Northwest Atlantic Fisheries Organization

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Integrated Science Data Management NAFO Report 2009

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Abstract

ISDM, 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, surface thermosalinographs, drifting buoys, currents, waves, tides and water level measurements for the calendar year 2009 are included. This report will also provide an update on other ISDM activities during 2009 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

ISDM, has been recognized since 1975 as the Regional Environmental Data Center for ICNAF and subsequently for NAFO. In order for ISDM to carry out its responsibility of reporting to the Scientific Council, the Designated National Representatives selected by STACFEN are requested to provide ISDM 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 2010 required the submission to ISDM of a completed oceanographic inventory form for data collected in 2009, and oceanographic data pertinent to the NAFO area, for all stations occupied in the year prior to 2009. 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 ISDM are available to all members on request. Requests can be made by telephone (613) 990-0243, by e-mail to isdm-gdsi@dfo-mpo.gc.ca, by completing an on-line order form on the ISDM web site at www.meds-sdmm.dfo-mpo.gc.ca/meds/Contact_US/Request_e.asp or by writing to Services, Integrated Science Data Management (ISDM), Dept. of Fisheries and Oceans, 12th Floor, 200 Kent St., Ottawa, Ont. Canada K1A 0E6.

Data Summaries for 2009

Subsurface profile data

For the NAFO area, subsurface vertical profiles as well as surface observations, sample a variety of parameters such as temperature, salinity, oxygen, nutrients and other chemical and biological variables. ISDM receives these data either in real-time (within one month of observation) via the Global Telecommunications System (GTS) reporting system 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 surface data processing activities in 2009 for the NAFO area:

- **Table 1 (P.19), Figure 1 (P.5): Real-time temperature-salinity profile data processed in 2009**
  TOTAL: 307,848 profiles
- **Table 2 (P.25), Figure 2 (P.6): Delayed-mode profile data collected in 2009**
  TOTAL: 995 profiles
- **Table 3 (P.28), Figure 3 (P.7): Profile data collected prior to 2009 and processed in 2009**
  TOTAL: 5,399 profiles
- **Table 4 (P.31), Figure 4 (P.8): Surface thermosalinograph data collected in 2009**
  TOTAL: 33,996 stations

Ocean subsurface data are processed at ISDM in much the same way for each of the data sets described above. Electronic files are converted from a wide range of 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, are 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/meds/Databases/OCEAN/QC_e.htm

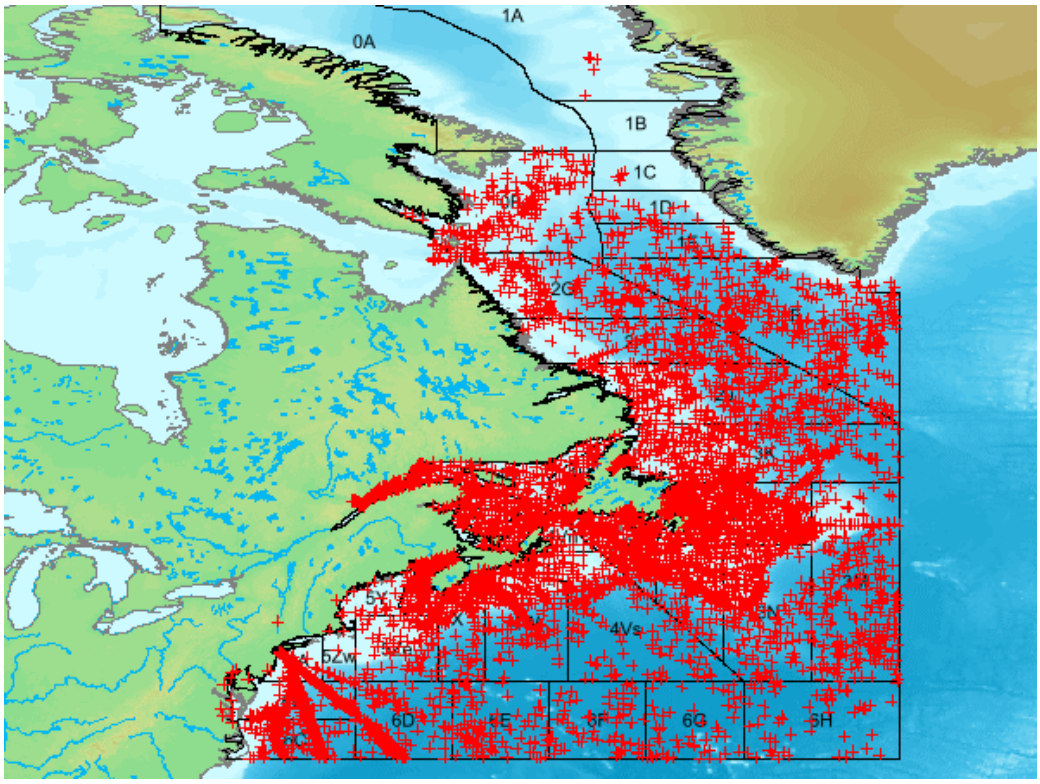


Figure 1: Real Time Temperature-Salinity Stations 2009

Total = 307,848 stations

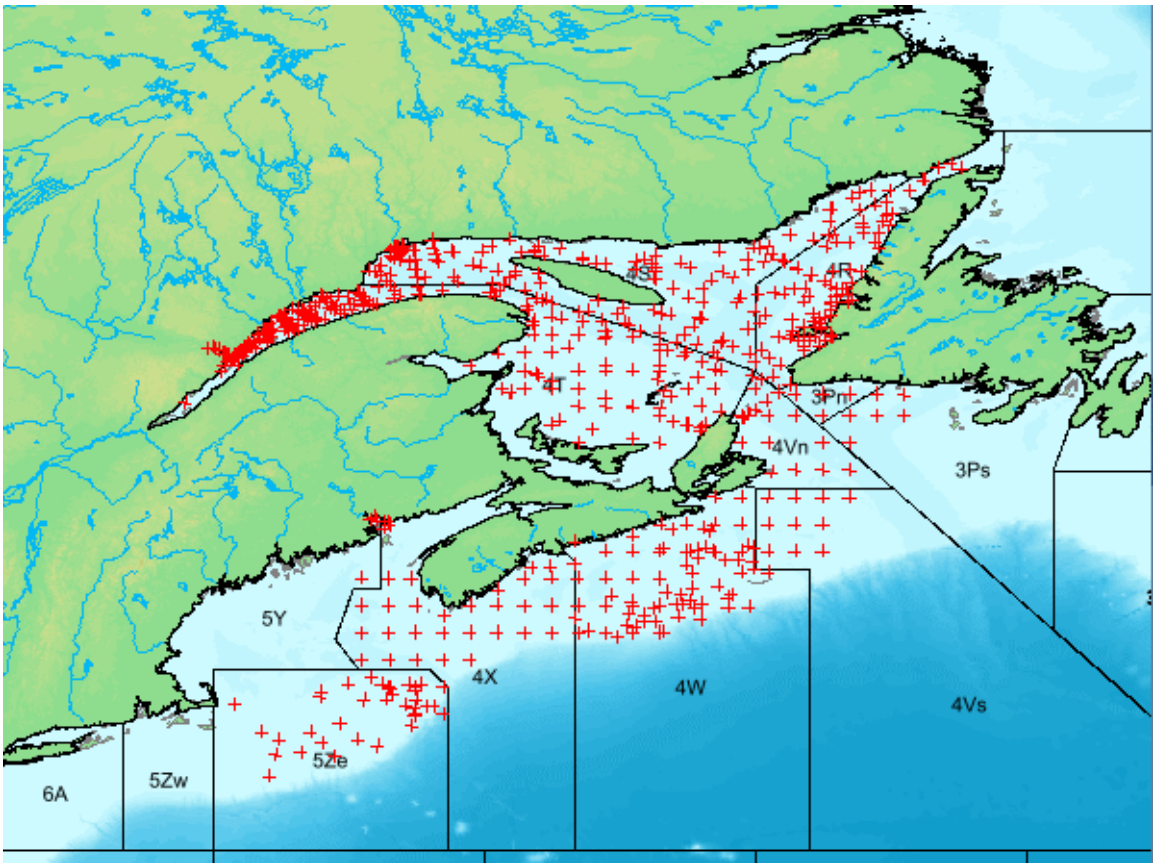


Figure 2: Delayed-mode profile data collected and processed in 2009

Total = 995 stations

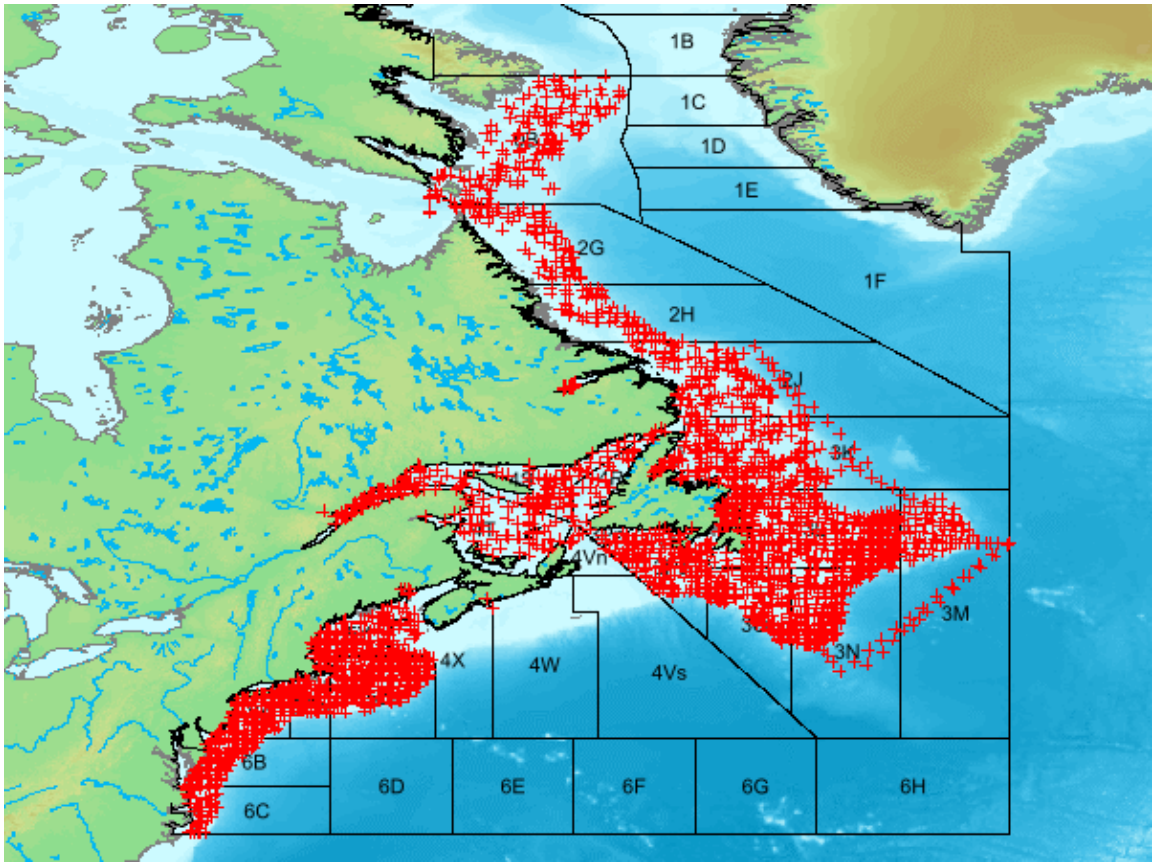


Figure 3: Delayed mode profile stations collected before 2009 and processed in 2009
Total = 5,399 Stations

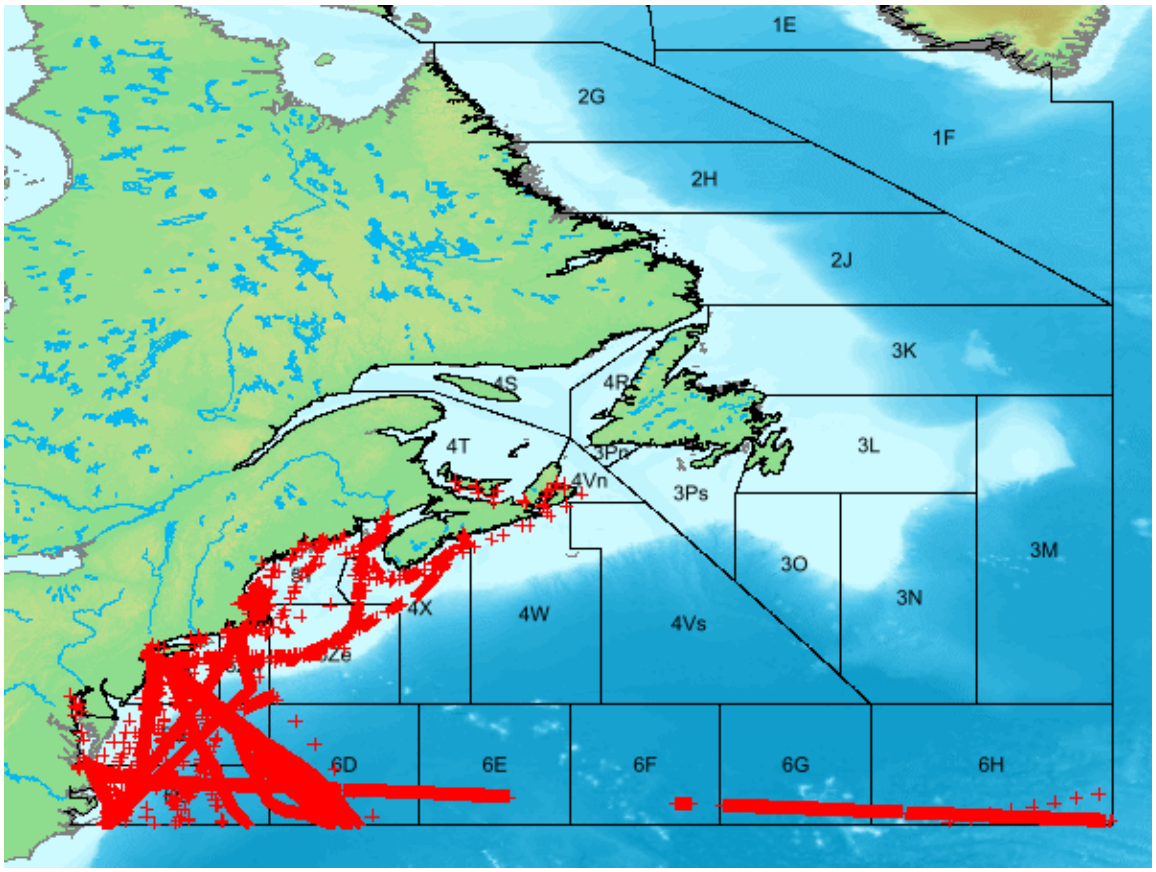


Figure 4: Surface Thermosalinograph data collected in 2009
Total = 33,996 Stations

Drifting Buoy Data

The following inventory and map summarize ISDM drifting buoy data collected and processed in 2009 for the NAFO area:

- **Table 5, Figure 5: Drifting Buoys in the NAFO Area in 2009**
  TOTAL = 283,721 messages from 367 buoys

Drifting buoy data are received at ISDM 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 ISDM software, which organize, analyze and display plots of the data. Quality checks use algorithms which check drifting speed and position, and ranges of sea surface temperatures and sea level pressure. The range checks include a comparison to NOAA's 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.

ISDM drifting buoy archive contains over 70 million records for the world's oceans, from 1978 to present, and is currently growing at a rate of 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.

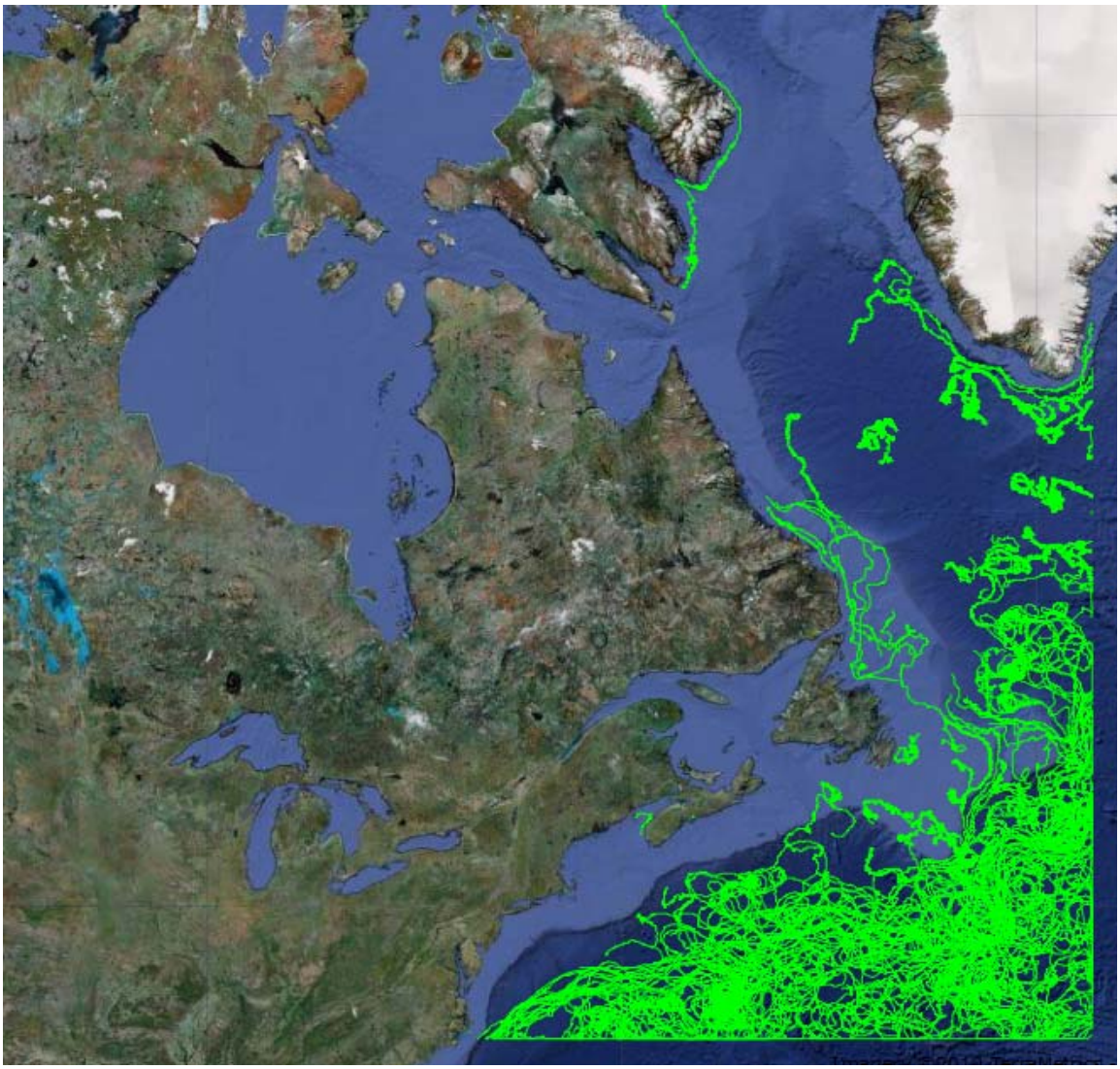


Figure 5: Drifting Buoy messages 2009
Total = 283,721 messages

Current Meter Data

The following inventory summarizes current meter data collections in 2009 in the NAFO area:

Table 6a, Figure 6: Current meter data recovered and processed in 2009
Table 6b, Figure 7: Current meter data recovered in 2009, but not yet processed in 2009.
Table 6c: Current meters deployed and not yet recovered in 2009

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.mar.dfo-mpo.gc.ca/science/ocean/database/data_query.html

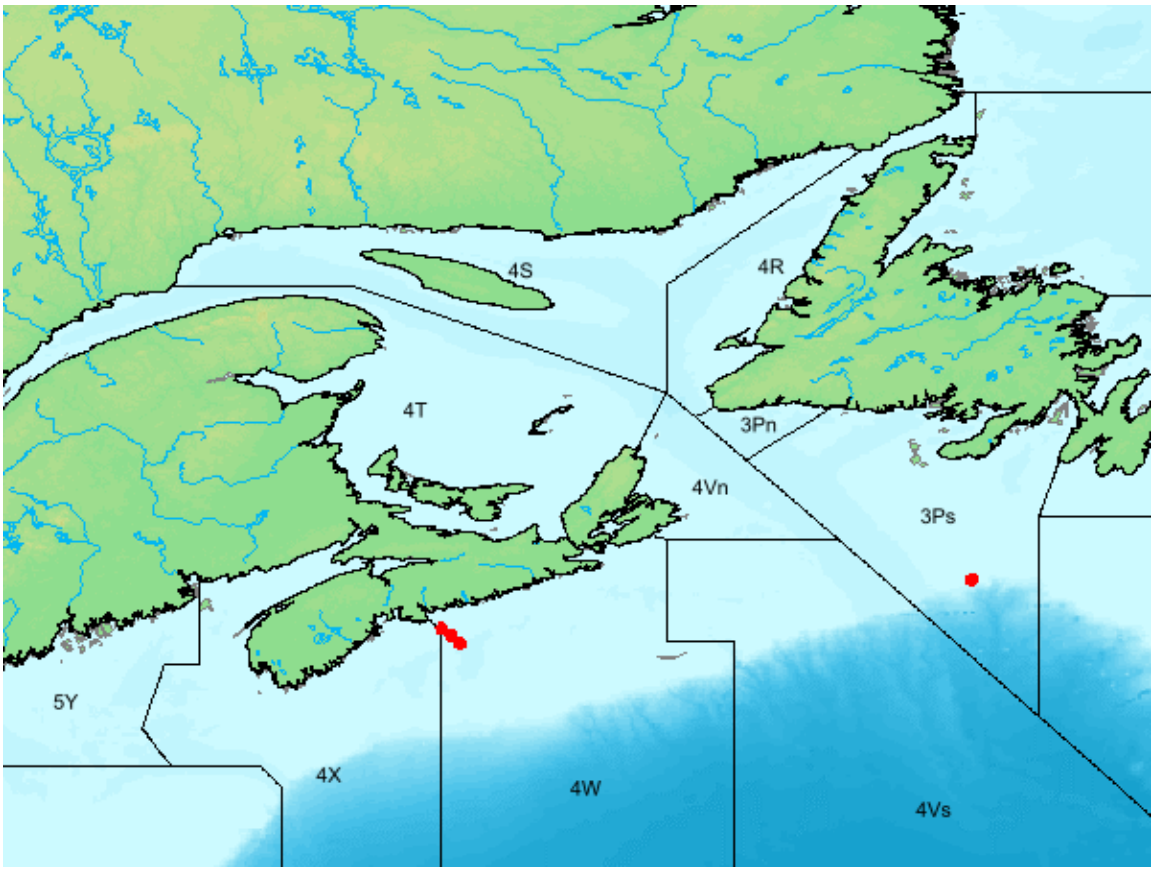


Figure 6: Current Meters Recovered and Processed in 2009

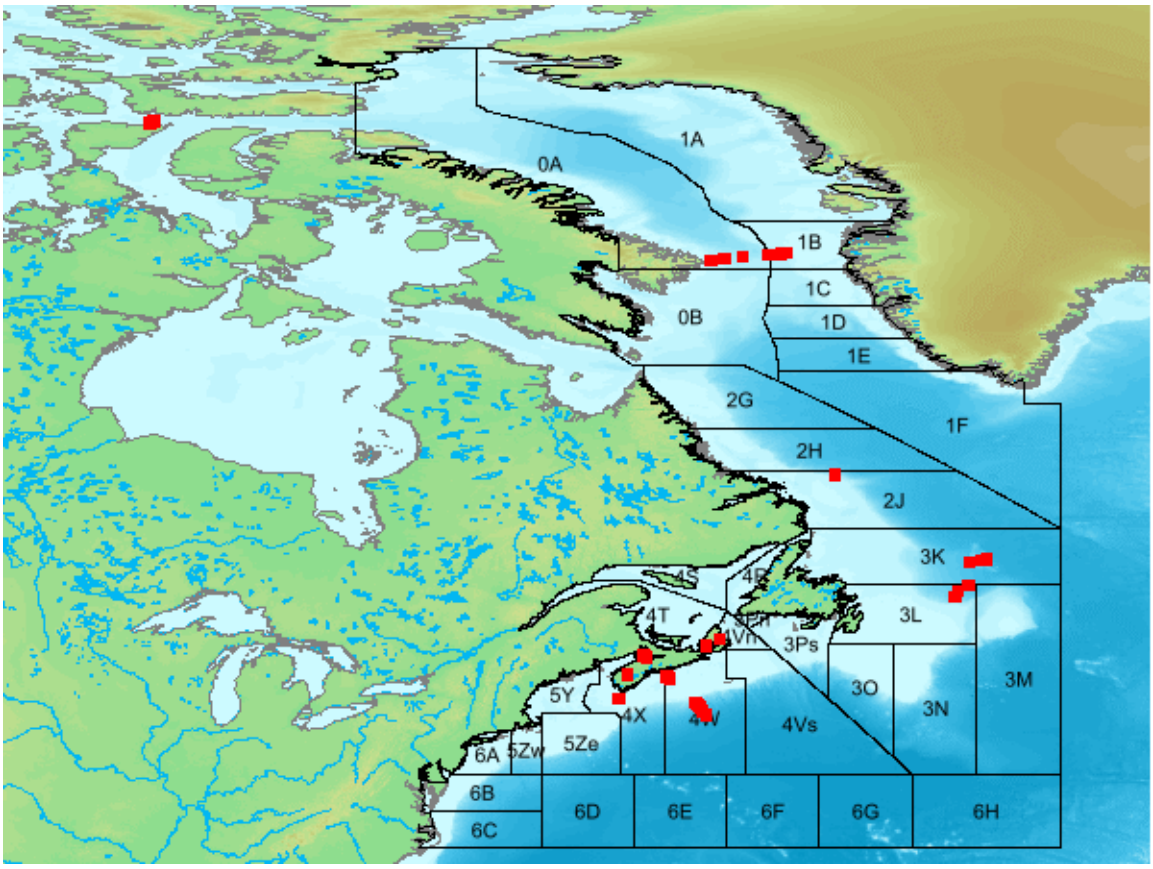


Figure 7: Current Meters recovered but not yet processed in 2009

Wave Data

The following map displays where ISDM wave data were collected in 2009:

- **Figure 8: Wave Buoys in the NAFO Area in 2009**
  12 Environment Canada meteorological buoys
  6 Wave Instruments from the Oil and Gas industry
  (Datawell and Triaxys buoys, MIROS RADAR and ADCP)

ISDM continued to process and archive operational surface wave data on a daily basis 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. Data are quality controlled with a visual inspection and with ISDM software to set flags on data showing instrument failures. During 2009, data was collected from 12 buoys in the NAFO area. All real-time and historical wave data are made available on-line from ISDM web site: www.meds-sdmm.dfo-mpo.gc.ca/meds/Databases/WAVE/WAVE_e.htm

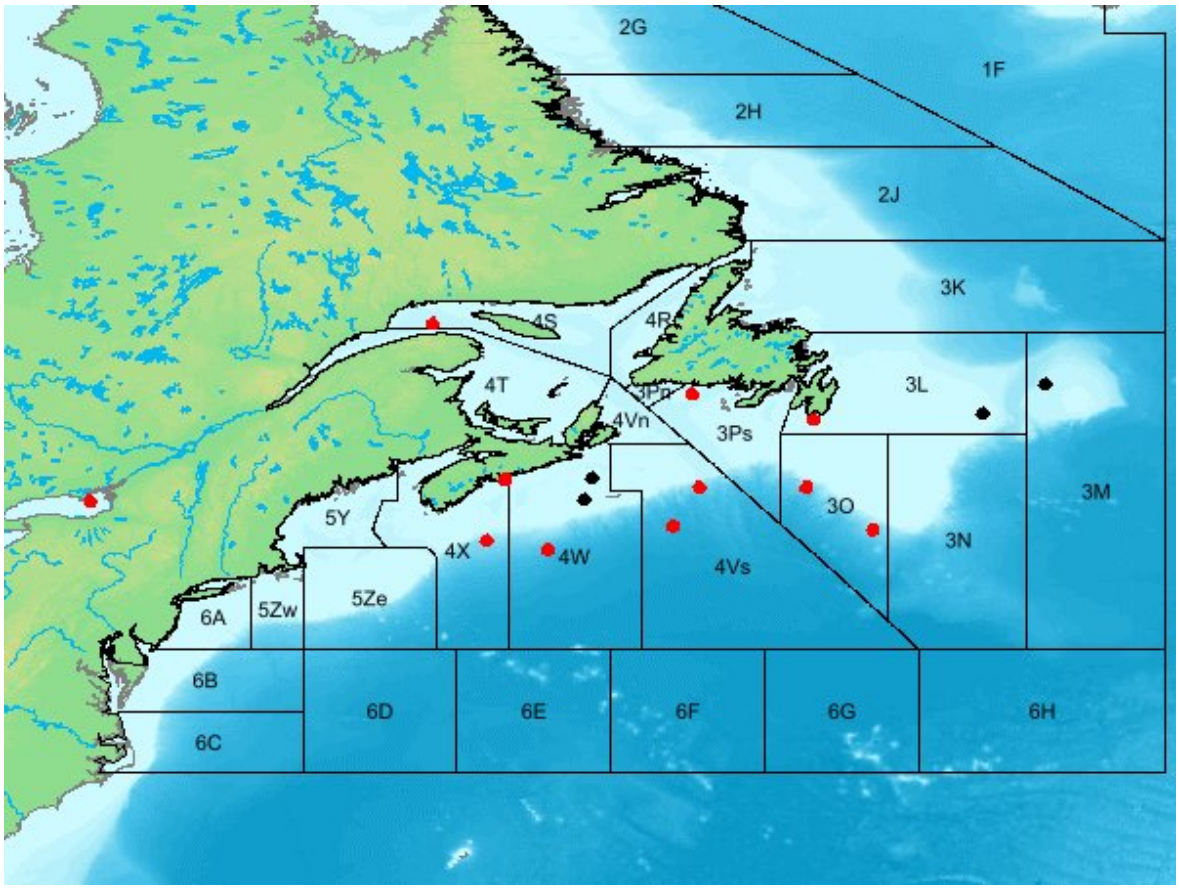


Figure 8: Wave Buoys in the NAFO Area in 2009
Total = 18 Platforms

Tide and Water level Data

As the designated data center, ISDM processes and archives observed water level data collected from the gauge network maintained by the Canadian Hydrographic Service (CHS). There are four main 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 2009, data was reported from 100 stations with 52 of those stations in the NAFO region. Data are quality controlled by the regional CHS tidal officers and ISDM before they become available to the public.

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

- **Figure 9: Tide and water level data in the NAFO Area in 2009**

Historical water level data and station benchmarks are available on-line from the ISDM web site:
http://www.meds-sdmm.dfo-mpo.gc.ca/isdm-gdsi/twl-mne/index-eng.htm

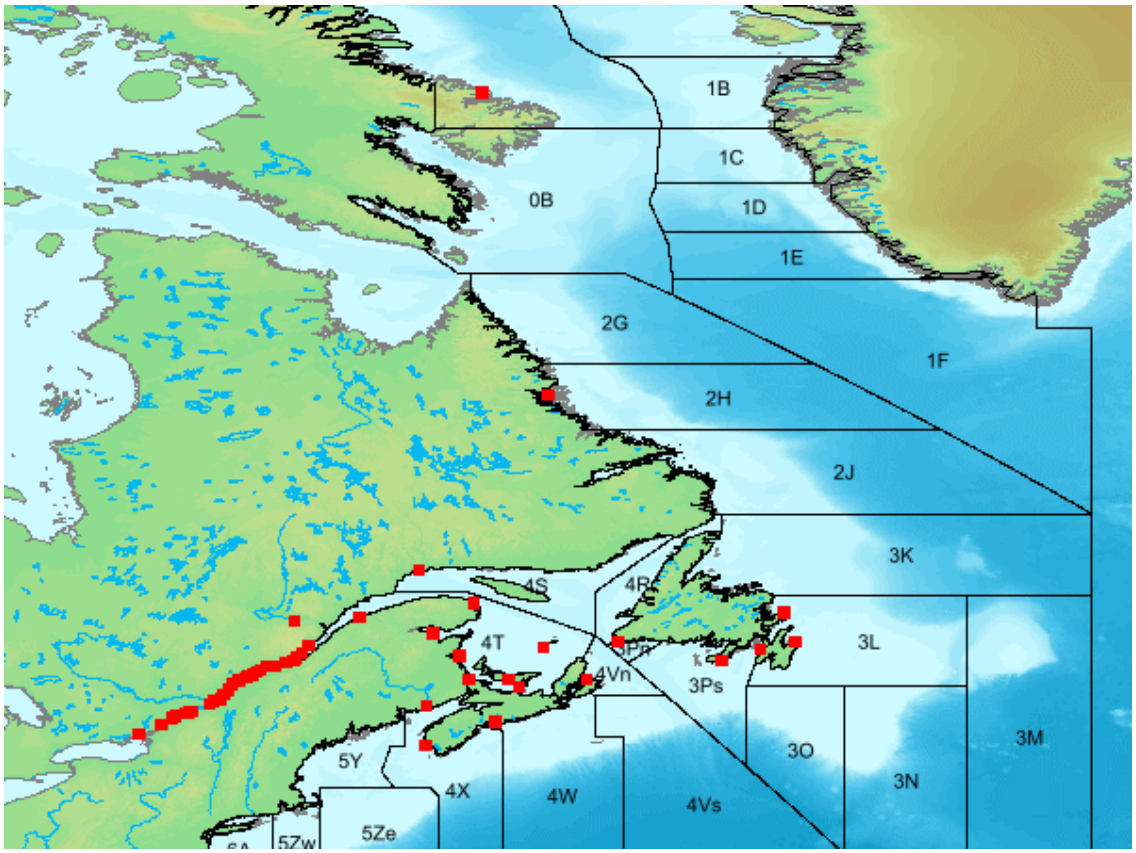


Figure 9: Tide and water level data in the NAFO Area in 2009
Total = 52 gauges

Activity Updates

The Argo data system

Argo is an international program 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 2000m to the surface every 10 days. Some of the newer floats now also report oxygen. Data are distributed on the Global Telecommunications System (GTS) within 24 hours of collection and made available on two Global servers located in France and the US. ISDM role is to carry out the processing of the data received from Canadian floats, to distribute the data on the GTS and the global servers within 24 hours and to handle the delayed mode processing.

ISDM developed a Canadian web site
www.meds-sdmm.dfo-mpo.gc.ca/meds/Prog_Int/argo/ArgoHome_e.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.

During 2009, the Canadian Argo program deployed 14 Argo floats in the NAFO region, including 0 oxygen floats (but 17 already active) and produced 1201 temperature and salinity profiles and 95 oxygen profiles. Currently, there are 59 active floats and 57 inactive floats in the NAFO region. Figure 10 shows the Canadian Argo floats profiling and drifting in the North Atlantic in May 2009 (blue tracks). The tracks in red indicate floats that are inactive and thus no longer reporting, but who last or once reported in the North Atlantic

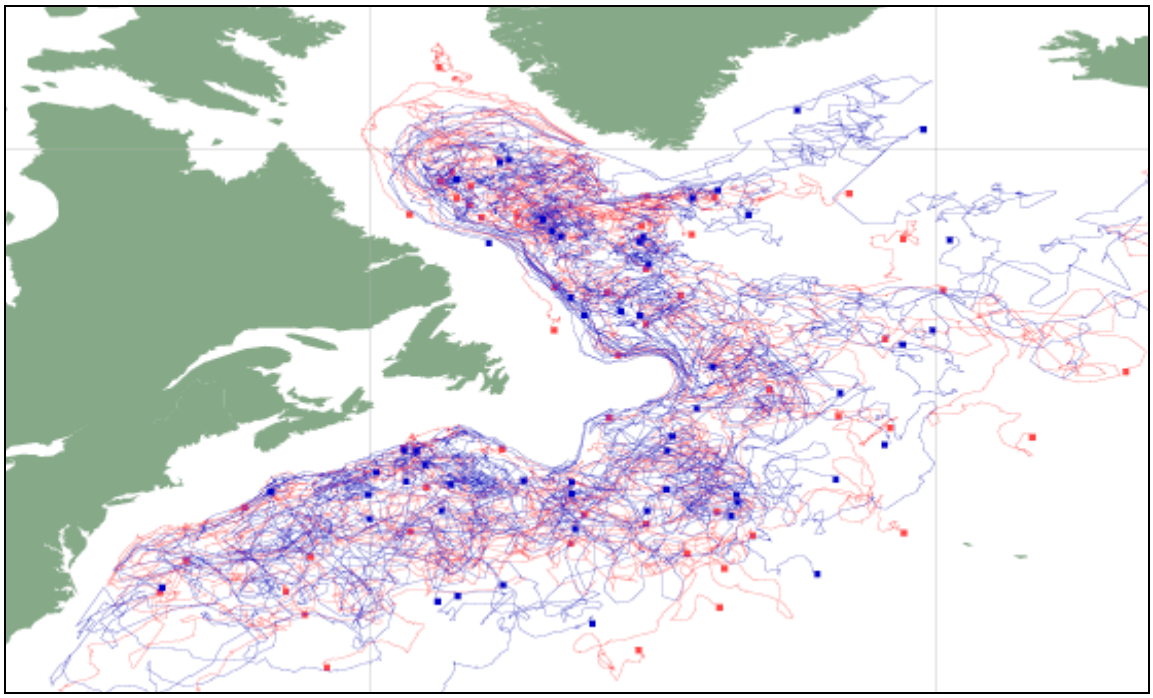


Figure 10: Canadian Argo profiling floats May 2009

Atlantic Zone Monitoring Programme (AZMP)

The DFO Atlantic Zone Monitoring Programme activities include regular sampling for 7 fixed stations and 13 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, ISDM 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 areas of Seawater, Freshwater, Ice, Atmosphere
- 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

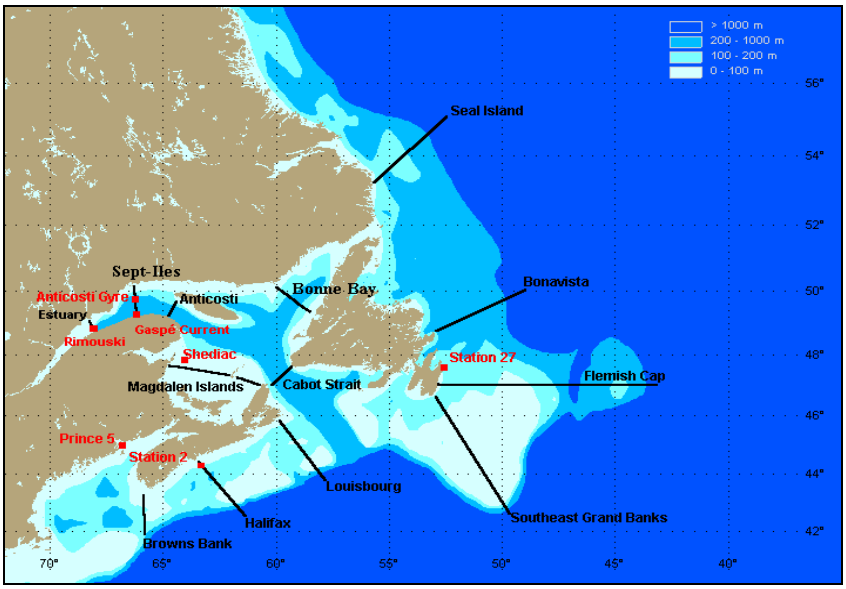


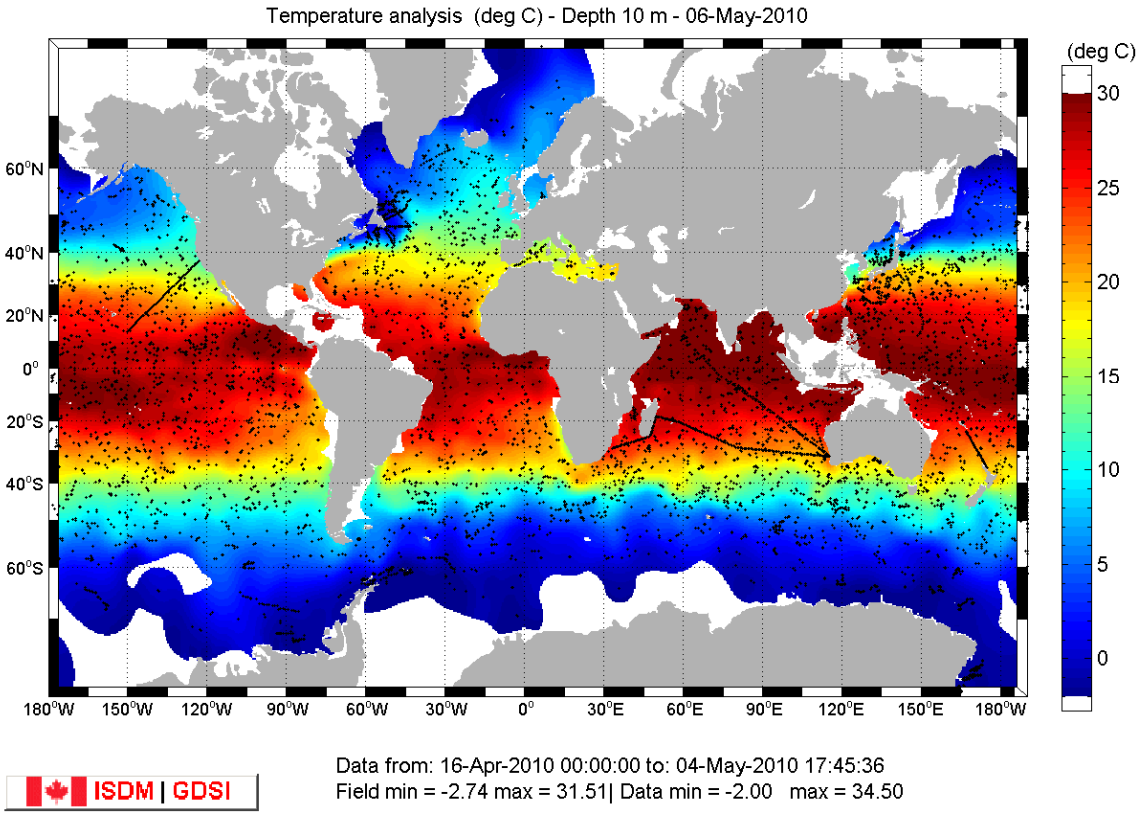
Figure 11: Map of AZMP sections and stations

Centre for Ocean Model Development and Application (COMDA)

DFO has created a virtual Centre for Ocean Model Development and Application (COMDA) with a mandate to provide national leadership, coordination and advice in areas of ocean model development and application that are departmental priorities. COMDA will be leading and assisting in the development and execution of different scientific projects. One of the initial and major projects includes "Ocean Modelling for Benthic Habitat Mapping" in collaboration with NRCan to provide a quantitative representation of ocean current and waves influences on the seabed surrounding Canada. Other projects are listed here: http://www.mar.dfo-mpo.gc.ca/science/ocean/comda/comda-e.html

ISDM's involvement with COMDA will be to provide data streams of temperature and salinity for model initialization and data assimilation. This step involves creation of three-dimensional fields of temperature and salinity that represent the real-time state of the ocean. This is done by integrating all real-time data sources that are received, controlled or processed at ISDM. The scientific method behind this integration is called objective analysis. The depth levels can be targeted according to the needs of scientists and other clients. Figure 11 illustrates the current daily analysis of temperature and salinity at 10 and 300 metres depth.

One by-product of this operation is the capability of generating very accurate fields of temperature and salinity for periods from the recent past, using all data that was available at the time and that has been coming to ISDM since (delayed mode, calibrated data).



ISDM | GDSI

Data from: 16-Apr-2010 00:00:00 to: 04-May-2010 17:45:36
Field min = -2.74 max = 31.51| Data min = -2.00 max = 34.50

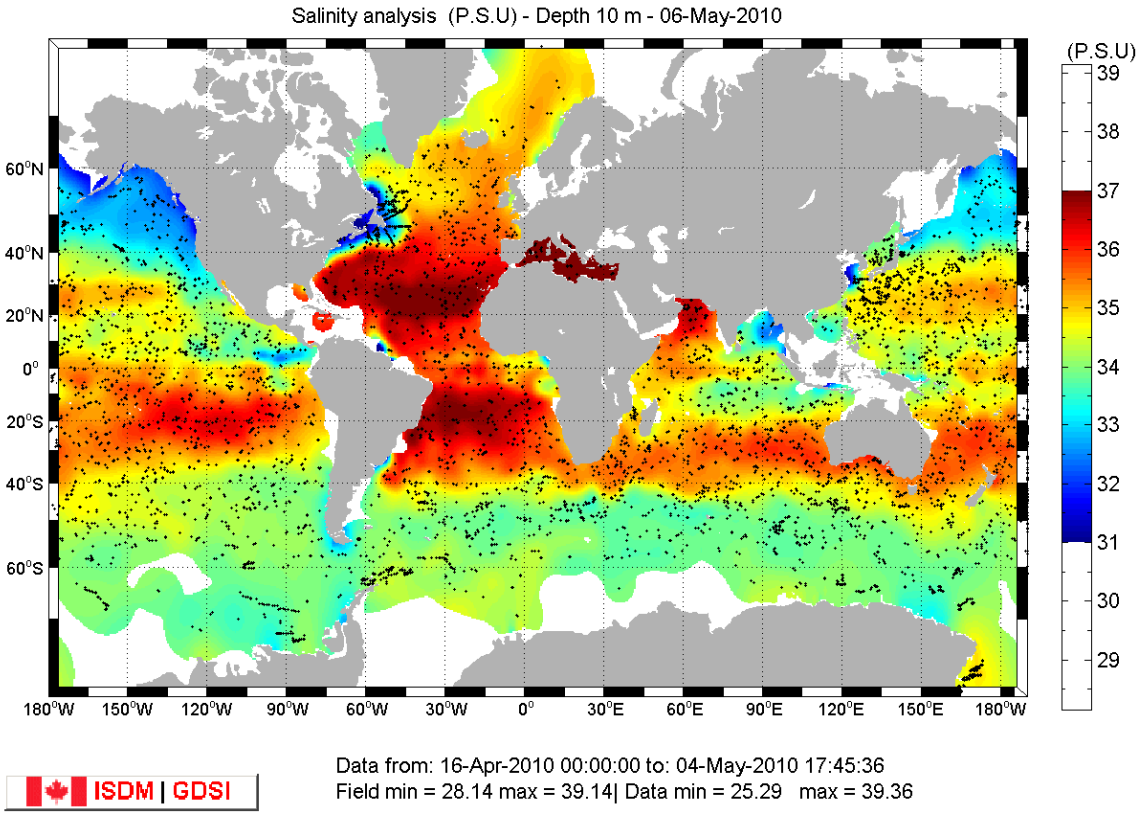


Figure 12: COMDA/OI Climatology analysis for May 6, 2010 at 10m depth

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.

National Science Data Management Committee (NSDMC)

This committee was again funded in 2009-10 to a total of 1.3 million. From this 27, projects were funded with about 1/3 going to data rescue, and 1/6 for building archives for data that had none. The other funds were spread over improving infrastructure, building a metadata repository, and supporting continuing work to create a detailed gridded bathymetry around Canada. A number of fisheries related data set management was also supported including work on east coast trawl fisheries data.

2009-10

- There were 8 projects directly concerned with data rescue funded at 401K
- Four were targeted to build archives for data where none now exist funded at 227K
- A total of 27 projects were approved for NSDMC funding from the 1300K total

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 data received during 2009

Total: 307,848 stations

Platform Name	COUNTRY	CALL SIGN	CRUISE PERIOD	BATHY	TESAC	NAFO SUBAREA
DIAMOND SHOALS	USA	41025 09	Apr-03 - Aug-18	0	3275	6C
		41936 09	Jan-31 - Jan-31	0	2	5ZE
			Feb-09 - Feb-09	0	2	4X
GEORGES BANK	USA	44011 09	Jan-01 - Jun-30	0	2552	5ZE
BOSTON	USA	44013 09	Jan-13 - Dec-31	0	8392	5ZW
VIRGINIA BEACH 64NM, VA	USA	44014 09	Jan-01 - Dec-31	0	8582	6C
BUOY N NORTHEAST CHANNEL	USA	44024 09	Jan-01 - Dec-31	0	7768	4X
LONG ISLAND	USA	44025 09	Jan-01 - Jan-07	0	138	6A
			Jan-17 - Jan-22	0	125	6A
			Feb-16 - Dec-31	0	6660	6A
BUOY A0102	USA	44029 09	Jan-02 - Dec-31	0	5626	5ZW
BUOY B0102	USA	44030 09	Jan-09 - Dec-31	0	8221	5ZW
BUOY C0201	USA	44031 09	Jan-01 - Mar-23	0	666	5ZW
BUOY E0104	USA	44032 09	Jan-01 - Dec-31	0	8614	5Y
BUOY F0103	USA	44033 09	Jan-01 - Dec-31	0	7348	5Y
BUOY I0103	USA	44034 09	Jan-11 - May-08	0	2001	5Y
BUOY I0103	USA	44034 09	May-15 - May-24	0	11	5Y
BUOY I0103	USA	44034 09	May-29 - Dec-31	0	4790	5Y
BUOY M0102	USA	44037 09	Jan-01 - Dec-31	0	5098	5Y
JAMESTOWN	USA	44041 09	Oct-06 - Dec-31	0	1908	6B
POTOMAC	USA	44042 09	Aug-15 - Aug-26	0	271	6B
			Sep-18 - Dec-31	0	2402	6B
PATAPSCO	USA	44043 09	Jan-01 - Jan-01	0	6	6B
			Sep-09 - Sep-10	0	18	6B
			Sep-23 - Nov-17	0	992	6B
			Nov-25 - Dec-31	0	687	6B
SUSQUEHANNA	USA	44057 09	Aug-15 - Dec-17	0	2891	6B
STINGRAY POINT	USA	44058 09	Aug-15 - Dec-31	0	3216	6B
NORFOLK	USA	44059 09	Aug-15 - Sep-12	0	662	6B
			Oct-16 - Dec-31	0	1772	6B
SAFMARINE ZAMBEZI	LIBERIA	A8CE9 09	Feb-17 - Feb-17	2	0	6D
RAILROAD, CHESAPEAKE RESE	USA	BRIM2 09	Jan-01 - Apr-27	0	9999	6B
		BRIM2 A09	Apr-27 - Aug-18	0	9999	6B
			Aug-18 - Dec-10	0	9994	6B
			Dec-10 - Dec-25	0	836	6B
			Dec-30 - Dec-31	0	114	6B
PANDALUS	CANADA	CFD4703 09	Jan-13 - Jan-13	0	1	4X
			Feb-17 - Feb-17	0	1	4X
			Mar-16 - Mar-16	0	1	4X
			Apr-06 - Apr-06	0	1	4X
			May-11 - May-11	0	1	4X

			Jun-15 - Jun-15	0	1	4X
			Jul-15 - Jul-15	0	1	4X
			Aug-17 - Aug-17	0	1	4X
			Sep-16 - Sep-16	0	1	4X
			Oct-14 - Oct-14	0	1	4X
			Nov-18 - Nov-18	0	1	4X
			Dec-14 - Dec-14	0	1	4X
SAMBRO	CANADA	CG2613 09	Jun-16 - Jun-16	0	1	4W
SHAMOOK	CANADA	CG2676 09	Jan-29 - Feb-05	0	11	3L
			Feb-17 - Feb-17	0	1	3L
			Apr-09 - Apr-13	0	3	3L
			May-21 - Jun-23	2	129	3PS
			Jul-02 - Jul-02	0	1	3L
			Jul-10 - Jul-14	0	2	3L
			Aug-01 - Aug-12	0	32	3L
			Aug-18 - Aug-18	0	1	3L
			Aug-25 - Aug-30	0	25	3L
			Sep-06 - Sep-12	0	22	3K
			Sep-23 - Oct-10	0	49	3L
			Oct-18 - Oct-19	0	24	3L
			Oct-26 - Oct-26	0	1	3L
			Nov-09 - Nov-25	0	28	3L,3PS
ALFRED NEEDLER	CANADA	CG2683 09	Feb-11 - Feb-21	0	28	4W,4X,5ZE
			Mar-23 - Apr-02	0	49	4W,5ZE
			Apr-09 - Jun-24	22	414	3L,3N,3O,3PS,3PN
			Jul-01 - Jul-13	0	87	4W,4X,5Y
			Aug-13 - Aug-21	0	23	4VS,4W
			Aug-29 - Sep-06	0	29	3L,3PS
			Sep-11 - Sep-26	11	0	1F,2G,2H,3K
			Oct-02 - Dec-15	16	327	3K,3L,3N,3O,3PS
BELUGA	CANADA	CG3161 09	Apr-20 - Apr-20	0	1	4T
			Apr-27 - Apr-27	0	1	4T
			May-05 - May-05	0	1	4T
			May-12 - May-12	0	1	4T
			Jun-09 - Jun-09	0	1	4T
			Jun-25 - Jun-25	0	1	4T
			Jul-02 - Jul-02	0	1	4T
			Jul-08 - Jul-08	0	1	4T
			Jul-16 - Jul-21	0	2	4T
			Jul-30 - Jul-30	0	1	4T
			Aug-06 - Aug-11	0	2	4T
			Aug-18 - Aug-18	0	1	4T
			Sep-09 - Sep-09	0	1	4T
			Sep-16 - Sep-16	0	1	4T
			Sep-24 - Sep-24	0	1	4T
			Oct-01 - Oct-01	0	1	4T
			Oct-13 - Oct-13	0	1	4T
			Oct-22 - Oct-22	0	1	4T
NSC CALANUS II	CANADA	CG3187 09	Apr-22 - Apr-27	0	9	4T

			May-03 - May-16	0	21	4S,4T
			Jun-15 - Jun-21	0	21	4T
			Aug-11 - Aug-11	0	2	4S,4T
F.G. CREED	CANADA	CG3198 09	May-16 - May-26	0	25	4S,4T
			Jun-02 - Jun-06	0	4	4T
			Jun-22 - Jul-02	0	22	4S,4T
			Jul-13 - Jul-28	0	25	4S,4T
			Oct-16 - Oct-16	0	2	4S,4T
TELEOST	CANADA	CGCB 09	Apr-25 - May-15	34	109	3K,3L,3M,3N,3O,3PS
			May-20 - Jun-01	3	85	3L
			Jun-06 - Jun-22	0	88	4R,4S,4T,4VN
			Jul-11 - Aug-31	50	232	2G,2H,2J,3K,3L,3M,4R,4S,4T,4VN
			Sep-08 - Sep-30	0	157	4T,4VN
			Oct-10 - Dec-14	20	231	2J,3K,3L,3N,3O
HUDSON	CANADA	CGDG 09	Apr-09 - Apr-16	0	35	4W,4X,5ZE
			Apr-24 - May-26	0	112	1F,2H,2J,3K,3L,3PS,4R,4VN,4VS,4W,4X
			Sep-26 - Oct-19	0	72	4R,4VN,4VS,4W,4X,5ZE
			Oct-25 - Nov-13	0	121	4R,4S,4T,4VN
			Nov-23 - Dec-09	67	156	2J,3K,3L,3M,3N,3O
QUADRA	CANADA	CGDN 09	Aug-16 - Aug-29	0	13	4S,4T
W. TEMPLEMAN	CANADA	CGDV 09	May-06 - Jun-01	82	71	3K,3L
SWEET HALL, CHESAPEAKE BA	USA	CVQV2 09	Jan-01 - Jan-13	0	955	6B
			Jan-22 - May-09	0	9044	6B
		CVQV2 A09	May-09 - Sep-08	0	9995	6B
			Sep-08 - Dec-25	0	7620	6B
			Dec-30 - Dec-31	0	112	6B
MARIA S. MERIAN	GERMANY	DBBT 09	Jul-18 - Aug-02	0	66	1E,1F,2G,2H,2J,3K,3L,3M
LEBANON LANDING, DELAWARE	USA	DEQD1 09	Feb-04 - Feb-04	0	8	6B
OYSTER RIVER	USA	GBQN3 09	Apr-27 - Aug-18	0	9995	5ZW
		GBQN3 A09	Aug-18 - Nov-29	0	8524	5ZW
GOODWIN ISLAND	USA	GDWV2 09	Jan-01 - Jan-12	0	434	6B
			Jan-22 - Mar-24	0	1352	6B
			Jul-20 - Jul-22	0	226	6B
			Jul-29 - Aug-05	0	650	6B
			Aug-20 - Aug-27	0	217	6B
CHESNUT NECK	USA	JCQN4 09	Jan-01 - May-06	0	9999	6A
		JCQN4 A09	May-06 - Aug-20	0	9996	6A
			Aug-20 - Dec-15	0	9987	6A
			Dec-15 - Dec-25	0	567	6A

			Dec-30 - Dec-31	0	114	6A
BUOY 126, JACQUES COUSTEA	USA	JCTN4 09	Jan-01 - Jan-12	0	862	6A
			May-05 - May-22	0	1368	6A
			Jun-12 - Jun-12	0	16	6A
			Jul-07 - Jul-07	0	12	6A
			Jul-17 - Oct-28	0	7741	6A
		JCTN4 A09	Oct-28 - Dec-22	0	4228	6A
EMPIRE STATE	USA	KKFW 09	May-19 - May-24	12	0	3M,3N,4VS,4W,4X,5ZE
OTTER POINT CREEK	USA	LTQM2 09	Apr-27 - Aug-15	0	9995	6B
		LTQM2 A09	Aug-15 - Nov-16	0	8382	6B
			Dec-01 - Dec-14	0	901	6B
T - WHARF BOTTOM	USA	NAQR1 09	Jan-01 - Mar-31	0	7193	5ZW
			Apr-14 - May-12	0	2504	5ZW
			May-25 - May-29	0	302	5ZW
		NAQR1 A09	May-29 - Sep-16	0	9995	5ZW
			Sep-16 - Oct-04	0	1688	5ZW
			Nov-02 - Dec-25	0	3753	5ZW
			Dec-30 - Dec-31	0	105	5ZW
SAFMARINE NGAMI	BELGIUM	ONFC 09	Jan-03 - Jan-04	7	0	5ZW,6D,6E
			Apr-27 - Apr-27	4	0	6D,6E
			Jun-19 - Jun-20	7	0	5ZW,6D,6E
			Aug-17 - Aug-19	5	0	5ZW,6A,6D,6E
			Oct-19 - Oct-20	8	0	5ZW,6A,6B,6D,6E
			Dec-15 - Dec-15	1	0	6D
NUKA ARCTICA	DENMARK	OXYH2 09	Jul-14 - Jul-14	0	6	1F
OLEANDER	NETHERLAND	PJJU 09	Jan-10 - Jan-10	14	0	6A,6B,6D
			Feb-07 - Feb-08	14	0	6A,6B,6D
			Mar-14 - Mar-14	18	0	6A,6B,6D
			Apr-10 - Apr-14	13	0	6A,6B,6D
			May-01 - May-06	18	0	6A,6B,6D
			Jun-05 - Jun-05	2	0	6A
			Jul-03 - Jul-05	18	0	6A,6B,6D
			Sep-04 - Sep-05	29	0	6A,6B,6D
			Oct-09 - Oct-11	26	0	6A,6B,6D
			Nov-07 - Nov-08	24	0	6A,6B,6D
			Dec-18 - Dec-24	28	0	6A,6B,6D
PROFILE FLOAT	USA	Q390058209	Sep-16 - Sep-16	0	1	6C
			Sep-26 - Sep-26	0	1	6C
SCOTTON LANDING	USA	SCLD1 09	Jan-01 - Jan-12	0	450	6B
			Jan-18 - Jan-20	0	7	6B
			Feb-12 - Jul-18	0	9541	6B
		SCLD1 A09	Jul-18 - Dec-25	0	9650	6B
			Dec-30 - Dec-31	0	55	6B
UNKNOWN/INCONNU	UNKNOWN/IN	SHIP 09	Jan-12 - Jan-21	13	0	4W,4X,6C,6D
			Jan-27 - Jan-27	0	1	4W
			Feb-02 - Feb-11	20	0	4W,4X,6E

			Feb-24 - Feb-27	6	0	4X,6C
			Mar-04 - Apr-07	76	85	3O,3PS,4R,4S,4T,4VN,4VS,4W,4X,5Y,6E
			Apr-16 - May-20	223	4	3L,3M,3N,3O,3PS,4S,4T,4VN,4VS,4W,4X,5ZE,6B,6C,6D
			May-25 - Sep-15	209	415	0B,1C,2G,2H,2J,3K,3L,3M,3O,3PS,3PN,4R,4S,4T,4VN,4VS,4W,4X,5Y,5ZE,5ZW,6A,6C,6D,6E
			Sep-22 - Sep-23	8	0	4W,4X,6C
			Oct-03 - Oct-07	8	1	3N,3PS,4VS,4X,6B,6C
			Oct-22 - Nov-09	0	97	4T,4W,4X,5Y
			Nov-16 - Nov-19	13	0	4W,4X,6D
			Nov-24 - Nov-24	0	1	4T
RICKERS GENOA	MARSHALL I	V7FS3 09	May-08 - May-11	12	0	3M,3N,3O,4VS,4W,4X,5ZE
MENAUHANT, WAQUOIT BAY RE	USA	WAQM3 09	Jun-04 - Sep-26	0	9993	5ZW
		WAQM3 A09	Sep-26 - Dec-07	0	5691	5ZW
SEALAND NAVIGATOR	USA	WPGK 09	Jan-01 - Jan-04	8	0	6A,6B,6C
			Jan-22 - Jan-24	5	0	6B,6C
			Feb-05 - Feb-08	7	0	6B,6C
			Feb-19 - Feb-22	49	0	6A,6B,6C
			Mar-05 - Mar-07	7	0	6A,6B,6C
			Mar-19 - Mar-22	6	0	6A,6B,6C
			Apr-04 - Apr-04	3	0	6B,6C
			Apr-16 - Apr-18	4	0	6B,6C
			Apr-30 - May-02	6	0	6A,6B,6C
			May-14 - May-16	6	0	6B,6C
			Jun-11 - Jun-13	26	0	6A,6B,6C
			Jun-25 - Jun-25	3	0	6B,6C
			Jul-09 - Jul-10	4	0	6B,6C
			Jul-23 - Jul-23	2	0	6C
			Aug-06 - Aug-06	1	0	6C
			Aug-27 - Aug-27	3	0	6B,6C
			Sep-10 - Sep-13	36	0	6A,6B,6C
			Sep-24 - Sep-24	3	0	6B,6C
			Oct-22 - Oct-22	2	0	6B
			Dec-05 - Dec-06	46	0	6A,6B,6C
S.A. ORANJE	SOUTH AFRI	ZSDN 09	Apr-24 - Apr-25	7	0	5ZW,6A,6B,6D,6E
			Aug-05 - Aug-07	7	0	5ZW,6D,6E
			Dec-06 - Dec-07	5	0	5ZW,6D,6E

Table 2: Delayed mode data collected during 2009

Total: 995 stations

Country	Cruise Num	Cruise Period	BT	CTD	BOTTLE	NAFO Subarea
CANADA	18BG09029	Apr-20 - Apr-20	0	1	0	4T
		Apr-27 - Apr-27	0	1	0	4T
		May-05 - May-05	0	1	0	4T
		May-12 - May-12	0	1	0	4T
		May-27 - May-27	0	1	0	4T
		Jun-09 - Jun-09	0	1	0	4T
		Jun-25 - Jun-25	0	1	0	4T
		Jul-02 - Jul-02	0	1	0	4T
		Jul-08 - Jul-08	0	1	0	4T
		Jul-16 - Jul-21	0	2	0	4T
		Jul-30 - Jul-30	0	1	0	4T
		Aug-06 - Aug-11	0	2	0	4T
		Aug-18 - Aug-18	0	1	0	4T
		Sep-09 - Sep-09	0	1	0	4T
		Sep-16 - Sep-16	0	1	0	4T
		Sep-24 - Sep-24	0	1	0	4T
		Oct-01 - Oct-01	0	2	0	4T
		Oct-13 - Oct-13	0	1	0	4T
		Oct-22 - Oct-22	0	1	0	4T
CANADA	18CN09011	Apr-22 - Apr-27	0	9	0	4T
CANADA	18CN09013	May-03 - May-03	0	1	0	4T
CANADA	18CN09014	May-08 - May-16	0	20	0	4S
CANADA	18CN09018	Jun-15 - Jun-21	0	21	0	4T
CANADA	18FC09004	Aug-16 - Aug-20	0	7	0	4T
		Aug-28 - Aug-28	0	1	0	4S
CANADA	18FC09005	Jun-22 - Jun-27	0	20	0	4S,4T
CANADA	18HE09003	Mar-09 - Mar-17	0	85	90	4R,4S,4T,4VN
CANADA	18HU09063	Oct-25 - Nov-13	0	107	0	4R,4S,4T,4VN
CANADA	18NE09002	Mar-27 - Apr-02	0	44	0	4W
CANADA	18NE09841	Feb-11 - Feb-21	0	28	0	4W,4X,5ZE
		Mar-23 - Mar-26	0	5	0	5ZE
CANADA	18OL09062	Aug-25 - Aug-29	0	5	0	4T
CANADA	18PA09001	Jan-13 - Jan-16	0	2	0	4X
CANADA	18PA09002	Jan-13 - Jan-13	0	5	0	4X
CANADA	18PA09003	Mar-16 - Mar-16	0	5	0	4X
CANADA	18PA09004	Mar-16 - Mar-18	0	2	0	4X
CANADA	18PA09005	Apr-06 - Apr-06	0	1	0	4X
CANADA	18PA09006	Apr-06 - Apr-06	0	5	0	4X
CANADA	18PA09007	May-11 - May-11	0	2	0	4X
CANADA	18PA09008	Jun-15 - Jun-15	0	2	0	4X
CANADA	18PA09009	May-05 - May-05	0	5	0	4X
		May-12 - May-12	0	5	0	4X
		May-19 - May-19	0	5	0	4X
		May-26 - May-26	0	5	0	4X
CANADA	18PA09010	Jul-15 - Jul-15	0	2	0	4X

CANADA	18PA09011	Jun-02 - Jun-02	0	5	0	4X
		Jun-09 - Jun-09	0	5	0	4X
		Jun-16 - Jun-16	0	5	0	4X
		Jun-23 - Jun-23	0	1	0	4X
		Jun-30 - Jun-30	0	5	0	4X
CANADA	18PA09012	Jul-07 - Jul-07	0	5	0	4X
		Jul-14 - Jul-14	0	5	0	4X
		Jul-21 - Jul-21	0	5	0	4X
		Jul-28 - Jul-28	0	5	0	4X
CANADA	18PA09013	Aug-17 - Aug-19	0	2	0	4X
CANADA	18PA09014	Aug-04 - Aug-04	0	5	0	4X
		Aug-11 - Aug-11	0	5	0	4X
		Aug-18 - Aug-18	0	5	0	4X
		Aug-26 - Aug-31	0	10	0	4X
CANADA	18PA09015	Sep-17 - Sep-17	0	2	0	4X
CANADA	18PA09016	Sep-08 - Sep-08	0	5	0	4X
		Sep-15 - Sep-15	0	5	0	4X
		Sep-22 - Sep-22	0	5	0	4X
		Sep-30 - Sep-30	0	5	0	4X
CANADA	18PA09017	Oct-14 - Oct-15	0	2	0	4X
CANADA	18PA09018	Nov-16 - Nov-18	0	2	0	4X
CANADA	18PA09019	Oct-14 - Oct-14	0	5	0	4X
		Oct-20 - Oct-20	0	3	0	4X
		Oct-27 - Oct-27	0	5	0	4X
CANADA	18PA09020	Nov-18 - Nov-18	0	5	0	4X
CANADA	18PA09021	Dec 14 - Dec 14	0	2	0	4X
CANADA	18PA09022	Dec 18 - Dec 18	0	5	0	4X
CANADA	18PA09669	Jan-13 - Jan-13	0	1	0	4X
		Feb-17 - Feb-17	0	1	0	4X
		Mar-16 - Mar-16	0	1	0	4X
		Apr-06 - Apr-06	0	1	0	4X
		May-11 - May-11	0	1	0	4X
		Jun-15 - Jun-15	0	1	0	4X
		Jul-15 - Jul-15	0	1	0	4X
		Aug-17 - Aug-17	0	1	0	4X
		Sep-16 - Sep-16	0	1	0	4X
		Oct-14 - Oct-14	0	1	0	4X
		Nov-18 - Nov-18	0	1	0	4X
		Dec 14 - Dec 14	0	1	0	4X
CANADA	18TL09037	Jun-06 - Jun-22	0	88	0	4R,4S,4T,4VN
CANADA	18TL09051	Jul-31 - Aug-31	0	112	0	4R,4S,4T,4VN
CANADA	18VA09001	May-19 - May-19	0	2	0	4S,4T
		Jul-02 - Jul-02	0	2	0	4S,4T
		Jul-13 - Jul-13	0	2	0	4S,4T
		Jul-28 - Jul-28	0	2	0	4S,4T
		Aug-11 - Aug-11	0	2	0	4S,4T
		Oct-16 - Oct-16	0	2	0	4S,4T
CANADA	18VA09032	May-10 - May-11	0	2	0	4S
CANADA	18VA09047	Jun-02 - Jun-18	0	92	0	3PS,3PN,4VN,4VS,4W,4X,5Y,5ZE
CANADA	18VA09054	Jul-15 - Jul-18	0	31	0	4R

CANADA	18VA09666	Jan-27 - Jan-27	0	1	0	4W
		Mar-17 - Mar-17	0	1	0	4W
		Jun-04 - Jun-04	0	1	0	4W
		Jun-16 - Jun-16	0	1	0	4W
		Aug-25 - Aug-25	0	1	0	4W
		Nov-09 - Nov-09	0	1	0	4W
CANADA	18VA09668	May-05 - May-05	0	1	0	4T
		May-20 - May-20	0	2	0	4T
		Jun-04 - Jun-04	0	1	0	4T
		Jul-08 - Jul-08	0	1	0	4T
		Oct-22 - Oct-22	0	1	0	4T
		Nov-24 - Nov-24	0	1	0	4T

Table 3: Profile data collected prior to 2009 and processed during the past year

Total: 5,399 stations

Unique ID	Year	CTD	TowedCTD	BOT	BT	NAFO Subarea
181C08823	2008	2	1	0	1	3L
181C08824	2008	46	1	0	1	3PS 3L 3PN
181C08825	2008	31	0	0	2	3PS 3O
181C08826	2008	83	0	0	2	3PS 3PN 3O 3L
181C08827	2008	95	2	0	4	3L 3PS 3O 3N
181C08828	2008	45	2	0	3	3L 3N
181C08829	2008	92	0	0	9	3L 3N 3O
181C08833	2008	0	9	0	0	3N 3L
181C08834	2008	0	2	0	0	3PS
181C08835	2008	21	1	0	3	3L 3O
181C08836	2008	47	1	0	2	3L 3O 3N
181C08837	2008	78	1	0	3	3N 3L
181C08838	2008	82	2	0	9	3L 3K
181C08839	2008	68	1	0	1	3L 2J 3K
181C08840	2008	32	0	0	1	3K 2J
181C08841	2008	18	0	0	0	3K
187F07001	2007	0	0	265	0	4T 4S
189008001	2008	0	15	15	0	4T 4S
189908103	2008	227	0	0	4	3L 2G 0B 1C
18BB80001	1980	0	0	53	0	4T
18BG08005	2008	0	27	27	0	4T
18BG08099	2008	0	18	7	0	4T
18BS79002	1979	0	0	54	0	4T
18BS79003	1979	0	0	54	0	4T
18BS79004	1979	0	0	53	0	4T
18BS79006	1979	0	0	38	0	4T
18BS80002	1980	0	0	52	0	4T
18BS80003	1980	0	0	20	0	4T
18BS80004	1980	0	0	51	0	4T
18BS80005	1980	0	0	42	0	4T
18BS80006	1980	0	0	43	0	4T
18BS80007	1980	0	0	44	0	4T
18BS80008	1980	0	0	54	0	4T
18BS80009	1980	0	0	40	0	4T
18BS80011	1980	0	0	12	0	4T
18DA79032	1979	0	0	53	0	4T
18FC08027	2008	0	15	6	0	4T
18FC08035	2008	0	6	0	0	4S 4T
18FC08051	2008	0	7	0	0	4T
18GA89001	1989	0	50	0	0	3PN 4R 4S 4T
18GP08001	2008	0	0	0	41	3K 3L 2J
18HE08002	2008	0	0	84	0	4T 4S 4R 4VN
18HU08057	2008	0	129	127	0	4X 4T 4S 4VN 4R
18HU08865	2008	0	82	0	41	3L 3K 2J 3M 3N 3O 3PS
18NE08866	2008	0	2	0	0	3PS
18NE08867	2008	6	1	0	3	3L

18NE08868	2008	43	0	0	5	3L 3O 3K
18NE08869	2008	38	1	0	0	3K 3L
18OK08788	2008	0	36	0	0	3L 3PS
18OK08798	2008	0	14	0	0	3L
18OK08848	2008	0	3	0	0	3L
18OK08850	2008	0	21	0	0	3L
18OK08852	2008	0	9	0	0	3L
18OK08853	2008	0	42	0	0	3K
18OK08856	2008	0	31	0	0	3L
18OK08857	2008	0	27	0	0	3L
18OK08858	2008	0	31	0	0	3L
18OK08859	2008	0	1	0	0	3L
18OK08861	2008	0	1	0	0	3L
18OK08862	2008	0	32	0	0	3L 3PS
18PA08023	2008	0	2	0	0	4X
18PA08024	2008	0	5	0	0	4X
18PA08669	2008	0	2	0	0	4X
18TL08036	2008	0	0	74	0	4T 4S 4R 4VN
18TL08756	2008	14	9	0	0	3L 3PS 3K 2J
18TL08806	2008	0	11	0	0	3PS 3L
18TL08807	2008	0	126	0	33	3L 3O 3N 3M 3K
18TL08808	2008	0	0	0	24	3K 3L
18TL08809	2008	73	0	0	8	3L
18TL08811	2008	0	91	0	46	3L 3M 3K 2J
18TL08817	2008	31	1	0	1	3L 2J 2H
18TL08818	2008	33	0	0	1	2H
18TL08820	2008	17	1	0	0	3L 2J
18TL08821	2008	8	0	0	2	3L 3K
18TL08864	2008	40	2	0	4	3L
18VA08022	2008	0	35	0	0	2J
18VA08668	2008	0	2	0	0	4T
18VA08866	2008	0	1	0	0	4W
29VE08001	2008	0	121	0	0	3N 3O
29VE08002	2008	0	62	0	0	3M 3L
29VE08003	2008	0	101	0	0	3L 3N
316G08001	2008	0	33	0	0	6A 6B 6C
316G08002	2008	0	117	0	0	6A 5ZW 6B 5ZE 4X 5Y
316G08003	2008	0	59	0	0	5Y 4X
316G08006	2008	0	1	0	0	5ZE
316G08008	2008	0	170	0	0	5ZW 6A 6B 6C 5ZE 4X 5Y
316G08009	2008	0	132	0	0	5ZE 5ZW 4X 5Y
31A408001	2008	0	169	0	0	6A 5ZW 6B 6C 5ZE 4X 5Y
31A408002	2008	0	17	0	0	5ZE 6A
31A408003	2008	0	104	0	0	6B 6A 6C 5ZW 5ZE 4X 5Y
31S108001	2008	0	148	0	0	6B 6C 6A 5ZE
33HH08002	2008	0	182	0	0	6B 6A 6C 5ZW 5ZE 4X 5Y
33HH08003	2008	0	53	0	0	6A 5ZW 5ZE
33HH08004	2008	0	77	0	0	5ZW 6A
33HH08005	2008	0	105	0	0	6A 6B 5ZE
33HH08006	2008	0	22	0	0	5ZE

Table 4: TRACKOB data collected during 2009

TOTAL: 33,996 stations

Ship Name	Country	Call Sign	Cruise Period	TRACKOB	NAFO Subarea
		C6TN4 B09	Aug-16 - Aug-27	2183	4X,5ZE,5ZW,6B,6C,6D,6E,6F,6G,6H
UNKNOWN/INCONNU	UNKNOWN/IN	KS004 09	May-31 - Nov-02	1039	4W,4X,5Y,5ZE,5ZW,6A,6B,6C
UNKNOWN/INCONNU	UNKNOWN/IN	KS026 09	May-11 - May-11	8	6H
UNKNOWN/INCONNU	UNKNOWN/IN	KS049 09	Apr-15 - Apr-23	34	5ZE,5ZW,6A,6B,6C,6D
			Apr-29 - May-01	14	6A,6B,6C
			May-07 - May-09	13	6A,6B,6C
			May-15 - May-17	15	6A,6B,6C
			May-23 - May-25	14	6A,6B,6C
			May-31 - Jun-02	13	6A,6B,6C
			Jun-08 - Jun-10	14	6A,6B,6C
			Jun-16 - Jun-18	14	6A,6B,6C
			Jun-24 - Jun-26	11	6A,6B,6C
			Jul-02 - Jul-04	10	6A,6B,6C
			Jul-10 - Jul-12	14	6A,6B,6C
			Jul-18 - Jul-20	14	6A,6B,6C
			Jul-26 - Jul-28	15	6A,6B,6C
			Aug-03 - Aug-05	9	6A,6B,6C
			Aug-11 - Aug-13	14	6A,6B,6C
			Aug-19 - Aug-20	6	6A,6B,6C
			Aug-27 - Aug-29	9	6A,6B,6C
			Sep-04 - Sep-06	11	6A,6B,6C
			Sep-12 - Sep-14	6	6A,6B,6C
			Sep-20 - Sep-22	11	6A,6B,6C
			Sep-28 - Sep-30	11	6A,6B,6C
			Oct-06 - Oct-08	15	6A,6B,6C
			Oct-14 - Oct-18	26	6A,6B,6C
UNKNOWN/INCONNU	UNKNOWN/IN	KS058 09	Jul-06 - Oct-08	676	4T,4VN,4W,4X,5Y,5ZE,5ZW,6A,6B,6C
		KS064 09	Jan-23 - Jan-23	1	5ZW
			Jan-30 - Jan-30	2	5ZW
			Feb-06 - Feb-06	1	5ZW
			Apr-10 - Apr-10	1	5ZW
OLEANDER	NETHERLAND	PJJU 09	Jan-02 - Feb-08	6829	6A,6B,6D
		PJJU B09	Feb-10 - Mar-08	6305	6A,6B,6D
		PJJU C09	Feb-25 - Mar-08	2362	6A,6B,6D
			Mar-14 - Mar-26	2298	6A,6B,6C,6D
			Apr-01 - Apr-02	428	6A,6B,6D
			Apr-11 - Apr-26	1731	6A,6B,6C,6D
		PJJU D09	Apr-28 - Apr-29	460	6A,6B,6D
			May-07 - Jun-04	2578	6A,6B,6D
			Jul-09 - Jul-09	83	6A,6B
			Aug-16 - Aug-27	1375	6A,6B,6C,6D

WTDO	C09	Aug-02 - Aug-03	158	6C
WTER	B09	Jul-14 - Aug-06	4541	5ZW,6A,6B,6C
		Aug-13 - Aug-14	289	6B,6C
		Aug-30 - Aug-31	238	6C

Table 5: DRIBU data received during 2009

TOTAL = 283,721 messages from 367 buoys

BUOY	DATE RANGE	DAYS	SST	AP	AT	WS	WD	TC	NAFO Subarea
13534	Aug-29 - Oct-24	57	-	X	X	-	-	-	6E,6D,6B
13597	Oct-02 - Nov-29	59	-	X	-	-	-	-	6C,6B,6D,6E
13606	Jan-01 - Aug-07	220	X	X	-	-	-	-	6F,6G,4VS,3N,6H,3M
13613	Sep-20 - Nov-05	47	X	X	-	-	-	-	6F
13618	Sep-26 - Dec-07	72	X	X	-	-	-	-	6E,6D,4X,4W,4VS
13905	Oct-06 - Dec-26	82	X	X	-	-	-	-	6C,6D
13923	Nov-30 - Dec-31	32	X	X	-	-	-	-	6C,6B,6D
15663	Jan-01 - Jan-04	4	X	X	-	-	-	-	6G
25529	Jul-26 - Sep-19	56	-	X	-	-	-	-	0A,1B
25585	Jul-12 - Jul-12	1	-	X	-	-	-	-	1A
32545	Oct-28 - Dec-31	65	X	X	-	-	-	-	6H,3M,3N,6G
41561	Jan-01 - Jan-13	13	X	X	-	-	-	-	3M,6H
41563	Jan-01 - Mar-12	72	X	X	-	-	-	-	6D,6E
41565	Jan-01 - May-24	145	-	-	-	-	-	-	4W,6F,4VS,3O,3N,3M
41567	Jan-01 - Jun-04	156	X	X	-	-	-	-	5ZE,6D,4X,6E,4W,4VS,3O,3N,3M
41568	Jan-01 - Jun-12	164	X	X	-	-	-	-	6H,6G,6F,4VS,3N
41570	Jan-01 - Mar-09	69	X	X	-	-	-	-	4VS,3O,3N,3M
41572	Jan-01 - Sep-16	260	X	X	-	-	-	-	6F,6E,4W,4VS,6G,3N,6H,3M
41593	Jan-01 - Sep-04	248	X	X	-	-	-	-	6H,6G
41609	Jul-15 - Dec-21	159	X	X	-	-	-	-	6D,5ZE,4X,6E,4W,6F,4VS,6G,3N,6H,3M
41614	Apr-23 - May-02	10	X	X	-	-	-	-	6E
41622	Mar-12 - May-01	50	X	X	-	-	-	-	6C,6B,6D,6E
41668	Mar-13 - Jun-04	84	X	X	-	-	-	-	6C,6B,6D,6E,4W,4VS,6F,6G,3N,6H
41689	Jan-01 - Mar-27	87	X	X	-	-	-	-	6C,6D,6B
41690	Jan-01 - Oct-07	281	X	X	-	-	-	-	6G,6F,6E
41696	Aug-23 - Nov-06	76	X	X	-	-	-	-	6C,6B,6D,6E,6F
41697	Oct-09 - Nov-16	39	X	X	X	-	-	-	6C,6D
41699	Sep-22 - Dec-31	101	X	X	X	-	-	-	6D,6E,4X,4W,6F,4VS,6G
41700	Sep-22 - Dec-31	101	X	X	X	-	-	-	6E,4W,4VS,6G,3O,3N,6H,3M
41703	Nov-18 - Dec-31	44	X	X	-	-	-	-	6F,6E
41704	Nov-18 - Dec-15	28	X	X	-	-	-	-	6E,6F
41712	Nov-19 - Dec-31	43	X	X	-	-	-	-	6F,4W,4VS
41713	Nov-19 - Dec-31	43	X	X	-	-	-	-	6F
41852	Sep-12 - Dec-31	111	X	X	-	-	-	-	6G,6F,6E,4W,4VS,6H
41855	Jan-01 - Feb-16	47	X	X	-	-	-	-	6D,6E,4W
41856	Jan-01 - Jun-24	176	X	X	-	-	-	-	6G,6F,6E,4W,4VS,3N,6H

41914	Feb-21 - Jul-19	149	X	X	-	-	-	-	6D,6E,6F
41915	Jan-01 - Jul-22	204	X	X	-	-	-	-	6G,6F,4VS,3N,6H
41936	Dec-17 - Dec-31	15	X	X	-	X	X	-	6C,6B,6D
41954	Mar-12 - Apr-15	34	X	X	-	-	-	-	6C,6B,6D,6E
41956	Mar-12 - Sep-30	202	X	X	-	-	-	-	6C,6B,6D,6E,4W,6F
41957	Sep-13 - Dec-31	110	X	X	-	-	-	-	6C,6D,6E,4X,4W,4VS,6F
41958	Nov-15 - Dec-31	47	X	X	X	-	-	-	6H
41960	Jan-01 - Feb-03	33	X	X	X	-	-	-	6C,6D
41966	Mar-01 - Dec-31	306	X	X	-	-	-	-	6C,6D,6E,4W
41973	Jan-25 - Apr-02	68	X	X	-	-	-	-	6C,6D,6E,4W,6F,4VS,6G,3N,3M
41976	May-15 - Dec-31	231	X	X	-	-	-	-	6C,6D,4X,5ZE,4W,6E,6F,4VS,3O,3N,3M,6H,6G
41982	Jan-01 - Feb-07	37	X	X	-	-	-	-	4VS,6G,3O,3N,3M,6H
41983	Jan-01 - Mar-22	82	X	X	-	-	-	-	6D,6E,6F
41987	Sep-30 - Dec-31	93	-	X	-	-	-	-	6F,6E,4X,4W,4VS,3O,3N,3M
41990	Jan-01 - Feb-15	46	X	X	-	-	-	-	3M,6H
41994	Jan-01 - Mar-21	81	X	X	-	-	-	-	6G,6H
42538	Mar-18 - Dec-05	262	X	X	-	-	-	-	6H,3M,3N
43523	Feb-05 - Oct-08	246	X	X	-	-	-	-	6C,6D,6E,4W,4X,5ZE
43524	Feb-11 - Apr-04	53	X	X	-	-	-	-	6C,6B,6D,6E,4X,4W,4VS,3O,3N,3M
44501	Apr-03 - Sep-19	170	X	X	-	-	-	-	3L,3N,3O,3M
44502	May-09 - Dec-27	232	X	X	-	-	-	-	3K,3L,3M
44503	Jan-01 - Jun-27	179	X	X	-	-	-	-	3M,3K,3L,3N
44504	Jun-10 - Sep-21	104	X	X	-	-	-	-	3L,3M
44510	Jan-01 - Jan-01	1	X	X	-	-	-	-	3M
44549	Jan-01 - May-17	138	X	X	X	-	-	-	3N,3O,3PS,4VS
44551	Jun-01 - Oct-06	127	X	X	X	-	-	-	1F,1E,1D,0B,2G,2H
44603	Jan-01 - Nov-06	311	X	X	X	-	-	-	1F,2J
44608	Jan-01 - Feb-20	51	X	X	X	-	-	-	4X,5ZE,4W,6E,4VS
44616	Jan-01 - Jul-07	189	X	X	-	-	-	-	2J,1F,2H
44621	Apr-21 - Dec-24	248	X	X	X	-	-	-	3N,3O,3PS,4VS,3M
44627	Jan-01 - Feb-04	35	X	X	X	-	-	-	2J
44629	Jan-01 - Jan-22	22	X	X	X	-	-	-	3K
44638	Dec-15 - Dec-31	17	X	X	X	X	X	-	4W
44639	Dec-14 - Dec-31	18	-	X	X	X	X	-	4X
44704	Jan-08 - Jan-15	8	X	X	X	X	X	-	3M
44705	Jan-01 - Jan-23	23	X	X	X	X	X	-	2J,1F,3K
44706	Jan-01 - Mar-26	86	X	X	X	X	X	-	3PS,3O,4VS,3N,3M
44721	Jan-15 - Jan-30	16	X	X	X	-	-	-	3M,3N
44722	Jan-15 - Mar-29	75	X	X	X	-	-	-	3N,3M,6H
44724	Jul-24 - Dec-31	161	X	X	X	-	-	-	1F,1E,2G,2H
44725	Jan-24 - May-02	100	X	X	X	-	-	-	3L,3M
44726	Mar-14 - Apr-09	27	X	X	X	-	-	-	3K,3M
44728	Mar-10 - Dec-31	297	X	X	X	-	-	-	3L,3N,3O,3PS
44729	Mar-10 - Apr-08	30	X	X	X	-	-	-	3M,3K
44730	Mar-13 - Jul-04	114	X	X	X	-	-	-	3L,3M,3K
44744	Oct-28 - Nov-25	28	X	X	X	-	-	-	3K
44745	Oct-28 - Dec-18	51	X	X	X	-	-	-	3K,2J,1F

44747	Jan-01 - Apr-22	113	X	X	X	-	-	-	6B,6D,5ZE,5ZW,4X,6E,4W,6F,4VS,3O,3N,6H,3M
44751	Sep-10 - Sep-14	5	-	-	-	-	-	-	3M
44752	Sep-03 - Oct-03	31	X	X	X	X	X	-	4X
44753	Sep-03 - Dec-31	120	X	X	X	X	X	-	4VS,4W,3PS,3O,3N,6H,3M
44754	Sep-03 - Dec-31	120	X	X	X	X	X	-	4VS,3PS,3O,3N
44755	Sep-03 - Sep-18	15	-	X	X	-	-	-	3O
44760	Aug-07 - Sep-19	44	X	X	X	-	-	-	1F
44761	Jun-02 - Dec-15	196	X	X	X	-	-	-	3K,2J,3L,3M
44762	Jun-02 - Dec-31	213	X	X	X	-	-	-	3L,3N,3O,3PS
44763	Jun-02 - Sep-15	106	X	X	X	-	-	-	2J,1F
44764	Sep-08 - Oct-13	35	X	X	X	-	-	-	3K,2J,1F
44765	Sep-09 - Dec-31	114	X	X	X	-	-	-	3K,3L,3N
44766	Sep-09 - Dec-31	114	X	X	X	-	-	-	3K,2J
44768	Sep-17 - Dec-31	106	X	X	X	-	-	-	2J,3K
44770	Sep-18 - Nov-29	72	X	X	X	-	-	-	3L,3N,3M
44772	Dec-01 - Dec-31	31	X	X	X	-	-	-	2J,3K,3L
44774	Dec-01 - Dec-31	31	X	X	X	-	-	-	1F
44777	Dec-08 - Dec-31	24	X	X	X	-	-	-	1F
44832	Jan-14 - May-19	127	X	X	-	-	-	-	6H
44833	Jan-01 - Oct-02	276	X	X	X	-	-	-	1F
44834	Sep-23 - Oct-07	15	-	-	-	-	-	-	6H
44846	Jan-01 - Dec-31	366	-	-	-	-	-	-	5ZE,5ZW,6A,6B,6D,6E,4W,4VS,6G,3O,3N,6H,3M
44848	Aug-19 - Nov-30	103	X	X	X	-	-	-	6G,4VS,3O,3N,6H
44850	Sep-29 - Dec-31	94	X	X	X	-	-	-	6E,6F
44877	Jan-01 - Apr-05	96	X	X	-	-	-	-	6E,6F,4W,4VS,6G,3N,3M,6H
44881	Jan-11 - Apr-18	99	X	X	-	-	-	-	6H
44882	Jan-01 - May-23	144	X	X	-	-	-	-	6G,6H,3M
44883	Jan-01 - Oct-16	290	X	X	-	-	-	-	6F,6E
44887	Jan-01 - Feb-21	52	X	X	X	-	-	-	2J,1F
44888	Jan-13 - May-13	122	X	X	-	-	-	-	6F,6E,6D
44891	Jan-01 - Jan-25	25	X	X	-	-	-	-	6G,4VS,3O,3N,3M
44892	Jan-01 - Jan-06	6	X	X	-	-	-	-	3M
44893	Jan-01 - Jan-30	30	X	X	-	-	-	-	3M,6H
44894	Jul-15 - Sep-10	58	X	X	-	-	-	-	6D,6B,5ZW,6A
44895	Jul-15 - Oct-20	97	X	X	-	-	-	-	4X,4W,4VS
44896	Jul-15 - Sep-18	66	X	X	-	-	-	-	4W,4VS,6G,3O,3N,6H
44897	Aug-08 - Sep-07	30	X	X	-	-	-	-	6D,6E,4W,4X,4VS
44898	Aug-08 - Aug-11	3	X	X	-	-	-	-	6D
44899	Aug-08 - Dec-29	143	X	X	-	-	-	-	4W,4X,6E,4VS,3O,3N,3M,3K
44900	Aug-25 - Dec-31	129	X	X	-	-	-	-	5ZE,5Y,4X,6D,4W,6E,6F,4VS,6G
44901	Jul-06 - Dec-22	169	X	X	X	-	-	-	6H,3M
44908	Jan-01 - Apr-27	118	X	X	X	-	-	-	1F,2J
44910	Oct-10 - Dec-31	83	X	X	X	-	-	-	5ZE,5ZW,6D,6B
44912	Jan-01 - Jan-14	14	X	X	X	-	-	-	3M
44914	Dec-11 - Dec-28	17	X	X	X	-	-	-	6H
44915	Jan-01 - Jan-17	17	X	X	X	-	-	-	3N,3L,3M
44916	Jan-05 - Mar-31	86	X	X	-	-	-	-	3M
44917	Jan-01 - Feb-21	52	X	X	X	-	-	-	2H,1F,2J

44918	Jan-29 - Dec-22	328	X	X	X	-	-	-	6H
44929	Jan-01 - Apr-22	113	-	X	-	-	-	-	4W,4VS,3N,6H,3M
44939	Jan-01 - Dec-31	366	X	X	-	-	-	-	4VS,3O,3N,3M,6H
44940	Jan-01 - Nov-28	333	X	X	-	-	-	-	6F,4VS,6G,3N,6H
44944	Mar-12 - Jun-03	84	X	X	-	-	-	-	6G,6F
44945	Jan-01 - Feb-13	44	X	X	-	-	-	-	6H,3M
44978	Aug-12 - Oct-13	63	X	X	X	-	-	-	3O,3PS
47503	May-12 - May-12	1	-	X	-	-	-	-	4X
47553	Jan-01 - Jun-29	181	-	-	-	-	-	-	0A,0B,1B,1C
47555	Mar-10 - Oct-28	233	-	-	-	-	-	-	4X
47557	Sep-15 - Dec-31	108	-	-	-	-	-	-	0A
47558	Sep-17 - Oct-25	38	-	-	-	-	-	-	0A
48618	Dec-04 - Dec-04	1	-	X	-	-	-	-	6D
48637	May-08 - May-12	4	-	-	-	-	-	-	4X
48638	May-08 - May-12	4	-	-	-	-	-	-	4X
48639	May-08 - May-12	4	-	-	-	-	-	-	4X
52513	Oct-10 - Oct-10	1	-	-	-	-	-	-	0B
55620	Feb-22 - Feb-22	1	X	X	-	-	-	-	6B
55916	Feb-22 - Feb-22	1	X	X	-	-	-	-	6B
62510	Nov-20 - Nov-26	7	-	X	X	-	-	-	6F
62522	May-26 - May-26	1	X	X	X	-	-	-	1F
62697	Aug-03 - Dec-31	151	X	X	X	-	-	-	1F,1E,1D,2G
62902	Jan-15 - Jan-18	3	X	X	X	-	-	-	1F
64516	Aug-07 - Dec-31	147	X	X	X	-	-	-	1F
64531	Sep-30 - Dec-08	70	-	X	X	-	-	-	0A,1A
64619	Jan-01 - Feb-09	40	X	X	X	-	-	-	2H,2J,3K
64620	Jan-01 - Sep-11	255	X	X	X	-	-	-	2G,2H,1F,2J,3K,3L,3M
64933	Jan-01 - Feb-20	51	X	X	X	-	-	-	2J,3K

Table 6a: Current data recovered in 2009 and not yet processed in 2009

Latitude	Longitude	Sounding Depth (meters)	Instrument Depth (meters)	Start Date	End Date	Serial Number	Mooring Number
45.0753	55.4734	275	159	12-Dec-2008	20-Jan-2009	ADCP RDI # 3745	1714
44.3521	63.3051	103	11.15	14-Oct-2008	02-Apr-2009	ADCP RDI # 10487	1705
44.2498	63.1662	169	16.24	14-Oct-2008	10-Apr-2009	ADCP RDI # 10572	1706
44.1339	63.0329	172	15.34	15-Oct-2008	10-Apr-2009	ADCP RDI #10220	1707

Table 6b: Current data recovered and not yet processed in 2009

Latitude	Longitude	Sounding Depth (meters)	Instrument Depth (meters)	Start Date	End Date	Serial Number	Mooring Number
45.3576	64.4033	55	53	07-Jan-09	04-Mar-09	ADCP RDI # 104	1708
45.3321	64.4210	53	51	07-Jan-09	04-Mar-09	ADCP RDI # 499	1709
45.3353	64.3244	57.5	55.5	07-Jan-09	04-Mar-09	ADCP RDI # 8336	1710
45.2418	64.2580	28.5	26.5	07-Jan-09	04-Mar-09	ADCP RDI # 9186	1715
45.3101	64.3361	53	N/A	07-Jan-09	26-Mar-09	ADCP RDI # 511	1711
48.5496	47.6507	2263	233	11-May-08	08-May-09	ADCP RDI # 8680	1677
48.5496	47.6507	2263	363	11-May-08	08-May-09	Aanderaa # 7127	1677
48.5496	47.6507	2263	713	11-May-08	08-May-09	Aanderaa # 655	1677
48.5496	47.6507	2263	1113	11-May-08	08-May-09	Aanderaa # 4998	1677
48.5496	47.6507	2263	1513	11-May-08	08-May-09	Aanderaa # 397	1677
48.5496	47.6507	2263	1913	11-May-08	08-May-09	Aanderaa # 464	1677
						Aanderaa	

48.5496	47.6507	2663	2238	11-May-08	08-May-09	# 376	1677
48.8315	47.4544	2480	2455	12-May-08	08-May-09	Aanderaa # 476	1678
49.1375	46.9211	2744	2719	14-May-08	10-May-09	Aanderaa # 566	1679
50.5116	46.2642	1745	1720	15-May-08	14-May-09	Aanderaa # 0563	1682
50.3956	46.8274	2220	2195	17-May-08	14-May-09	Aanderaa # 0392	1683
50.5592	45.9405	2241	2216	15-May-08	13-May-09	Aanderaa # 5573	1684
55.1203	54.0893	1018	998	28-May-08	25-May-09	Aanderaa # 5002	1680
45.2413	64.2581	27.6	25.6	04-Mar-09	25-May-09	ADCP RDI # 0039	1716
45.3573	64.4021	49	47	04-Mar-09	25-May-09	ADCP RDI # 9184	1717
74.0817	91.0481	146	77	04-Aug-08	01-Aug-09	ADCP RDI # 0493	1686
74.1997	90.8491	277	252	03-Aug-08	02-Aug-09	ADCP RDI # 8956	1688
74.1959	90.8413	267	75	03-Aug-08	02-Aug-09	ADCP RDI # 1269	1689
45.2406	64.2597	27	N/A	17-July-09	27-Aug-09	ADCP RDI # 8599	1737
45.2497	64.2944	26.5	N/A	17-July-09	27-Aug-09	ADCP RDI # 10487	1738
45.3351	64.4764	38	33	17-July-09	27-Aug-09	ADCP RDI # 2456	1739
45.3578	64.4703	68	N/A	17-July-09	27-Aug-09	ADCP RDI # 9184	1740
42.7391	61.5750	1710	1599	03-Oct-2008	28-Sept-09	Aanderaa # 33	1697
42.7391	61.5750	1710	1605	03-Oct-2008	28-Sept-09	Aanderaa # 595	1697
42.7391	61.5750	1710	1608	03-Oct-2008	28-Sept-09	Aanderaa # 20	1697
42.1636	61.0704	3870	968	02-Oct-08	29-Sept-09	Aanderaa # 1039	1701
42.8493	61.6309	1116	1066	03-Oct-08	28-Sept-09	ADCP RDI #11432	1696
42.7377	61.5769	1703	1653	03-Oct-08	28-Sept-09	ADCP RDI # 10942	1697
42.6583	61.4599	2302	2252	03-Oct-08	28-Sept-09	ADCP RDI # 11433	1698
42.5559	61.3671	2787	2737	03-Oct-08	29-Sept-09	ADCP RDI # 11089	1699
						ADCP RDI	

42.3928	61.2761	3393	3343	02-Oct-08	29-Sept-09	# 11431	1700
42.1636	61.0704	3870	3820	02-Oct-08	29-Sept-09	ADCP RDI # 10941	1701
44.3521	65.3052	102	96	10-Apr-09	03-Oct-09	ADCP RDI #9186	1721
44.2511	63.1634	173	169	10-Apr-09	02-Oct-09	ADCP RDI #11217	1722
44.1341	63.0329	176	172	10-Apr-09	03-Oct-09	ADCP RDI #10657	1723
43.0334	65.7669	129	127	15-Apr-09	09-Oct-09	ADCP RDI # 8336	1720
45.9036	61.0176	13.5	12.5	20-May-09	20-July-09	ADCP RDI # 3409	1755
46.2785	60.3008	8	7	22-July-09	04-Nov-09	ADCP RDI # 3409	1756
66.6666	60.7811	440	250	17-Sept-08	10-Oct-09	Aanderaa # 4603	C1
66.7607	60.0787	649	200	17-Sept-08	10-Oct-09	Aanderaa # 9607	C2
66.7607	60.0787	649	500	17-Sept-08	10-Oct-09	Aanderaa # 6405	C2
66.8573	59.0632	1034	200	17-Sept-08	10-Oct-09	Aanderaa # 7525	C3
66.8573	59.0632	1034	500	17-Sept-08	10-Oct-09	Aanderaa # 6402	C3
66.9809	57.6915	863	200	17-Sept-08	11-Oct-09	Aanderaa # 5574	C4
66.9809	57.6915	863	500	17-Sept-08	11-Oct-09	Aanderaa # 5578	C4
Latitude	Longitude	Sounding Depth (meters)	Instrument Depth (meters)	Start Date	End Date	Serial Number	Mooring Number
67.0357	57.0341	695	200	16-Sept-08	08-Oct-09	Aanderaa # 4271	C5
67.0357	57.0341	695	500	16-Sept-08	08-Oct-09	Aanderaa # 5569	C5
67.0706	56.6827	391	250	16-Sept-08	08-Oct-09	Aanderaa # 3306	C6

Table 6c: Current meters deployed 2009 and not yet recovered

Deployment Date/Location	Instrument Type	Number of Instruments	Projected Recovery Date
May 2009 Orphan Basin	Aanderaa RCM8 Aanderaa RCM11 ADCP RDI	4 4 1	May2010
May 2009 Laurentian Fan	Aanderaa RCM8 Aanderaa RCM11 ADCP RDI	2 4 1	May 2010
May 2009 Labrador Sea	Aanderaa RCM 8	1	May 2010
May 2009 Orphan Knoll	Aanderaa RCM11	4	May 2010
September 2009 Halifax Stn. 2	ADCP RDI	1	September 2010
October 2009 Scotian Slope	ADCP RDI	3	October 2010
October 2009 Davis Strait	ADCP RDI	3	October 2010
October 2009 Scotian Slope	ADCP RDI Aanderaa RCM11	6 1	October 2010
October 2009 Georges Bank	ADCP RDI	1	October 2010
August 2009 Barrow Strait	ADCP RDI	4	August 2010