	6801670	Sep-Nov	1433	4R 4S

*Buoys marked by this symbol also measure waves
Dates are of first and last data reports within the NAFO Convention Area
Viking buoys are not shown in this table; see Table 3

Table 7. Water level data collected in 2021

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	66.1167	43.8333	-
491	Bedford Institute	Jan-Dec	63.6167	44.6833	4W
575	Port Hawkesbury	Mar-Dec	45.6167	61.3667	-
612	North Sydney	Jan-Dec	60.25	46.2167	-
665	Port aux Basques	Jan-Dec	59.1333	47.5667	-
755	St. Lawrence	Mar-Dec	55.3901	46.9168	-
835	Argentia	Jan-Dec	53.9833	47.3	3Ps
905	St. John's	Jan-Dec	52.7167	47.5667	-
990	Bonavista	Jan-Dec	53.115	48.651	-
1430	Nain	Jan-Jul	61.6833	56.55	-
1700	Charlottetown	Jan-Dec	63.1167	46.2333	4T
1805	Shediac Bay	Jan-Dec	64.546	46.227	4T
1970	Cap-aux-Meules	Jan-Dec	61.8573	47.3789	-
2000	Lower Escuminac	Jan-Dec	64.8833	47.0833	4T
2145	Belledune	Jan-Dec	65.85	47.9	-
2330	Rivière-au-Renard	Jan-Dec	64.3805	48.997	4T
2780	Sept-Îles	Jan-Dec	66.3768	50.1948	-
2985	Rimouski	Jan-Dec	68.5137	48.4783	4T
3057	Saint-Joseph-de-la-Rive	Jan-Dec	70.3655	47.4488	4T
3075	Banc du Cap Brûlé	Jan-Nov	70.710833	47.0895	4T
3100	Saint-Francois Île d'Orléans	Jan-Dec	70.8082	46.9965	4T
3110	Saint-Laurent île d'Orléans	Jan-Dec	71.0033	46.8582	4T
3248	Vieux-Québec	Jan-Dec	71.2019	46.8111	-
3280	Neuville	Jan-Dec	46.6965	71.57283	-
3300	Portneuf	Jan-Dec	46.68117	71.87717	-
3335	Deschaillons-sur-Saint-Laurent	Jan-Dec	46.561	72.10583	-
3345	Batiscan	Jan-Dec	46.50033	72.24583	-
3353	Bécancour	Jan-Dec	46.40033	72.3795	-
3360	Trois-Rivières	Jan-Dec	46.3405	72.53917	-
3365	Port-Saint-François	Jun-Dec	46.2725	72.61933	-

3424	Baie-Sainte-Catherine	Jan-Dec	48.1264	69.7297	-
3460	Port-Alfred	Jan-Dec	48.334	70.86917	-
3480	Chicoutimi	Jan-Dec	48.43083	71.05483	-
3980	Qikiqtarjuaq	Oct-Dec	64.031752	67.56052	0A