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Northwest Atlantic



Fisheries Organization

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## SCIENTIFIC COUNCIL MEETING – JUNE 2014

Oceanography and Scientific Data NAFO Report 2013

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### Abstract

The Oceanography and Scientific Data branch (OSD), as the Regional Environmental Data Center for NAFO, is required to provide an annual inventory of environmental data collected in the NAFO area to the NAFO subcommittee for the environment (STACFEN). 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 calendar year 20133 are included. This report will also provide an update on other OSD activities during 20133 and beyond.

It is important for STACFEN to encourage members to send data and information to the designated data center in order to get significant return for NAFO member countries.

### Introduction

OSD has been recognized since 1975 (back then as MEDS) as the Regional Environmental Data Center for ICNAF and subsequently for NAFO. In order for OSD to carry out its responsibility of reporting to the Scientific Council, the Designated National Representatives selected by STACFEN are requested to provide OSD with all marine environmental data collected in the Northwest Atlantic for the preceding years.

Provision of a meaningful report to the Council for its meeting in June 2014 required the submission to OSD of a completed oceanographic inventory form for data collected in 20133, and oceanographic data pertinent to the NAFO area, for all stations occupied in the year prior to 20133. 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 OSD are available to all members on request. Requests can be made by telephone (613) 990-6065, by e-mail to [isdm-qdsi@dfo-mpo.gc.ca](mailto:isdm-qdsi@dfo-mpo.gc.ca), by completing an on-line order form on the OSD web site at <http://http://www.meds-sdmm.dfo-mpo.gc.ca/isdm-qdsi/request-commande/form-eng.asp> or by writing to Services, Oceanography and Scientific Data (OSD), Fisheries and Oceans Canada, 12<sup>th</sup> Floor, 200 Kent St., Ont. Canada K1A 0E6.

## Data Summaries for 2013

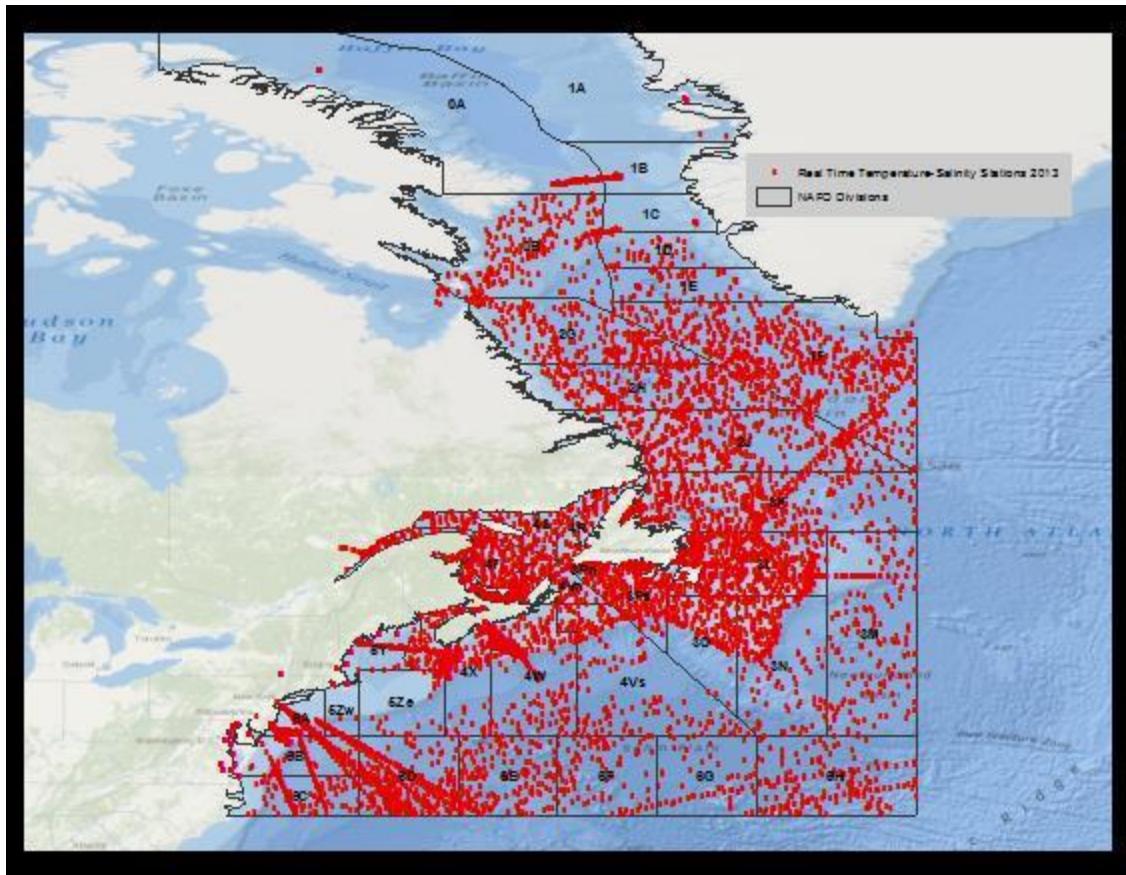
### Near-surface and profile data

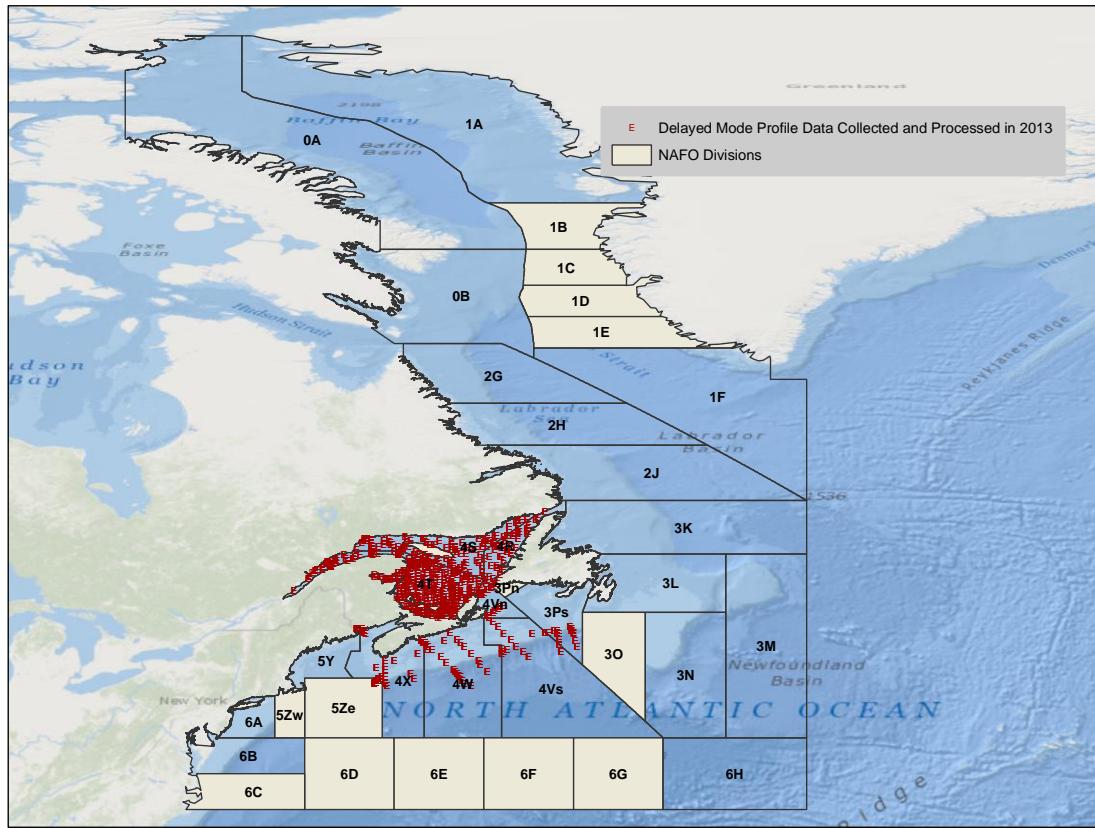
In the NAFO area, a variety of vertical profiles as well as near-surface observations from parameters such as temperature, salinity, oxygen, nutrients and other chemical and biological variables, are being made every year. OSD receives these data either in real-time (on average within one month of observation) via the Global Telecommunications System (GTS) or in delayed-mode directly from responsible institutions, and indirectly from national Cruise Summary Reports and other reports of marine activities.

The following inventories and corresponding maps summarize the ocean subsurface and near-surface data processing activities in 2013 for the NAFO area:

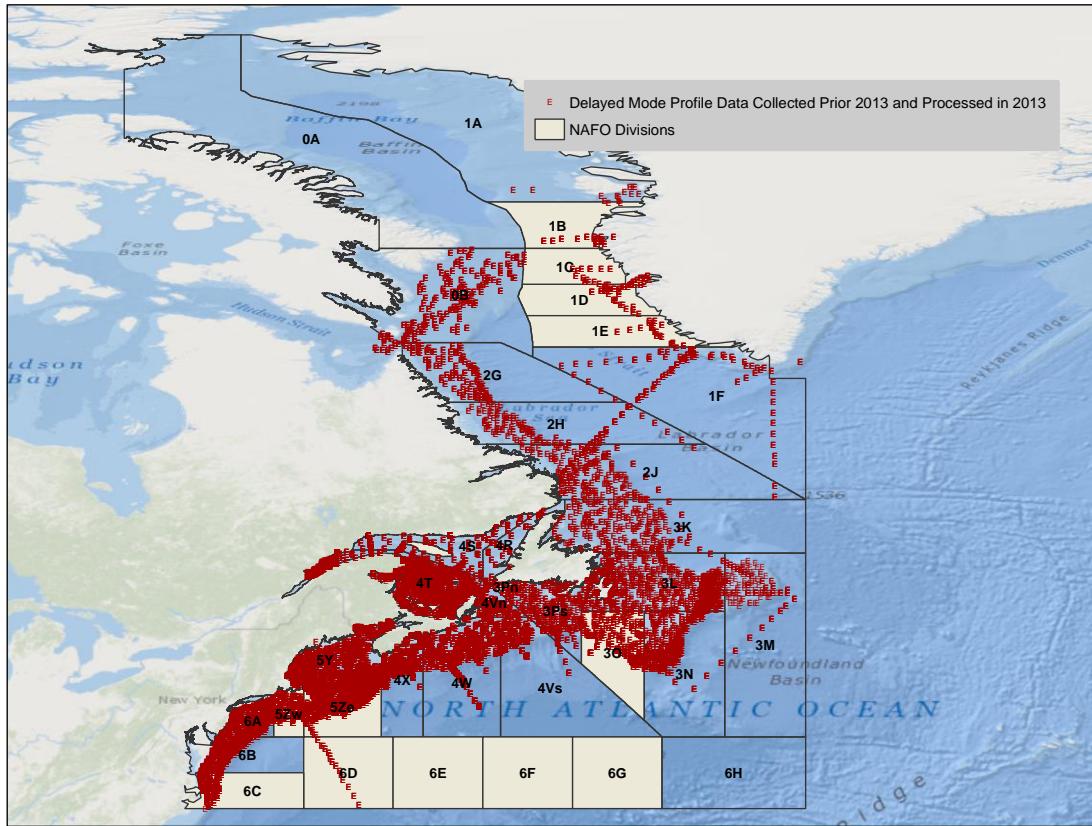
- **Table 1, Figure 1:** **Real-time temperature and/or salinity data collected and processed in 2013**  
TOTAL: 317726 stations
- **Table 2, Figure 2a:** **Delayed-mode temperature and/or salinity profiles collected in 2013**  
TOTAL: 797 stations
- **Table 2, Figure 2b:** **Delayed-mode temperature and/or salinity profiles collected prior to 2013 and processed in 2013**  
TOTAL: 10174 stations
- **Table 3, Figure 3:** **Near-surface underway temperature and/or salinity data collected in 2013**  
TOTAL: 16798 stations

Data processing at OSD 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 check identifies and corrects 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 of subsurface measurements. Each subsurface profile of temperature, salinity and other subsurface variables is also visually inspected using software to plot the data and allow a technician to set quality flags to individual points on a profile. <http://www.meds-sdmm.dfo-mpo.gc.ca/isdm-qdsi/ocean/qc-cq-eng.htm>

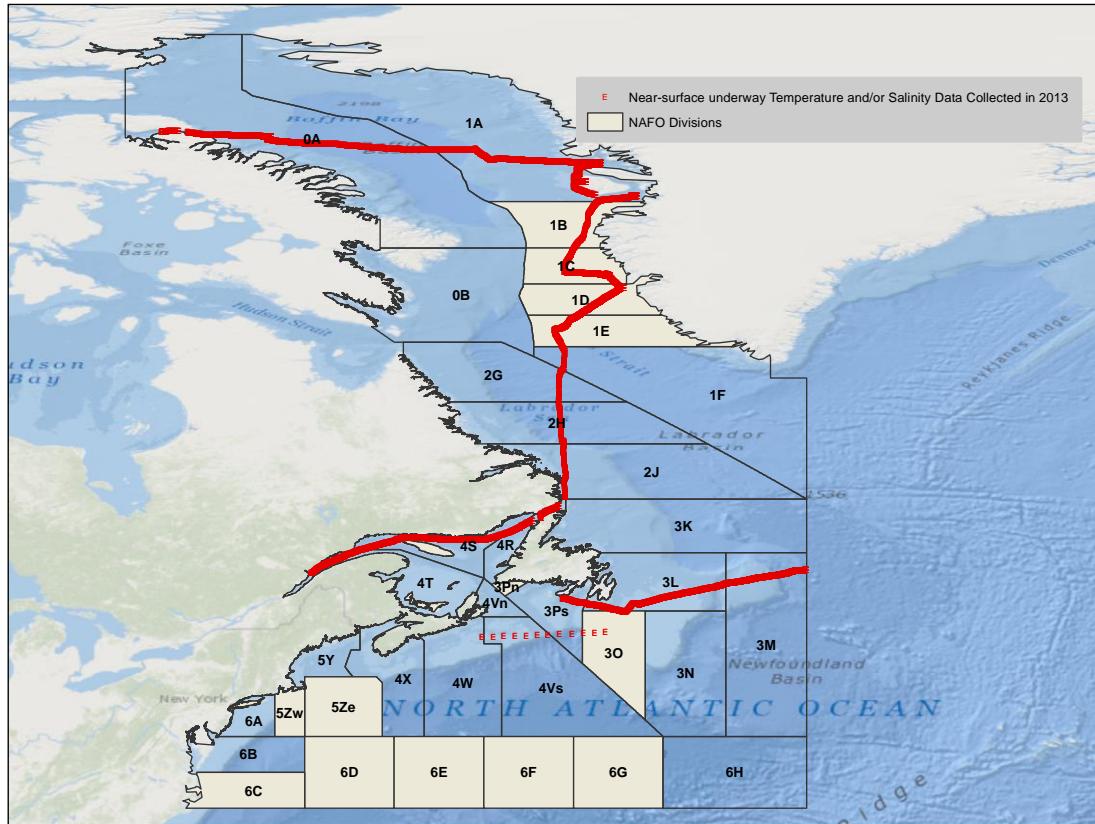




**Figure 2a: Delayed-mode temperature and salinity profiles collected and processed in 2013**  
Total = 797 stations



**Figure 2b: Delayed-mode temperature and salinity profiles collected prior to 2013 and processed in 2013**  
Total = 10174 Stations



**Figure 3: Near-surface underway temperature and/or salinity data collected in 2013**  
Total = 16798 Stations

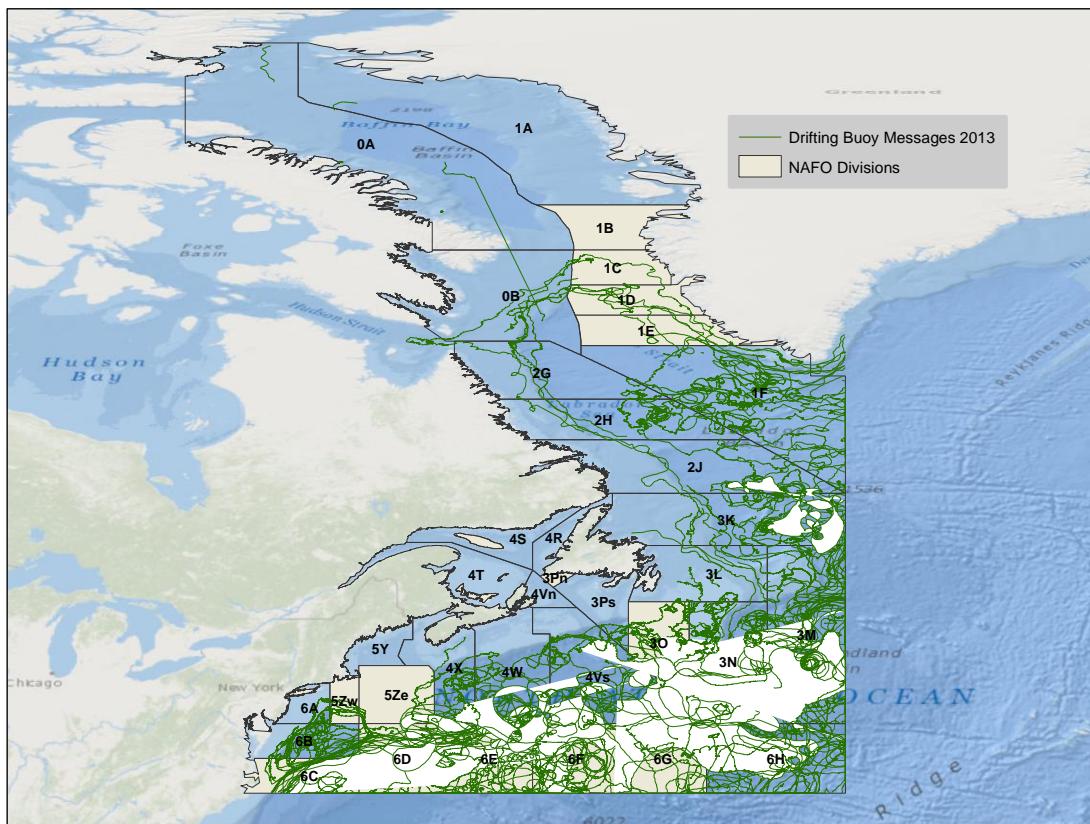
### Surface data from drifting buoys

The following inventory and map summarize OSD drifting buoy data collected and processed in 2013 for the NAFO area:

- **Table 4, Figure 4: Drifting Buoys in the NAFO Area in 2013**  
TOTAL = 335722 messages from 147 buoys

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

The OSD drifting buoy archive contains over 100 million records for the world's oceans, from 1978 to present, and is currently growing at a rate of approximately one million messages per month. A drifting buoy message is comprised of the buoy position and one or more of the following parameters: surface and subsurface water temperature, air pressure and temperature, wind speed and direction.



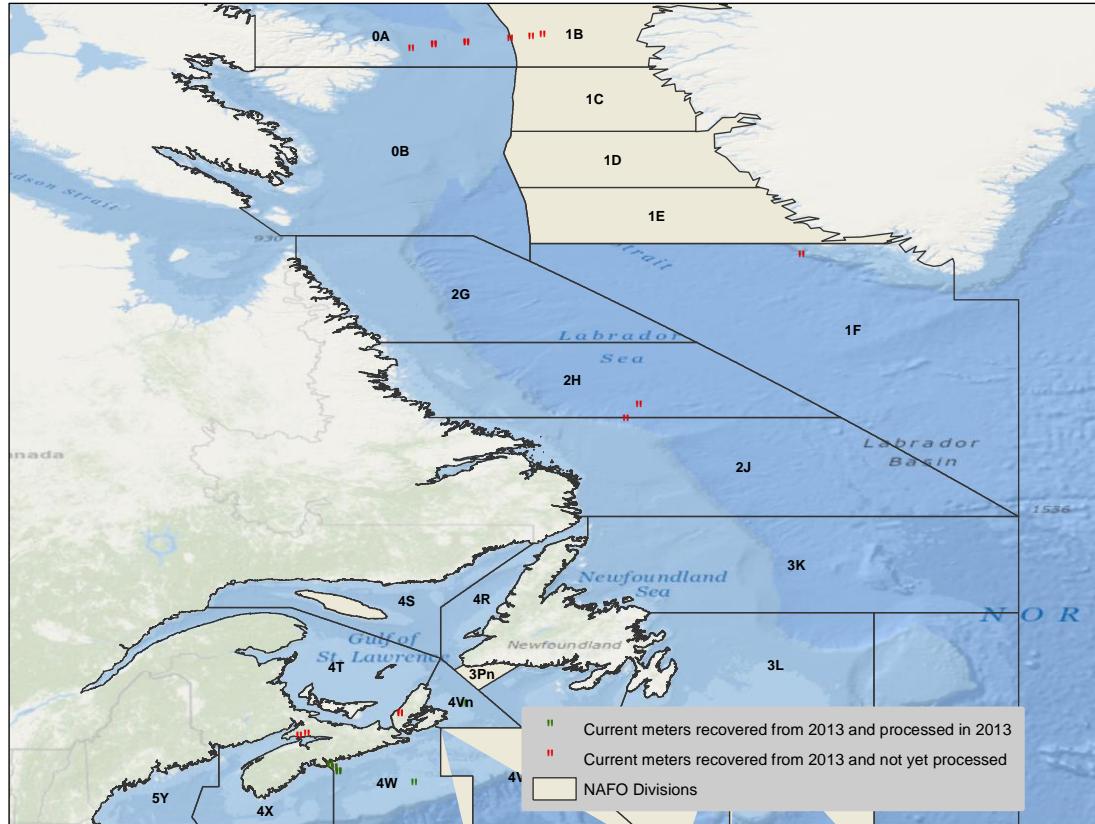
**Figure 4: Drifting Buoy messages 2013**  
Total = 335722 stations, 147 buoys

### Current Meter Data

The following maps and inventory summarizes current meter data deployments / recoveries and data processing in the NAFO area:

- **Table 5, Figure 5: 34 Current meters; 8 recovered and processed in 2013, 26 recovered in 2013 and not yet processed**

Current meters have been deployed in the NAFO area for many years. These data are processed and archived at the Bedford Institute of Oceanography (BIO), Dartmouth, Nova Scotia and are available online at: <http://www.bio.gc.ca/science/data-donnees/base/index-eng.php>



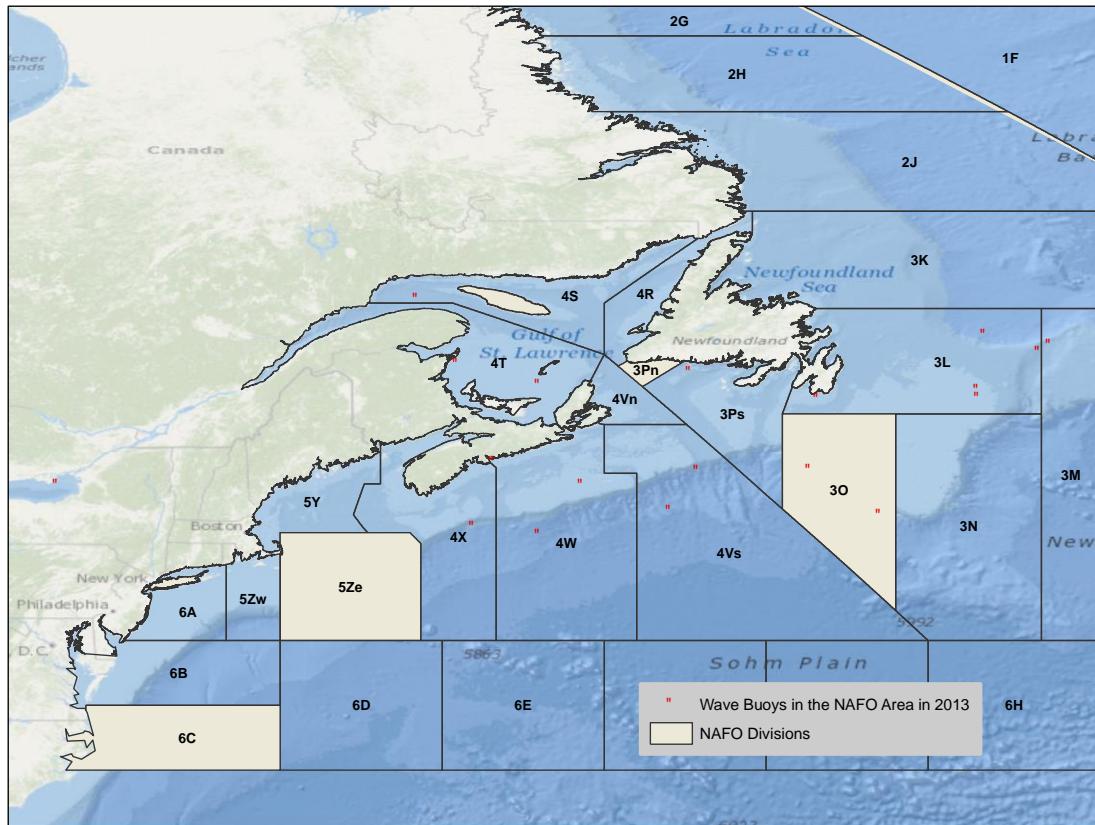
**Figure 5: Current Meters**

## Wave Data

The following map displays where wave data was collected in 2013:

- Figure 6: Wave Buoys in the NAFO Area in 2013**  
 13 Environment Canada meteorological buoys  
 6 Wave Instruments from the Oil and Gas industry

OSD continues to process and archive operational surface wave data on a daily basis from around Canada. Wave spectra, calculated variables such as the significant wave height and peak period, concurrent wind observations, and raw digital time series of water surface elevations are stored. The wave data has quality flags assigned by a combination of automated algorithms and a visual inspection of the spectral shape. During 2013, data was collected from 13 buoys in the NAFO area. All real-time and historical wave data are made available on-line from the OSD web site:  
<http://www.meds-sdmm.dfo-mpo.gc.ca/isdm-qdsi/waves-vagues/index-eng.htm>



**Figure 6: Wave Buoys in the NAFO Area in 2013**  
 Total = 19 Platforms

### Tide and Water level Data

As the designated data center, OSD 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 Canada. There are four CHS regions: Pacific, Central & Arctic, Quebec, and Atlantic region. Data is also exchanged with Environment Canada every year. Over 2 million new observations are archived every month. The historical tide and water level data archive has digital records with the earliest dating back before the turn of the century.

In 2013, data was reported from 50 stations within the NAFO general area. Data are quality controlled by the regional CHS tidal officers and OSD before they become available to the public.

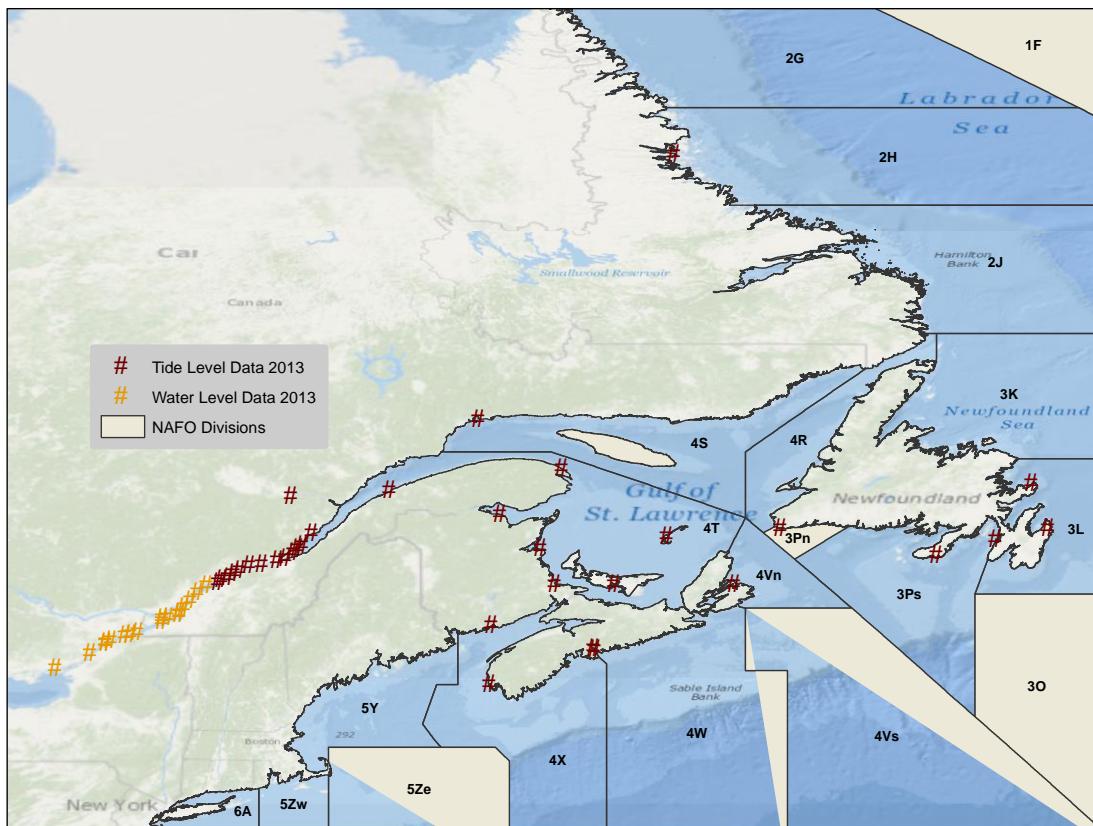
The following map displays where OSD tide and water level data were collected from:

- **Figure 7: Tide and water level data in the NAFO Area in 2013**

Historical water level data and station benchmarks are available on-line from the OSD web site:

<http://www.meds-sdmm.dfo-mpo.gc.ca/isdm-gdsi/twl-mne/index-eng.htm>

Tidal predictions and recent observations are available from the national Tides, Currents and Water Levels web site:  
<http://www.tides.gc.ca>



**Figure 7: Tide and water level data in the NAFO Area in 2013 Total = 50 gauges**

## Activity Updates

### The International Argo Project

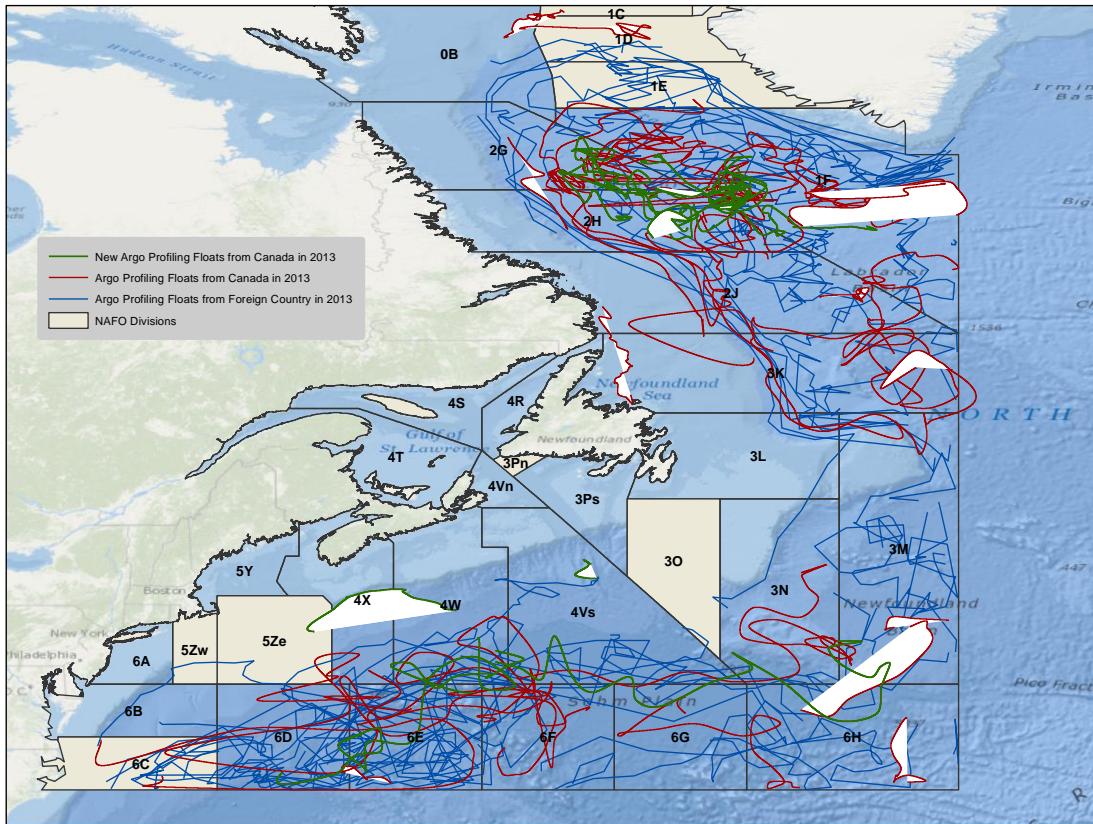
Argo is an international program which started in 2000 with aims to deploy profiling floats on a 3 by 3 degree grid in the oceans of the world. Each profiling float samples and reports both temperature and salinity from 2000 m to the surface every 10 days. Some of the floats also report oxygen. Data are distributed on the Global Telecommunications System (GTS) of WMO within 24 hours of collection and made available on two Global servers located in France and the US. There are currently approximately 3500 Argo profiling floats sampling the world oceans.

OSD's role is to carry out the processing of the data received from Canadian floats, to distribute the data on the GTS and global servers within 24 hours and to perform the delayed mode processing.

OSD maintains a web site <http://www.meds-sdmm.dfo-mpo.gc.ca/isdm-gdsi/argo/index-eng.html> that contains data and information about Canadian floats as well as general information and statistics about the global array. Global information is also available from the Argo Information Centre in Toulouse at [argo.jcommops.org](http://argo.jcommops.org).

During 2013, the Argo Canada program deployed 19 Argo floats in the NAFO region, and they all reported some data in the NAFO area. In addition to these newly deployed floats, 33 Canadian profilers (for a total of 52) were active in NAFO areas in 2012, 2 of which also reported oxygen. Details of which NAFO regions were sampled are given in table 1 ("PROFILE FLOAT", "CANADA" and other countries). Only 43 of 52 floats were still active as of early 2014, 2 of which are reporting oxygen. It is unclear which ones have stopped reporting because of ice coverage or because of a mechanical / power failure, more time is needed to assess which floats have become inactive.

The total number of profiles reported in NAFO areas by Canadian profilers were 895 vs. 1471 for other countries. In addition to be sent to the GTS within 24 hrs, the data were sent to the Argo GDACs as netCDF files in the same timelines. Figure 10 shows all Argo profilers sampling and drifting in the North Atlantic during 2013.



**Figure 8: Canadian Argo profiling floats 2013**

### Atlantic Zone Monitoring Programme (AZMP)

The DFO Atlantic Zone Monitoring Programme activities include regular sampling for 7 fixed stations and 14 standard sections, and research cruises in the AZMP area to collect other physical, chemical and biological data. As part of ISDM' activities in data management, OSD continues to build and maintain the AZMP web site: <http://www.meds-sdmm.dfo-mpo.gc.ca/isdm-gdsi/azmp-pmza/index-eng.html>.

The wealth of data and information on the site includes:

- Physical and chemical data from 1999 to the present such as CTD, bottle and bathythermograph measurements
- Climate indices showing long term trends of physical variables in the water and atmosphere.
  - The surface distribution of temperature at the bottom is presented for NAFO sub-areas 4X, 4W, 4Vn and 4Vs
- Water level data for 9 gauges ranging from 1895 to present
- Graphical representations of biological data (phytoplankton, zooplankton)
- Remote Sensing links for Ocean Colour, SST and Primary Productivity product

The data collected as part of AZMP is also compiled in figures and tables 1 to 3.

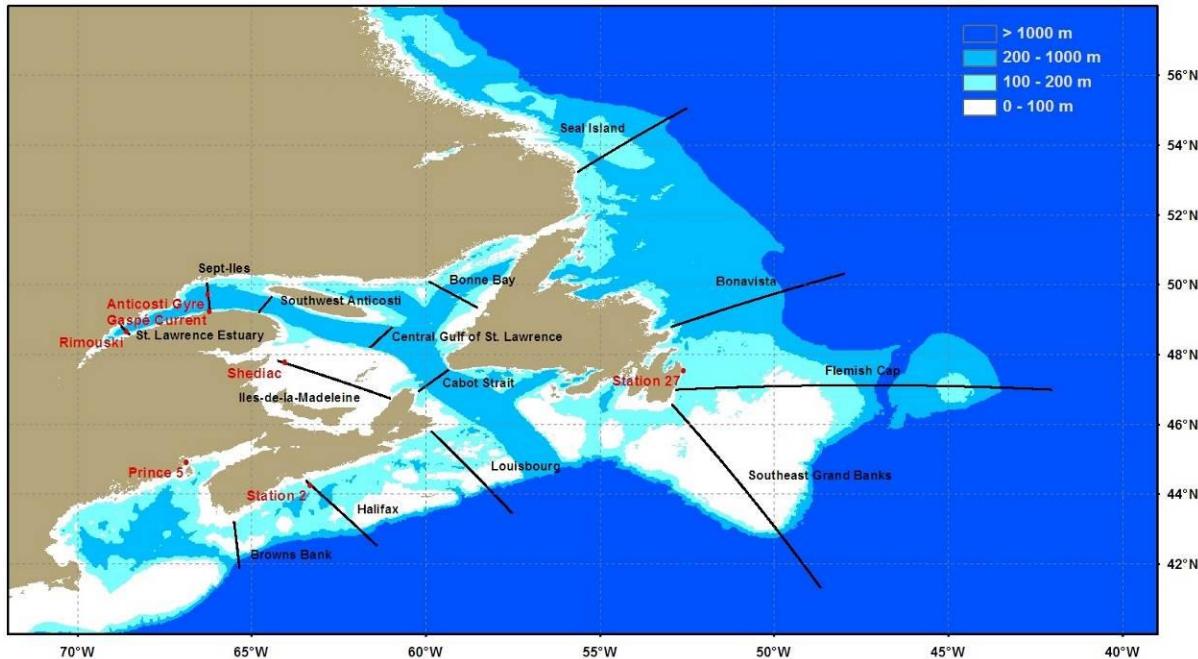


Figure 9: Map of AZMP sections and stations

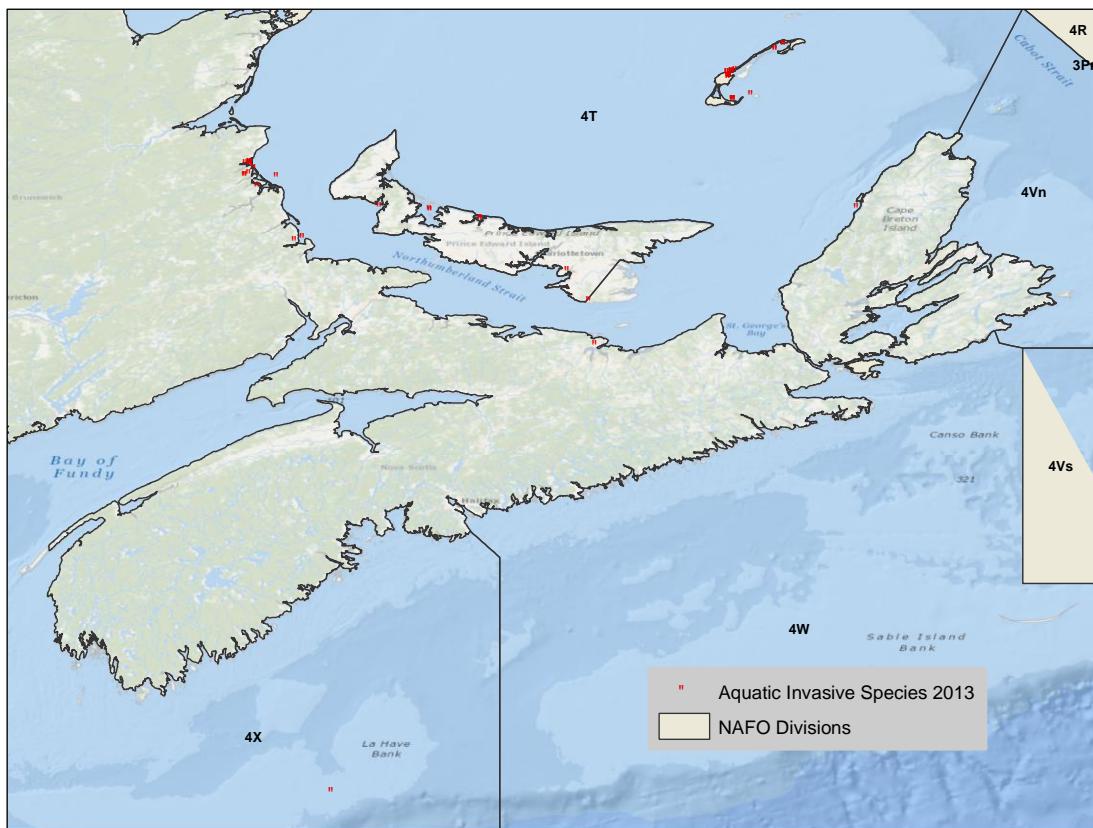
### Aquatic Invasive Species (AIS)

Aquatic Invasive Species are a major threat to Canada's fisheries and aquaculture industry and have been entering Canadian waters for centuries but never as rapidly as today. Every decade, some 15 alien species establish themselves in our coastal or inland waters. In the absence of their natural predators, the most aggressive of them spread rapidly. They can radically alter habitat, rendering it inhospitable for native species. The zebra mussel and sea lamprey are examples of such species that have greatly affected the Great Lakes.

The most effective approach to dealing with this threat involves managing the pathways through which invasive species enter and spread through Canadian waters. For aquatic species these pathways are shipping, recreational and commercial boating, the use of live bait, the aquarium/water garden trade, live food fish, unauthorized introductions and transfers, and canals and water diversions. The shipping pathway is considered the largest single source of new aquatic invasive species. Ballast water that is taken on in foreign ports, for ship stability and safety at sea, is discharged in Canadian waters, along with undesirable "hitchhikers" - foreign species ranging from bacteria to larger organisms.

The Canadian Aquatic Invasive Species database and web application was developed in 2004-5. The main objective was to provide a geo-referenced repository for all invasive species observations gathered in Canada by DFO scientists, provincial departments, other federal or municipal departments and the general public. The second objective was to create a decision making tool that would allow the production of augmented value products that would illustrate trends and movements over time and various locations and thus allow the department to be proactive rather than reactive to observations made.

Currently there is data from the Great Lakes, the Maritimes and some from the Vancouver area. Most of the data are observations of location name, long-lat, species name, date, and any metadata provided.



**Figure 10: Map of Aquatic Invasive Species sighting locations added in 2013**

**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.

**Table 1: Real-time temperature and /or salinity data collected and processed in 2013**

Total: 317726 stations from 189 platforms; a measurement consists of a profile or surface measurement at one place and time.

<u>Platform Name</u>	<u>Country</u>	<u>Call sign / Buoy ID</u>	<u>Reporting Period</u>	<u>BATHY</u>	<u>TESAC</u>	<u>NAFO Subareas</u>
VIRGINIA BEACH 64NM VA	USA	44014	Jan-01 - Mar-06	0	1375	6C
NEW MEADOWS RIVER	USA	44021	Jan-01 - Jan-09	0	209	5Y
BUOY N NORTHEAST CHANNEL	USA	44024	Jan-01 - Dec-31	0	8418	4X
MASS. BAY / STELLWAGEN	USA	44029	Jan-01 - Dec-31	0	8661	5ZW
WESTERN MAINE SHELF	USA	44030	Jan-01 - Dec-31	0	8675	5ZW
CENTRAL MAINE SHELF	USA	44032	Jan-01 - Dec-31	0	8313	5Y
WEST PENOBSCOT BAY	USA	44033	Jan-01 - Dec-31	0	8455	5Y
EASTERN MAINE SHELF	USA	44034	Jan-01 - Dec-31	0	8677	5Y
JORDAN BASIN	USA	44037	Jan-01 - Dec-31	0	6218	5Y
JAMESTOWN	USA	44041	Jan-01 - Dec-31	0	8376	6B
POTOMAC	USA	44042	Jan-01 - Dec-31	0	7790	6B
PATAPSCO	USA	44043	Jan-01 - Dec-31	0	8101	6B
SUSQUEHANNA	USA	44057	Mar-23 - Dec-12	0	6041	6B
STINGRAY POINT	USA	44058	Jan-01 - Dec-31	0	8312	6B
GOOSSES REEF	USA	44062	Jan-01 - Dec-31	0	7925	6B
ANNAPOLIS	USA	44063	Jan-01 - Dec-31	0	8370	6B
FIRST LANDING	USA	44064	Jan-01 - Dec-31	0	8009	6B
GLIDER NG213	USA	48912	Oct-18 - Dec-02	0	2056	6A 6B
GLIDER	UNKNOWN	48914	Dec-02 - Dec-24	0	178	0A 1B
OTN GLIDER	CANADA	48922	Mar-12 - Dec-17	0	2779	4W 4X
OTN GLIDER	CANADA	48923	Jun-26 - Oct-10	0	2824	4W 4X
MAERSK VILNIUS	SINGAPORE	9V8503	Jan-12 - Jun-02	79	0	5ZW 6A 6B 6C 6D
MAERSK VISBY	SINGAPORE	9V8827	May-31 - Oct-04	103	0	5ZW 6A 6B 6D 6E
JPO PISCES	LIBERIA	A8GU8	Aug-07 - Aug-08	27	0	6G 6H
RAILROAD CHESAPEAKE RES	USA	BRIM2	Jan-01 - Dec-31	0	33965	6B
VLADYKOV	CANADA	CFN5960	Apr-23 - Oct-19	0	234	3K 3L 3PS
LEIM	CANADA	CFN6223	May-10 - Sep-24	0	54	4S 4T
SAMBRO	CANADA	CG2613	Aug-21 - Aug-21	0	1	4W
ALFRED NEEDLER	CANADA	CG2683	Mar-25 - Dec-03	18	1100	2J 3K 3L 3N 3O 3PS 3PN 4R 4VN 4VS 4W 4X 5Y 5ZE
F.G. CREED	CANADA	CG3198	Jul-02 - Aug-21	0	9	4S 4T
TELEOST	CANADA	CGCB	Mar-08 - Dec-18	128	948	2H 2J 3K 3L 3M 3N 3O 3PS 4R 4S 4T 4VN 1F 2H 2J 3K 3L 3M 3N 3O
HUDSON	CANADA	CGDG	Apr-05 - Dec-08	55	615	3PS 3PN 4R 4S 4T 4VN 4VS 4W 4X 5ZE
VIOLA M DAVIDSON	CANADA	CGEC	Jan-14 - Dec-17	0	9	4X
M. PERLEY	CANADA	CGMP	May-27 - Sep-30	0	101	4T
SWEET HALL CHESAPEAKE B	USA	CVQV2	Jan-01 - Dec-31	0	33320	6B

MARIA S. MERIAN	GERMANY	DBBT	May-10 - May-12	0	15	2H 2J
TARA	FRANCE	FVNM	Oct-09 - Oct-28	0	29	0A 1A 1C 1E
GOODWIN ISLAND	USA	GDWV2	Jun-24 - Nov-25	0	28	6B
CHESNUT NECK	USA	JCQN4	Jun-04 - Oct-29	0	50	6A
BUOY 126 JACQUES COUSTE	USA	JCTN4	Jan-01 - Dec-31	0	24788	6A
OTTER POINT CREEK	USA	LTQM2	Apr-01 - Dec-05	0	22701	6B
T - WHARF BOTTOM	USA	NAQR1	Jan-01 - Dec-31	0	32109	5ZW
PROFILE FLOAT	FRANCE	Q1901210	Jan-09 - Dec-25	0	34	1F 2G 2H
PROFILE FLOAT	FRANCE	Q1901217	Jan-07 - Dec-23	0	34	1F 2H 2J
PROFILE FLOAT	FRANCE	Q1901218	Jan-10 - Dec-26	0	35	2H 2J 3K 3L 3M 3N 3O
PROFILE FLOAT	USA	Q1901378	Jan-03 - May-07	0	25	5ZE 5ZW 6A 6B 6C 6D
PROFILE FLOAT	USA	Q1901465	Jan-10 - Dec-26	0	33	3O 4VS 4W 6E
PROFILE FLOAT	USA	Q1901534	Jun-02 - Dec-29	0	22	4VS 4W 6C 6D 6E
PROFILE FLOAT	USA	Q1901584	Jan-25 - Dec-31	0	25	6B 6C 6D
PROFILE FLOAT	USA	Q1901597	Aug-08 - Dec-25	0	11	6H
PROFILE FLOAT	USA	Q3900743	Apr-27 - Oct-14	0	18	4W 6C 6D 6E 6F 6G 6H
PROFILE FLOAT	USA	Q4901039	Mar-24 - Mar-24	0	1	6H
PROFILE FLOAT	USA	Q4901057	Aug-22 - Nov-30	0	10	6E
PROFILE FLOAT	CANADA	Q4901078	Apr-26 - Oct-23	0	19	6G 6H
PROFILE FLOAT	CANADA	Q4901111	Oct-16 - Nov-25	0	5	3M
PROFILE FLOAT	CANADA	Q4901127	Jan-03 - Dec-29	0	37	1F 2H 2J 3K 3L 3M
PROFILE FLOAT	CANADA	Q4901129	Mar-31 - Dec-26	0	13	6H
PROFILE FLOAT	CANADA	Q4901139	Jan-04 - Oct-21	0	12	6C 6D 6E
PROFILE FLOAT	CANADA	Q4901140	Feb-17 - Apr-28	0	8	6D 6E
PROFILE FLOAT	CANADA	Q4901149	Jan-08 - Dec-24	0	36	4VS 4W 4X 6D 6E 6F
PROFILE FLOAT	CANADA	Q4901150	Jan-03 - Mar-14	0	8	3M 6H
PROFILE FLOAT	CANADA	Q4901152	Feb-06 - Dec-23	0	31	1F 2J 3K
PROFILE FLOAT	CANADA	Q4901154	Jan-06 - Apr-26	0	12	2J
PROFILE FLOAT	CANADA	Q4901157	Jan-05 - Jan-15	0	2	1F
PROFILE FLOAT	CANADA	Q4901159	Jan-06 - Jun-15	0	12	1F
PROFILE FLOAT	CANADA	Q4901160	Jan-04 - Dec-30	0	35	2J 3K
PROFILE FLOAT	CANADA	Q4901161	Jan-06 - Feb-15	0	5	3K
PROFILE FLOAT	CANADA	Q4901162	Jan-05 - Dec-31	0	36	1F 2H 2J
PROFILE FLOAT	CANADA	Q4901163	Jan-10 - Mar-11	0	7	2G 2H
PROFILE FLOAT	CANADA	Q4901164	Jan-10 - Dec-26	0	36	1C 1D
PROFILE FLOAT	CANADA	Q4901166	Jan-09 - Jun-08	0	15	1F
PROFILE FLOAT	CANADA	Q4901167	Jan-03 - Dec-29	0	37	1F
PROFILE FLOAT	CANADA	Q4901170	Jan-09 - Aug-27	0	24	1F 2G 2H
PROFILE FLOAT	CANADA	Q4901171	Jan-04 - Apr-24	0	12	1D
PROFILE FLOAT	CANADA	Q4901172	Jan-03 - Sep-20	0	27	2G 2H 2J 3K 3L 3M
PROFILE FLOAT	CANADA	Q4901173	Jan-15 - Dec-31	0	28	2J 3K

PROFILE FLOAT	CANADA	Q4901192	Jan-05 - May-05	0	9	1F
PROFILE FLOAT	CANADA	Q4901193	Jan-04 - Feb-13	0	5	1F
PROFILE FLOAT	CANADA	Q4901195	Jan-02 - Dec-29	0	35	1E 1F 2G 2H 2J 3K
PROFILE FLOAT	CANADA	Q4901196	Jan-07 - Jun-06	0	15	6E 6F
PROFILE FLOAT	CANADA	Q4901198	Jan-03 - Dec-30	0	32	1F 2G 2H
PROFILE FLOAT	CANADA	Q4901199	Jan-06 - Dec-22	0	14	4X 5ZE 6C 6D 6E
PROFILE FLOAT	CANADA	Q4901200	Jan-04 - Dec-30	0	35	1F 2G
PROFILE FLOAT	CANADA	Q4901201	Jan-06 - Dec-22	0	34	3M 3N 4VS 6G
PROFILE FLOAT	CANADA	Q4901202	Jan-05 - Dec-31	0	36	1E 1F 2G 2H 2J
PROFILE FLOAT	USA	Q4901217	Jan-09 - Feb-08	0	4	3M
PROFILE FLOAT	USA	Q4901218	Aug-20 - Dec-18	0	8	3M
PROFILE FLOAT	USA	Q4901219	Jan-27 - Jun-16	0	14	3M 3N
PROFILE FLOAT	USA	Q4901278	Jan-10 - Dec-26	0	24	6D 6E
PROFILE FLOAT	USA	Q4901290	Jan-09 - Jan-09	0	1	6H
PROFILE FLOAT	USA	Q4901297	Oct-17 - Dec-16	0	4	6H
PROFILE FLOAT	USA	Q4901298	Jan-01 - Dec-17	0	26	6D 6E 6F
PROFILE FLOAT	USA	Q4901404	Jan-02 - Jan-18	0	4	1D
PROFILE FLOAT	GERMANY	Q4901411	Feb-08 - Dec-25	0	29	3M
PROFILE FLOAT	GERMANY	Q4901416	Oct-14 - Nov-03	0	3	1F
PROFILE FLOAT	GERMANY	Q4901417	May-17 - Dec-23	0	22	1F
PROFILE FLOAT	GERMANY	Q4901418	May-21 - Dec-27	0	22	1F
PROFILE FLOAT	GERMANY	Q4901420	Jul-01 - Jul-01	0	1	3M
PROFILE FLOAT	USA	Q4901448	Jan-03 - Dec-29	0	32	4W 6B 6D 6E 6F
PROFILE FLOAT	USA	Q4901450	Aug-21 - Sep-10	0	3	6E 6F
PROFILE FLOAT	USA	Q4901453	Jan-22 - Dec-28	0	35	4W 4X 5ZE 6D 6E
PROFILE FLOAT	USA	Q4901461	May-31 - Dec-26	0	23	6C 6D 6E
PROFILE FLOAT	USA	Q4901462	Jun-09 - Nov-16	0	9	6D
PROFILE FLOAT	USA	Q4901463	Jul-18 - Jul-28	0	2	6D
PROFILE FLOAT	USA	Q4901464	Jun-04 - Dec-29	0	18	4VS 4W 6D 6E
PROFILE FLOAT	USA	Q4901465	Jun-04 - Jun-18	0	16	6D
PROFILE FLOAT	USA	Q4901470	Aug-08 - Dec-26	0	16	6G 6H
PROFILE FLOAT	USA	Q4901471	Aug-09 - Aug-09	0	1	6H
PROFILE FLOAT	USA	Q4901591	Oct-10 - Dec-22	0	9	6D 6E
PROFILE FLOAT	GERMANY	Q4901680	Mar-31 - Dec-26	0	17	3K 3L 3M
PROFILE FLOAT	GERMANY	Q4901681	Jan-06 - Dec-22	0	36	1F 2G 2H 2J
PROFILE FLOAT	CANADA	Q4901743	May-27 - Aug-25	0	10	4VS 4W 4X 6E
PROFILE FLOAT	CANADA	Q4901744	May-14 - Dec-29	0	24	2G 2H
PROFILE FLOAT	CANADA	Q4901745	May-24 - Dec-30	0	22	3M 3N 4VS 4W 6F 6G 6H
PROFILE FLOAT	CANADA	Q4901746	May-15 - Dec-31	0	19	1F 2G 2H
PROFILE FLOAT	CANADA	Q4901747	May-19 - Dec-25	0	15	1F
PROFILE FLOAT	CANADA	Q4901748	May-15 - Dec-31	0	16	1F

PROFILE FLOAT	CANADA	Q4901749	May-26 - Oct-13	0	10	4W 4X 5ZE
PROFILE FLOAT	CANADA	Q4901750	May-19 - Dec-26	0	16	1F 2H
PROFILE FLOAT	CANADA	Q4901751	May-14 - Dec-30	0	24	1F 2G 2H
PROFILE FLOAT	CANADA	Q4901752	Oct-08 - Dec-27	0	8	1F
PROFILE FLOAT	CANADA	Q4901753	May-15 - Dec-30	0	24	1F 2G 2H
PROFILE FLOAT	CANADA	Q4901754	May-14 - Jun-04	0	3	1F 2G 2H
PROFILE FLOAT	CANADA	Q4901755	May-26 - Nov-22	0	19	4W 6D 6E 6F
PROFILE FLOAT	CANADA	Q4901756	May-26 - May-26	0	1	4W
PROFILE FLOAT	CANADA	Q4901758	Oct-12 - Dec-11	0	3	4VS
PROFILE FLOAT	CANADA	Q4901759	May-13 - Jul-22	0	8	2H
PROFILE FLOAT	CANADA	Q4901761	Sep-27 - Sep-27	0	1	4VS
PROFILE FLOAT	FRANCE	Q5902269	Jan-05 - Dec-31	0	36	1E 1F 2G 2H 2J
PROFILE FLOAT	FRANCE	Q5902297	May-24 - Dec-30	0	22	1E 1F
PROFILE FLOAT	FRANCE	Q5902304	Nov-24 - Dec-14	0	2	1F
PROFILE FLOAT	USA	Q5903377	Jan-04 - Dec-28	0	61	3N 4VS 6G 6H
PROFILE FLOAT	USA	Q5903387	Jan-07 - Dec-28	0	37	1F 2G 2H
PROFILE FLOAT	USA	Q5903390	Jan-09 - Dec-31	0	36	0B 1D 1E 1F 2G
PROFILE FLOAT	USA	Q5903392	Jan-10 - Apr-11	0	10	1F 2J 3K
PROFILE FLOAT	USA	Q5903393	Apr-22 - Dec-22	0	24	1F 2J
PROFILE FLOAT	USA	Q5903395	Jan-07 - Jan-07	0	1	1F
PROFILE FLOAT	USA	Q5903396	Jan-08 - Aug-20	0	22	2J 3K 3L 3M
PROFILE FLOAT	USA	Q5903397	Jan-08 - Dec-30	0	36	1F 2H 2J
PROFILE FLOAT	USA	Q5903594	Jan-04 - Dec-29	0	60	3N 4VS 4W 6D 6E 6F 6G 6H
PROFILE FLOAT	USA	Q5903890	Dec-22 - Dec-27	0	2	6D
PROFILE FLOAT	USA	Q5903996	Jan-10 - Apr-24	0	10	6C 6D
PROFILE FLOAT	USA	Q5903997	Sep-15 - Dec-28	0	31	4W 4X 6C 6D 6E
PROFILE FLOAT	GERMANY	Q6900514	Jan-03 - May-18	0	9	3M 6H
PROFILE FLOAT	GERMANY	Q6900557	Jan-12 - Jul-11	0	13	2J 3K 3L 3M
PROFILE FLOAT	GERMANY	Q6900558	Jan-13 - Oct-25	0	20	2G 2H 2J 3K 3L 3M
PROFILE FLOAT	GERMANY	Q6900559	Mar-05 - Apr-04	0	2	1F
PROFILE FLOAT	GERMANY	Q6900562	Jan-08 - Nov-04	0	21	1D 1E 1F
PROFILE FLOAT	GERMANY	Q6900579	Aug-28 - Sep-12	0	2	1F
PROFILE FLOAT	GERMANY	Q6900582	May-14 - Dec-25	0	14	3M
PROFILE FLOAT	UK	Q6900603	Jan-04 - Mar-25	0	7	1F
PROFILE FLOAT	UK	Q6900613	Jan-09 - Dec-25	0	31	1D 1E 1F
PROFILE FLOAT	UK	Q6900614	Apr-30 - Sep-07	0	14	1F
PROFILE FLOAT	UK	Q6900617	Jun-02 - Jun-02	0	1	1F
PROFILE FLOAT	FRANCE	Q6900638	Jan-03 - Dec-29	0	38	3M 3N 4VS 6F 6G 6H
PROFILE FLOAT	FRANCE	Q6900640	Jan-05 - Apr-25	0	11	0B 1D 1E 2G
PROFILE FLOAT	IRELAND	Q6900648	Jan-05 - Jan-25	0	4	2H

PROFILE FLOAT	NETHERLANDS	Q6900753	Jan-09 - Aug-27	0	16	OB 1D 1E 1F
PROFILE FLOAT	NETHERLANDS	Q6900754	Oct-16 - Nov-05	0	3	1F
PROFILE FLOAT	NETHERLANDS	Q6900755	Jan-20 - Dec-06	0	25	1F 2G 2H 2J 3K 3L 3M
PROFILE FLOAT	NETHERLANDS	Q6900757	Feb-19 - Oct-07	0	17	1F
PROFILE FLOAT	NETHERLANDS	Q6900758	Jun-30 - Dec-07	0	14	1F
PROFILE FLOAT	NETHERLANDS	Q6900759	May-11 - May-11	0	1	1F
PROFILE FLOAT	GERMANY	Q6900865	Jan-09 - May-09	0	5	6D 6E
PROFILE FLOAT	FRANCE	Q6900965	Jan-05 - Feb-04	0	4	2G
PROFILE FLOAT	FRANCE	Q6900973	Dec-01 - Dec-31	0	4	1F
PROFILE FLOAT	FRANCE	Q6901001	Jan-07 - Dec-23	0	36	2G 2H 2J 3K 3L 3M
PROFILE FLOAT	FRANCE	Q6901030	Apr-22 - Dec-28	0	27	1E 1F
PROFILE FLOAT	GERMANY	Q6901047	Jan-03 - Jul-02	0	19	6F 6G 6H
PROFILE FLOAT	GERMANY	Q6901064	Jan-01 - Apr-20	0	11	1F 2J
PROFILE FLOAT	GERMANY	Q6901085	Jan-13 - Dec-29	0	32	4W 6D 6E 6F
PROFILE FLOAT	GERMANY	Q6901217	Jan-04 - Dec-30	0	35	4VS 4W 4X 6D 6E 6F
PROFILE FLOAT	GERMANY	Q6901218	Mar-17 - May-16	0	7	6F 6G
PROFILE FLOAT	FRANCE	Q6901521	Dec-27 - Dec-27	0	1	1F
PROFILE FLOAT	FRANCE	Q6901523	Dec-07 - Dec-27	0	2	1F
PROFILE FLOAT	FRANCE	Q6901524	Dec-06 - Dec-16	0	2	1F
PROFILE FLOAT	FRANCE	Q6901525	Dec-02 - Dec-27	0	5	2G 2H
PROFILE FLOAT	FRANCE	Q6901527	Dec-27 - Dec-27	0	1	2H
SCOTTON LANDING	USA	SCLD1	Jan-16 - May-28	0	6700	6B
UNKNOWN/INCONNUE	UNKNOWN	SHIP	Jan-02 - Oct-23	11	243	3L 3PS 4R 4S 4T 4VN 4W 4X
UNKNOWN/INCONNUE	UNKNOWN	SHIP	Nov-12 - Dec-19	0	12	4T 4W 4X
REYKJAFOSS	ANTIGUA	V2FB6	Jan-05 - Sep-06	147	0	1F 2J 3K 3L 4X 5Y 5ZE 5ZW 6B
OLEANDER	USA	V7SX3	Jan-20 - Dec-08	230	0	5ZW 6A 6B 6D
AQVIQ	CANADA	VOLT	Jul-17 - Aug-17	3	249	0B 1C 2G 2H
OOCL MONTREAL	CHINA	VRYO3	Feb-18 - Feb-18	4	0	3K 3L
MENAUHANT WAQUOIT BAY USA		WAQM3	Feb-19 - Dec-31	0	27280	5ZW
SEALAND NAVIGATOR	USA	WPGK	Feb-28 - Dec-14	121	0	6A 6B 6C
OREGON II	USA	WTDO	Aug-03 - Aug-03	0	1	6C
GORDON GUNTER	USA	WTEO	Jul-19 - Sep-12	0	15	6B 6C
TMM SINALOA	BERMUDA	ZCDJ6	Jun-01 - Jun-03	37	0	6F 6G 6H

**Table 2: Delayed mode profile data processed in 2013**

Total: 10971 stations from 127 cruises/missions; a station consists of a profile measurement at one place and time.

<u>Platform Name</u>	<u>Country</u>	<u>Cruise Number</u>	<u>Year</u>	<u>Reporting Period</u>	<u>BOTTLE</u>	<u>CTD</u>	<u>BATHY-THERMOGRAPH</u>	<u>TOW CTD</u>	<u>NAFO Subareas</u>
VARIOUS SMALL VESSELS	CANADA	18VA13668	2013	May-08 - May-27	0	2	0	0	4T
VARIOUS SMALL VESSELS	CANADA	18VA13023	2013	Jun-04 - Aug-14	0	21	0	0	4T
TELEOST	CANADA	18TL13118	2013	Sep-05 - Sep-27	0	132	0	0	4T 4VN
TELEOST	CANADA	18TL13030	2013	Aug-04 - Aug-31	0	96	0	0	4R 4S 4T 4VN
TELEOST	CANADA	18TL13019	2013	Jun-02 - Jun-21	46	125	0	0	4R 4S 4T 4VN
M. PERLEY	CANADA	18MU13126	2013	Jul-17 - Aug-13	0	91	0	0	4T
M. PERLEY	CANADA	18MU13036	2013	Sep-22 - Sep-30	0	10	0	0	4T
LEIM	CANADA	18LO13025	2013	Aug-07 - Aug-16	0	23	0	0	4T
LEIM	CANADA	18LO13009	2013	May-10 - May-12	0	4	0	0	4T
LEIM	CANADA	18LO13008	2013	May-17 - May-24	0	26	0	0	4S
HUDSON	CANADA	18HU13004	2013	Apr-05 - Apr-26	0	96	0	0	3PS 4R 4VN 4VS 4W 4X 5ZE
HELICOPTER	CANADA	18HE13004	2013	Mar-05 - Mar-14	0	92	0	0	4R 4S 4T 4VN
F. G. CREED	CANADA	18FC13018	2013	Aug-11 - Aug-21	0	6	0	0	4S 4T
F. G. CREED	CANADA	18FC13017	2013	Jul-02 - Jul-07	0	3	0	0	4T
BELUGA II	CANADA	18BP13005	2013	Apr-09 - Oct-17	24	0	0	0	4T
VLADYKOV	CANADA	18VD12007	2012	Oct-21 - Oct-27	0	0	5	0	3L
VLADYKOV	CANADA	18VD12006	2012	Sep-28 - Oct-09	0	24	0	0	3L
VLADYKOV	CANADA	18VD12005	2012	Sep-21 - Sep-24	0	15	0	0	3L
VLADYKOV	CANADA	18VD12004	2012	Sep-08 - Sep-08	0	6	0	0	3K
VLADYKOV	CANADA	18VD12003	2012	Aug-15 - Aug-20	0	16	0	0	3L
VARIOUS SMALL VESSELS	CANADA	18VA12671	2012	Jun-12 - Aug-09	0	17	0	0	4T
VARIOUS SMALL VESSELS	CANADA	18VA12670	2012	Jul-10 - Sep-24	0	307	0	0	4T
VARIOUS SMALL VESSELS	CANADA	18VA12669	2012	Jan-16 - Dec-20	35	3	0	0	4X
VARIOUS SMALL VESSELS	CANADA	18VA12668	2012	Apr-20 - Nov-20	23	0	0	0	4T
VARIOUS SMALL VESSELS	CANADA	18VA12666	2012	Jan-23 - Dec-13	27	2	0	0	4W
VARIOUS SMALL VESSELS	CANADA	18VA12107	2012	Jul-20 - Aug-24	0	0	2	265	OB 1C 1D 2G 3L
TELEOST	CANADA	18TL12112	2012	Dec-12 - Dec-21	0	2	1	28	3K 3L
TELEOST	CANADA	18TL12111	2012	Mar-04 - Mar-04	0	1	0	0	3L
TELEOST	CANADA	18TL12110	2012	Nov-28 - Dec-09	0	0	0	63	3K 3L
TELEOST	CANADA	18TL12109	2012	Nov-15 - Nov-27	0	0	1	61	2J 3K
TELEOST	CANADA	18TL12108	2012	Nov-01 - Nov-12	0	0	0	60	2J 3K
TELEOST	CANADA	18TL12107	2012	Oct-18 - Oct-29	0	0	3	81	2H 2J
TELEOST	CANADA	18TL12106	2012	Oct-03 - Oct-14	0	1	0	40	2H 2J 3L
TELEOST	CANADA	18TL12105	2012	Sep-05 - Sep-26	165	0	0	0	4T 4VN
TELEOST	CANADA	18TL12104	2012	Jul-09 - Jul-24	0	0	48	0	2H 2J 3K 3L 3M
TELEOST	CANADA	18TL12103	2012	May-10 - May-29	0	2	51	41	3K 3L

TELEOST	CANADA	18TL12102	2012	May-01 - May-09	0	7	1	0	3L 3PS
TELEOST	CANADA	18TL12101	2012	Apr-12 - Apr-29	0	0	35	0	3K 3L 3M 3N 3O 3PS
TELEOST	CANADA	18TL12100	2012	Jan-07 - Jan-07	0	1	0	0	3L
OPILIO	CANADA	18OP12026	2012	Jul-17 - Aug-11	0	105	0	0	4T
SHAMOOK	CANADA	18OK12611	2012	Jun-18 - Jun-18	0	1	0	0	3L
SHAMOOK	CANADA	18OK12610	2012	May-31 - Jun-13	0	29	0	0	3PS
SHAMOOK	CANADA	18OK12609	2012	May-16 - May-24	0	10	0	0	3PS
SHAMOOK	CANADA	18OK12607	2012	Apr-21 - Apr-27	0	15	0	0	3L
ALFRED NEEDLER	CANADA	18NE12428	2012	Nov-28 - Dec-05	0	7	0	20	3K 3L
ALFRED NEEDLER	CANADA	18NE12427	2012	Nov-15 - Nov-26	0	1	1	69	3L
ALFRED NEEDLER	CANADA	18NE12426	2012	Oct-31 - Nov-12	0	2	0	70	3L 3N
ALFRED NEEDLER	CANADA	18NE12425	2012	Oct-18 - Oct-30	0	2	1	54	3L 3N
ALFRED NEEDLER	CANADA	18NE12424	2012	Sep-29 - Oct-13	0	1	1	89	3L 3N 3O 3PS
ALFRED NEEDLER	CANADA	18NE12421	2012	Jun-13 - Jun-20	0	1	1	67	3L 3O 3PS
ALFRED NEEDLER	CANADA	18NE12420	2012	May-31 - Jun-12	0	2	3	102	3L 3N 3O
ALFRED NEEDLER	CANADA	18NE12419	2012	May-16 - May-27	0	0	2	95	3L 3N 3O
ALFRED NEEDLER	CANADA	18NE12418	2012	May-02 - May-04	0	0	1	6	3L 3O
ALFRED NEEDLER	CANADA	18NE12417	2012	Apr-19 - May-01	0	1	8	107	3L 3O 3PS
ALFRED NEEDLER	CANADA	18NE12416	2012	Apr-04 - Apr-16	0	0	2	98	3PN 3PS 4R
ALFRED NEEDLER	CANADA	18NE12415	2012	Mar-30 - Apr-03	0	1	0	23	3L 3PS
ALFRED NEEDLER	CANADA	18NE12022	2012	Jul-04 - Aug-05	261	438	0	0	4VN 4VS 4W 4X 5Y 5ZE
ALFRED NEEDLER	CANADA	18NE12002	2012	Feb-11 - Mar-18	136	90	0	0	4W 4X 5Y 5ZE
MARTHA L. BLACK	CANADA	18MF12001	2012	Jun-01 - Jun-12	149	0	0	0	1F 2H 2J 4W
HUDSON	CANADA	18HU12112	2012	Nov-20 - Dec-09	0	1	41	0	2J 3K 3L 3M 3N 3PS
HUDSON	CANADA	18HU12044	2012	Oct-20 - Nov-10	134	146	0	0	3PN 3PS 4R 4S 4T 4VN
HUDSON	CANADA	18HU12042	2012	Sep-24 - Oct-15	277	92	0	0	3O 3PS 4R 4VN 4VS 4W 4X 5ZE
CALANUS	CANADA	18CN12003	2012	Sep-21 - Oct-05	0	19	0	0	4T
BOSTON WHALER	CANADA	18BW12029	2012	Jun-01 - Oct-26	0	3	0	0	3L
BOSTON WHALER	CANADA	18BW12028	2012	Dec-03 - Dec-13	0	8	0	0	3L 3PS
BOSTON WHALER	CANADA	18BW12027	2012	Jun-19 - Aug-10	0	15	0	0	3L 3PS
BELUGA II	CANADA	18BP12009	2012	Apr-03 - Nov-14	25	0	0	0	4T
ANNE HARVEY	CANADA	18AV12003	2012	Mar-04 - Mar-24	0	0	32	0	2J 3K 3L
MULTIPLE SHIPS	CANADA	189012002	2012	Feb-29 - Aug-30	13	4	0	0	4S 4T
WALTHER HERWIG III	GERMANY	06NI12359	2012	Oct-23 - Nov-04	0	64	0	0	1C 1D 1E 1F
VIZCONDE DE EZA	SPAIN	29VE12030	2012	Aug-05 - Aug-18	0	69	0	0	3L 3M 3N

VIZCONDE DE EZA	SPAIN	29VE12026	2012	Jun-26 - Jul-23	0	32	0	0	3M
VIZCONDE DE EZA	SPAIN	29VE12003	2012	Jun-03 - Jun-21	0	120	0	0	3L 3N 3O
UNDAUNTED	USA	31UN12001	2012	May-12 - May-17	0	6	0	0	6C
DELAWARE II	USA	316G12005	2012	May-01 - May-21	0	80	0	0	4X 5ZE
DELAWARE II	USA	316G12003	2012	Mar-15 - Mar-25	0	76	0	0	5ZE 5ZW
DELAWARE II	USA	316G12002	2012	Feb-03 - Feb-21	0	170	0	0	4X 5Y 5ZE 5ZW 6A 6B 6C
DELAWARE II	USA	316G12001	2012	Jan-19 - Jan-26	0	29	0	0	5ZW 6A 6B 6C
HENRY B. BIGELOW	USA	33HH12006	2012	Sep-07 - Nov-10	0	364	0	0	4X 5Y 5ZE 5ZW 6A 6B 6C
HENRY B. BIGELOW	USA	33HH12005	2012	Aug-07 - Aug-24	0	248	0	0	4X 5Y 5ZE 5ZW 6A 6B 6C
HENRY B. BIGELOW	USA	33HH12002	2012	May-31 - Jun-13	0	120	0	0	4X 5ZE 5ZW 6A 6B 6C
HENRY B. BIGELOW	USA	33HH12001	2012	Feb-29 - May-04	0	374	0	0	4X 5Y 5ZE 5ZW 6A 6B 6C
HUGH R. SHARP	USA	33H512001	2012	Jun-16 - Jul-06	0	51	0	0	5ZE 5ZW 6A
PISCES	USA	334B12007	2012	Oct-26 - Nov-14	0	169	0	0	4X 5Y 5ZE 5ZW 6A 6B 6C
PISCES	USA	334B12006	2012	Sep-14 - Oct-18	0	162	0	0	4X 5Y 5ZE 5ZW
VARIOUS SMALL VESSELS	CANADA	18VA11668	2011	May-26 - Nov-29	4	0	0	0	4T
VARIOUS SMALL VESSELS	CANADA	18VA11667	2011	Jan-05 - Dec-21	0	70	0	0	4W 4X
VARIOUS SMALL VESSELS	CANADA	18VA11666	2011	Jan-17 - Nov-07	0	5	0	0	4W 5Y
TELEOST	CANADA	18TL11032	2011	Jun-03 - Jun-20	0	122	0	0	4R 4S 4T 4VN
ALFRED NEEDLER	CANADA	18NE11025	2011	Jul-05 - Aug-08	0	257	0	0	4VN 4VS 4W 4X 5Y 5ZE
HUDSON	CANADA	18HU11111	2011	Nov-20 - Dec-10	75	0	0	0	2J 3K 3L 3M 3N 3O 3PS
HUDSON	CANADA	18HU11004	2011	Apr-07 - Apr-22	0	73	0	0	3PS 4R 4VN 4VS 4W 4X 5ZE
F. G. CREED	CANADA	18FC11019	2011	Oct-18 - Oct-31	0	4	0	0	4R 4S
VIOLA M. DAVIDSON	CANADA	18AU11014	2011	Aug-02 - May-28	0	363	0	0	4X
VIOLA M. DAVIDSON	CANADA	18AU11013	2011	Aug-15 - May-13	0	42	0	0	4X
VIZCONDE DE EZA	SPAIN	29VE11029	2011	Jun-05 - Jun-24	0	122	0	0	3L 3N 3O
VIZCONDE DE EZA	SPAIN	29VE11027	2011	Jun-28 - Aug-09	0	40	0	0	3M
VIZCONDE DE EZA	SPAIN	29VE11010	2011	Aug-10 - Aug-24	0	83	0	0	3L 3N
CELTIC EXPLORER	IRELAND	45CE117246	2011	Feb-06 - Mar-03	0	16	0	0	2J 3K 3L
VARIOUS SMALL VESSELS	CANADA	18VA10666	2010	Jun-23 - Jun-23	0	1	0	0	4W
VARIOUS SMALL VESSELS	CANADA	18VA10009	2010	Jul-08 - Sep-14	0	339	0	0	4T 4VN
VARIOUS SMALL VESSELS	CANADA	18VA10001	2010	May-11 - Jun-03	0	67	0	0	4T
TELEOST	CANADA	18TL09892	2009	Sep-08 - Sep-30	0	157	0	0	4T 4VN
ENDEAVOR	USA	32EV093018	2009	Aug-31 - Sep-06	0	23	0	0	5ZE 5ZW 6D
TULUGAQ	DENMARK	26TU083035	2008	Jun-13 - Jun-23	0	61	0	0	1B 1C 1D 1E 1F

PAAMIUT	DENMARK	26PA083037	2008	Jul-21 - Jul-30	0	11	0	0	1A 1B
PAAMIUT	DENMARK	26PA083036	2008	Jul-01 - Jul-05	0	9	0	0	1A 1B
OCEANUS	USA	32OC089584	2008	May-10 - May-19	0	17	0	0	5ZE 5ZW 6D
HUGH R. SHARP	USA	33H5082420	2008	Jun-22 - Aug-05	0	148	0	0	5ZE 6A 6B 6C
THALASSA	FRANCE	35TH084949	2008	Aug-25 - Sep-07	0	48	0	0	1F 2H 2J 3K
BELUGA	CANADA	18BG07026	2007	Apr-12 - Nov-21	28	0	0	0	4T
VARIOUS SMALL VESSELS	CANADA	18VA06060	2006	Jul-10 - Nov-22	0	58	0	0	4VN 4W 4X
VARIOUS SMALL VESSELS	CANADA	18VA06006	2006	May-31 - Aug-15	45	0	0	0	4X
BELUGA	CANADA	18BG06005	2006	Apr-06 - Oct-16	24	0	0	0	4T
VARIOUS SMALL VESSELS	CANADA	18VA05006	2005	Aug-12 - Aug-26	5	0	0	0	4X
HUDSON	CANADA	18HU01061	2001	Oct-14 - Nov-07	0	64	0	0	3PS 4R 4S 4T 4VN 4VS 4W 4X
J. L. HART	CANADA	18HT99042	1999	Sep-08 - Sep-16	77	0	0	0	4X
FIXED PLATFORM	CANADA	187F99001	1999	May-03 - Nov-07	264	0	0	0	4S 4T
FIXED PLATFORM	CANADA	187F98001	1998	May-05 - Nov-02	254	0	0	0	4S 4T
FIXED PLATFORM	CANADA	187F97001	1997	May-08 - Oct-30	259	0	0	0	4S 4T
MULTIPLE SHIPS	CANADA	189089001	1989	Jun-19 - Jul-14	131	0	0	0	4T
VARIOUS	CANADA	180335056	1935	Jul-02 - Aug-23	52	0	0	0	4T
VARIOUS	CANADA	180334051	1934	Jun-27 - Aug-15	146	0	0	0	4T
VARIOUS	CANADA	180333047	1933	Jun-29 - Aug-18	77	0	0	0	4T
VARIOUS	CANADA	180332038	1932	Jun-30 - Aug-27	77	0	0	0	4T

**Table 3: Near-surface thermosalinograph data collected in 2013**

TOTAL: 16798 stations, from 2 platforms ; a station consists of a surface measurement at one place and time.

Platform Name	Country	Call Sign	Reporting Period	TRACKOB	NAFO Subareas
TARA	FRANCE	FVNM	Oct-06 - Nov-28	16774	0A 1A 1B 1C 1D 1E 1F 2G 2H 2J 3L 3M 3O 3PS 4R 4S 4T
UNKNOWN	UNKNOWN	SHIP	Jun-02 - Jun-02	24	3O 3PS 4VS 4W

**Table 4: Drifting Buoy data received during 2013**

TOTAL = 335722 stations from 147 buoys; a message consists of a measurement at one place and time.

<u>WMO ID</u>	<u>Year</u>	<u>Period</u>	<u>BUOY</u>	<u>NAFO Subareas</u>
13569	2013	Jan-01 - Jan-05	117	6H
41504	2013	Nov-28 - Dec-26	1048	6B 6C 6D 6E
41507	2013	Nov-17 - Dec-19	205	6H
41554	2013	Jan-05 - Jun-13	1939	6E 6F
41559	2013	Mar-27 - Jun-27	1942	4VS 4W 6B 6C 6D 6E 6F 6G
41560	2013	May-14 - Oct-03	3387	3M 3N 3O 4VS 4W 4X 6E 6F
41562	2013	Mar-27 - Nov-14	4236	6B 6C 6D 6E
41564	2013	Mar-26 - Apr-03	179	6C
41565	2013	Apr-09 - Aug-20	4135	4W 4X 6D 6E 6F 6G
41568	2013	Jan-19 - Aug-30	5936	3N 4VS 6B 6C 6D 6E 6F 6G 6H
41592	2013	Nov-06 - Dec-31	1990	4VS 4W 6C 6D 6E 6G
41612	2013	Jan-01 - Aug-30	1330	6C 6D 6E
41616	2013	Jan-01 - Apr-11	2403	3N 4VS 4X 5ZE 6D 6E 6F 6G 6H
41636	2013	Aug-15 - Dec-31	1708	6C 6D
41682	2013	Jan-26 - Feb-05	302	6C
41853	2013	Aug-20 - Dec-11	4226	3M 4VS 4W 6B 6C 6D 6E 6F 6G 6H
41855	2013	Oct-29 - Dec-31	2288	4W 6B 6C 6D 6E
41856	2013	Sep-21 - Dec-31	3933	3N 3O 4VS 4W 6C 6D 6E 6F 6G 6H
41912	2013	Aug-28 - Dec-31	2550	6B 6C 6D 6E
41918	2013	Nov-13 - Dec-31	1762	6B 6C 6D 6E
41929	2013	Jun-05 - Dec-31	4516	3M 3N 3O 4VS 4W 6E 6F 6H
41930	2013	Jun-07 - Oct-09	2346	3M 3N 3O 4VS
41932	2013	Aug-10 - Aug-13	73	6E
41933	2013	Aug-14 - Sep-17	132	6C 6D
41955	2013	Jul-23 - Dec-31	2767	4W 4X 6A 6B 6C 6D 6E
41957	2013	Dec-21 - Dec-31	250	6C
41958	2013	Aug-17 - Dec-31	2316	4W 6D 6E 6F
41968	2013	Jan-01 - Jan-02	42	6C
41969	2013	Aug-12 - Dec-31	3200	3M 3N 3O 4VS 4W 4X 6D 6E
41970	2013	Aug-12 - Sep-10	691	4W 6E 6F
41971	2013	Aug-12 - Dec-27	2669	4VS 4W 6B 6D 6E 6F
41972	2013	Aug-14 - Dec-15	2327	3M 3N 4VS 4W 4X 5ZE 6D 6E 6H
41973	2013	Aug-12 - Sep-25	1057	4VS 4W 4X 5ZE 6D 6E 6F
41976	2013	Sep-26 - Dec-31	3530	5ZE 5ZW 6A 6B 6C 6D
41977	2013	Sep-26 - Oct-26	1077	5ZE 5ZW 6A 6B 6C 6D
41978	2013	Sep-26 - Dec-31	3534	5ZE 5ZW 6A 6B 6C 6D
41979	2013	Sep-26 - Oct-01	135	6B 6C 6D
41980	2013	Sep-27 - Sep-29	88	6B 6C
41981	2013	Jan-01 - Jan-07	141	6H

41982	2013	Sep-26 - Dec-31	3332	5ZE 5ZW 6A 6B 6C 6D 6E
41983	2013	Sep-26 - Dec-31	3342	5ZE 5ZW 6A 6B 6C 6D
41991	2013	Sep-27 - Dec-31	3113	4W 4X 5ZE 6B 6C 6D 6E
41995	2013	Sep-27 - Nov-18	1489	5ZE 5ZW 6A 6B 6C 6D
41997	2013	Sep-26 - Dec-31	2477	3N 3O 4VS 4W 6B 6C 6D 6E 6F 6G 6H
42551	2013	Feb-20 - Mar-12	484	4VS 4W 6B 6C 6D 6E 6F
43508	2013	Feb-18 - Apr-07	1128	4W 6B 6C 6D 6E
43534	2013	Jan-01 - Jan-28	2284	3M
43573	2013	Jan-01 - Mar-01	892	6G 6H
44501	2013	May-23 - Sep-01	4118	3K 3L 3M
44506	2013	Jan-01 - Nov-14	7004	3M 3N 3O 3PS 4VS 4W
44507	2013	Jan-01 - Sep-25	5904	3M 3N 3O 3PS 4VS 6H
44508	2013	Jan-01 - Jun-30	4100	3K 3M 3N
44510	2013	Feb-15 - Feb-27	371	3K
44511	2013	Apr-22 - Oct-13	3079	2J 3K 3L 3M
44512	2013	Apr-22 - Dec-31	5524	3L 3M 3N 3O 3PS
44514	2013	Oct-01 - Nov-02	779	3M 3N 3O
44515	2013	Aug-09 - Aug-31	634	6E 6F
44516	2013	Oct-18 - Dec-31	1305	4VS 4W 6E 6F 6G
44518	2013	Aug-13 - Sep-12	719	6C
44519	2013	Feb-10 - May-27	999	3N 3O 4VS 6G 6H
44520	2013	Aug-15 - Nov-07	1683	3N 3O 4VS 6F 6G 6H
44546	2013	Mar-20 - Nov-14	5706	3K 3L 3M
44547	2013	Mar-21 - Apr-30	959	3K
44548	2013	Mar-21 - Oct-25	5217	2J 3K
44550	2013	Mar-28 - May-11	876	3K 3L 3M
44553	2013	Nov-19 - Dec-31	941	4VS 6F 6G
44554	2013	Oct-21 - Dec-31	1702	3M 3N 3O
44561	2013	Jun-05 - Sep-21	2532	3M 3N 3O 4VS 6F 6H
44601	2013	Jan-01 - Jan-09	197	3M
44604	2013	May-09 - Jul-01	1243	3L 3M 3N
44605	2013	May-12 - Sep-03	2724	3K 3M
44606	2013	Jan-12 - Feb-22	971	3M
44608	2013	Sep-27 - Oct-07	196	3L 3M
44609	2013	Sep-27 - Nov-21	1318	3N
44610	2013	Dec-11 - Dec-31	485	2J 3K
44611	2013	Mar-07 - Apr-09	607	3K 3M
44612	2013	Dec-23 - Dec-31	201	3K 3L
44613	2013	Mar-07 - Dec-31	7164	3M 3N 3O
44617	2013	Mar-07 - Nov-30	6189	3L 3M 3N 3O
44622	2013	Jan-01 - Oct-30	6078	3N 4VS 4W 4X 5ZE 6E 6F 6G 6H
44623	2013	Jan-01 - Jan-16	378	1F 2J 3K
44624	2013	Jan-01 - Apr-17	2511	3K 3L 3M 3N

44683	2013	Mar-27 - Oct-31	5161	4W 4X 5ZE 6D 6E
44684	2013	Mar-27 - Aug-23	3293	3M 3N 3O 4VS 4W 4X 6E 6F 6G 6H
44685	2013	Jan-01 - Mar-11	1614	3N 3O 4VS 6G 6H
44687	2013	Jan-01 - Mar-17	928	3M
44690	2013	Sep-07 - Dec-31	2763	0B 1D 2G 2H
44691	2013	Sep-03 - Dec-31	2788	0B 1C 2G 2H
44721	2013	Jan-01 - Mar-15	781	6G 6H
44723	2013	Mar-29 - Apr-24	624	1F
44730	2013	Jan-01 - Mar-29	1558	3K 3L 3M
44739	2013	Jan-01 - Jan-12	285	6H
44741	2013	Jan-19 - Apr-16	1522	3M 6H
44744	2013	Dec-11 - Dec-11	3	3K
44745	2013	Dec-11 - Dec-31	490	3L
44747	2013	Dec-31 - Dec-31	18	1F
44760	2013	Jan-01 - Apr-08	1937	3K 3M 3N
44762	2013	Jan-01 - Apr-30	2633	3K 3M 3N
44763	2013	Mar-28 - Apr-04	183	1F 2J 3K
44764	2013	Mar-29 - Nov-13	5477	3L 3M 3N 3O
44765	2013	Mar-29 - Nov-15	5540	3L 3M 3N 3O
44766	2013	Mar-29 - May-04	862	3L 3N 3O
44769	2013	Jul-15 - Oct-29	1937	4VS 4W 6D 6E 6F
44772	2013	Jan-01 - Apr-07	1386	1F 2H 2J
44773	2013	Jul-15 - Nov-29	3216	3M 3N 3O 4VS 4W 4X 6H
44774	2013	Jan-01 - Apr-10	2398	3K 3L 3M
44831	2013	Aug-15 - Dec-26	1934	3M 3N 3O 4VS 6H
44832	2013	Jan-01 - Jun-17	4308	3M 3N 4VS 6G 6H
44838	2013	Jan-01 - Feb-11	648	6F 6G
44845	2013	May-16 - Nov-03	2958	1F
44863	2013	Jul-16 - Dec-17	1055	3M 6H
44868	2013	May-08 - Dec-28	2122	3M 6H
44870	2013	Jul-16 - Aug-17	713	3N 4VS 6G 6H
44874	2013	Jul-17 - Oct-05	1794	3M
44881	2013	May-16 - Dec-18	5104	1F 2G 2H
44883	2013	May-19 - Dec-12	4918	1F 2H 2J
44884	2013	May-16 - Dec-14	5023	1F 2G 2H 2J
44895	2013	Jun-10 - Jun-29	438	6H
44897	2013	Jul-26 - Dec-31	3439	2J 3K 3M
44912	2013	Jan-01 - Jun-14	813	6C 6E 6F
44913	2013	May-18 - Nov-06	4087	1F 2H 2J 3K
44924	2013	May-31 - Sep-14	2542	3M 3N 3O 3PS 4VS
44926	2013	Jun-03 - Jul-09	842	6E 6F
44928	2013	Jul-26 - Aug-12	197	3K
44932	2013	Jun-20 - Dec-31	4451	4W 4X 6B 6C 6D 6E

47545	2013	Dec-15 - Dec-19	114	0A
47550	2013	Jan-01 - Dec-02	6900	0A
47551	2013	Jan-01 - Jul-29	8192	0A
47559	2013	Jan-01 - Aug-10	5238	0A
48662	2013	Jan-01 - Jan-28	666	1F 2J 3K
48663	2013	Jan-01 - May-31	3351	2J 3K 3M
62678	2013	Oct-15 - Nov-27	938	1F
62681	2013	Jun-14 - Dec-31	4797	0B 1C 1D 1E 1F 2G 2H 2J 3K
62686	2013	Mar-28 - May-04	875	1F
64517	2013	Aug-31 - Dec-20	2632	0B 1C 1D 1E 1F
64522	2013	Jan-01 - Jan-01	15	1F
64524	2013	Mar-16 - Nov-04	5597	0B 1C 1D 1E 1F 2G 2H 2J 3K 3L
64525	2013	Jan-01 - Apr-20	1714	1D 1E 1F
64527	2013	Jan-29 - Dec-31	8062	1D 1E 1F 2H
64620	2013	Mar-29 - Oct-27	4034	1F
64622	2013	Jan-01 - Jan-05	111	1C 1D
64716	2013	Jan-01 - Apr-21	1129	1F
64931	2013	Feb-28 - Feb-28	12	1F
65591	2013	Jan-28 - Sep-26	5771	1E 1F 2G 2H
65592	2013	Nov-20 - Dec-31	969	1E 1F
65593	2013	Sep-02 - Sep-05	72	1A
65594	2013	Nov-05 - Dec-25	288	0A 0B

Table 5: Current meter data from the Bedford Institute of Oceanography

<u>Mooring number/ desc.</u>	<u>Year Recov- ered</u>	<u>Year proce- ssed</u>	<u>Latitude (°N)</u>	<u>Longitude (°W)</u>	<u>Soun- ding (m)</u>	<u>Instru- ment Depth (m)</u>	<u>Data Start or Deployment Date</u>	<u>Data End or Recovery Date</u>	<u>Instrument Type</u>	<u>Serial Number</u>
1815	2013	2013	46.255	59.142	114	110	'26-Apr-12	'06-oct-12	ADCP RDI	#9088
AMEC	2013	2013	43.8083	60.6783	42.8	2	'26-nov-09	'19-jul-10	ADCP RDI	#1348
1827	2013	2013	44.3481	63.3044	125	119	'15-oct-12	'11-Feb-13	ADCP RDI	#14074
1829	2013	2013	44.1345	63.033	170	166	'15-oct-12	'12-Apr-13	ADCP RDI	#1829
1845	2013	2013	46.2522	59.1411	112	112	'18-Apr-13	'28-sep-13	ADCP RDI	#1269
1846	2013	2013	44.3486	63.3037	125	118	'05-Apr-13	'04-jun-13	ADCP RDI	#10487
1847	2013	2013	44.2504	63.1669	169	164	'04-Apr-13	'21-sep-13	ADCP RDI	#14017
1848	2013	2013	44.1343	63.0329	170	166	'12-Apr-13	'22-sep-13	ADCP RDI	#10572
1822	2013	N/A	60.2167	48.6177	2786	2686	'10-jun-12	'16-May-13	AANDERAA RCM-11	#0453
1823	2013	N/A	55.5583	53.6862	2756	2656	'5-jun-12	'19-May-13	AANDERAA RCM-11	#0476
1824	2013	N/A	55.1197	54.092	1033	1013	'5-jun-12	'19-May-13	AANDERAA RCM-8	#4406
1852	2013	N/A	45.2395	64.258	20.3	18	'6-jun-13	'13-jun-13	ADCP RDI	#10902
1853	2013	N/A	45.3178	64.0209	28.5	34	'6-jun-13	'13-jun-13	ADCP RDI	#3745
1854	2013	N/A	44.3482	63.3043	124	90	'1-sep-13	'05-Apr-14	ADCP RDI	#14074
1855	2013	N/A	44.2504	63.1672	170	162	'21-sep-13	'05-Apr-14	ADCP RDI	#15538
1856	2013	N/A	44.1338	63.0329	170	165	'22-sep-13	'05-Apr-14	ADCP RDI	#11217
Bras d'Or Lakes (Whycoco magh)	2013	N/A	45.9442	61.1177	14.7	14.7	'7-nov-12	'30-Apr-13	ADCP RDI	#14033
Bras d'Or Lakes (Whycoco magh)	2013	N/A	45.9441	61.1177	14.7	14.7	'2-May-13	'01-oct-13	ADCP RDI	#14033
C1	2013	N/A	66.6426	60.777	441	90.3	'7-oct-11	'18-sep-13	ADCP RDI	#7786
C1	2013	N/A	66.6426	60.777	441	250	'7-oct-11	'18-sep-13	Aanderaa RCM8	#7592
C2	2013	N/A	66.7632	60.0765	656	92	'7-oct-11	'18-sep-13	ADCP RDI	#9186
C2	2013	N/A	66.7632	60.0768	656	200	'7-oct-11	'18-sep-13	Aanderaa RCM8	#7127
C2	2013	N/A	66.7632	60.0765	656	500	'7-oct-11	'18-sep-13	Aanderaa RCM8	#4998
C3	2013	N/A	66.8526	59.0560	1032	96.6	'5-oct-11	'17-sep-13	ADCP RDI	#15905
C3	2013	N/A	66.8526	59.0594	1032	200	'5-oct-11	'17-sep-13	Aanderaa RCM8	#4349
C3	2013	N/A	66.8526	59.0594	1032	500	'5-oct-11	'17-sep-13	Aanderaa RCM8	#5573
C4	2013	N/A	66.9797	57.6888	866	93	'6-oct-11	'16-sep-13	ADCP RDI	#15899
C4	2013	N/A	66.9797	57.6888	866	200	'6-oct-11	'16-sep-13	Aanderaa RCM8	#5359
C4	2013	N/A	66.9797	57.6888	866	500	'6-oct-11	'16-sep-13	Aanderaa RCM8	#3299
C5	2013	N/A	67.0366	57.0334	685	na	'5-oct-11	'17-sep-13	ADCP RDI	#15906 (lost)
C5	2013	N/A	67.0366	57.0334	685	na	'5-oct-11	'17-sep-13	Aanderaa RCM8	#4350 (lost)

C5	2013	N/A	67.0366	57.0334	685	na	'5-oct-11	'17-sep-13	Aanderaa RCM8	#3300 (lost)
C6	2013	N/A	67.0712	56.6808	385	98	'4-oct-11	'15-sep-13	ADCP RDI	#15907
C6	2013	N/A	67.0712	56.6808	385	250	'4-oct-11	'15-sep-13	Aanderaa RCM8	#5002
Labrador Sea RAPID (RS1 - RS6)	N/A	N/A					'7-Apr-13	'Fall 2014	RDI ADCP	
Labrador Sea Slope near L3_08 (AR7W)	N/A	N/A					'11-May-13	'May 2014 (projected )	RCM11	
Sackville Spur (Flemish Cap, N. Grand Banks, Flemish Pass)	N/A	N/A					'jul-13	'Jun/Jul 2014 (projected )	RDI ADCP (3), RCM11 (12)	
Scotian Shelf and Slope Fall (OTN1 - OTN3)	N/A	N/A					'21-sep-13	'Apr 2014 (projected )	RDI ADCP	
Bras d'Or Lakes (West Bay)	N/A	N/A					'oct-13	'May 2014 (projected )	RDI ADCP	
Davis Strait (Univ of Wash)	N/A	N/A					'sep-13	'Sep/Fall 2015 (projected )	Aanderaa RCM8	