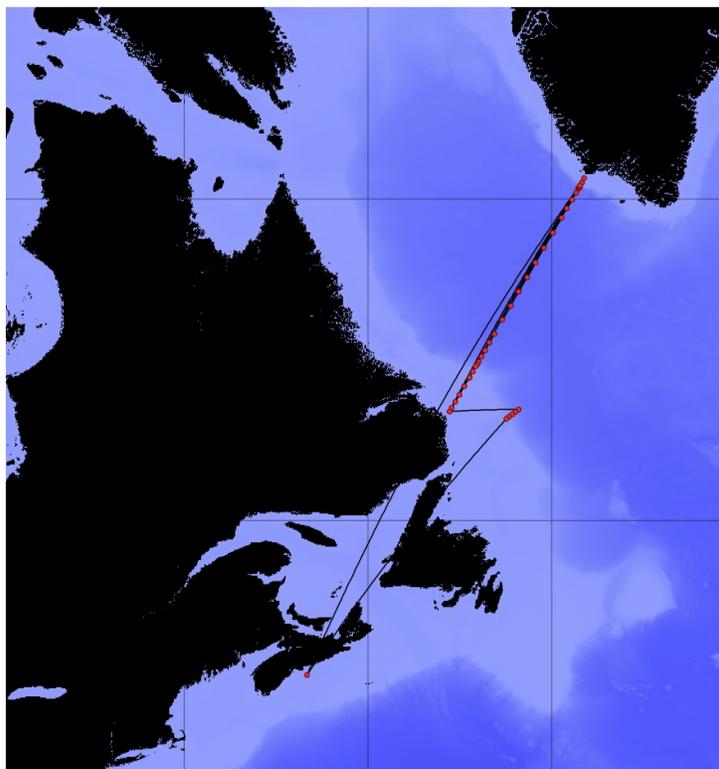


CRUISE REPORT: AR07W

(Updated OCT 2012)



Highlights

Cruise Summary Information

WOCE Section Designation	AR07W
Expedition designation (ExpoCodes)	18HU20050526
Chief Scientists	W. Glen Harrison/BIO
Dates	2005-MAY 26 - 2005 JUN 7
Ship	<i>CCGS HUDSON</i>
Ports of call	St. John's, NL, Canada - Dartmouth, NS, Canada
Geographic Boundaries	63° 19.27' W 60° 34.05' N 48° 13.86' W 44° 15.87' N
Stations	41 CTD/ROS stations
Floats and drifters deployed	2
Moorings deployed or recovered	1 recovered, 1 deployed

Recent Contact Information:

W. Glen Harrison
Institute: DFO, BIO, Biological Oceanography Section, Ecosystem Research Division
PO Box 1006 • Dartmouth, NS • B2Y 4A2 • CANADA
Tel: +1-902-426-3879 • Email: Glen.Harrison@dfo-mpo.gc.ca

Links To Select Topics

Shaded sections are not relevant to this cruise or were not available when this report was compiled.

Cruise Summary Information	Hydrographic Measurements
Description of Scientific Program	CTD Data:
Geographic Boundaries	Acquisition
Cruise Track (Figure): PI CCHDO	Processing
Description of Stations	Calibration
Description of Parameters Sampled	Temperature Pressure
Bottle Depth Distributions (Figure)	Salinities Oxygens
Floats and Drifters Deployed	Bottle Data
Moorings Deployed or Recovered	Salinity
	Oxygen
Principal Investigators	Nutrients
Cruise Participants	Carbon System Parameters
	CFCs
Problems and Goals Not Achieved	Helium / Tritium
Other Incidents of Note	Radiocarbon
Underway Data Information	References
Navigation Bathymetry	
Acoustic Doppler Current Profiler (ADCP)	
Thermosalinograph	
XBT and/or XCTD	
Meteorological Observations	Acknowledgments
Atmospheric Chemistry Data	
Data Processing Notes	

CRUISE REPORT

HUDSON 2005016

LABRADOR SEA

WOCE LINE AR7W

May 26 – June 7, 2005

A. CRUISE NARRATIVE

1. Highlights

- a. WOCE Designation: WOCE Line AR7W
Atlantic Circulation Experiment
- b. Expedition Designation: Hudson 2005016
- c. Chief Scientist: Glen Harrison
Ecosystem Research Division
Department of Fisheries and Oceans
Bedford Institute of Oceanography
PO Box 1006
Dartmouth, NS, Canada B2Y 2A4
Internet harrisong@mar.dfo-mpo.gc.ca
- d. Ship: CCGS Hudson
- e. Ports of Call: May 26 St. John's, NL, Canada
June 7 BIO, Dartmouth, NS, Canada
- f. Cruise Dates: May 26 to June 7, 2005

2. Cruise Summary Information

a. Cruise Track

A cruise track is shown in [Figure A.2.1](#). The ship's position at 0000Z on each day of the cruise is indicated with a date label.

The WOCE cruise station summary file (SUM) outlines the science operations conducted during the cruise.

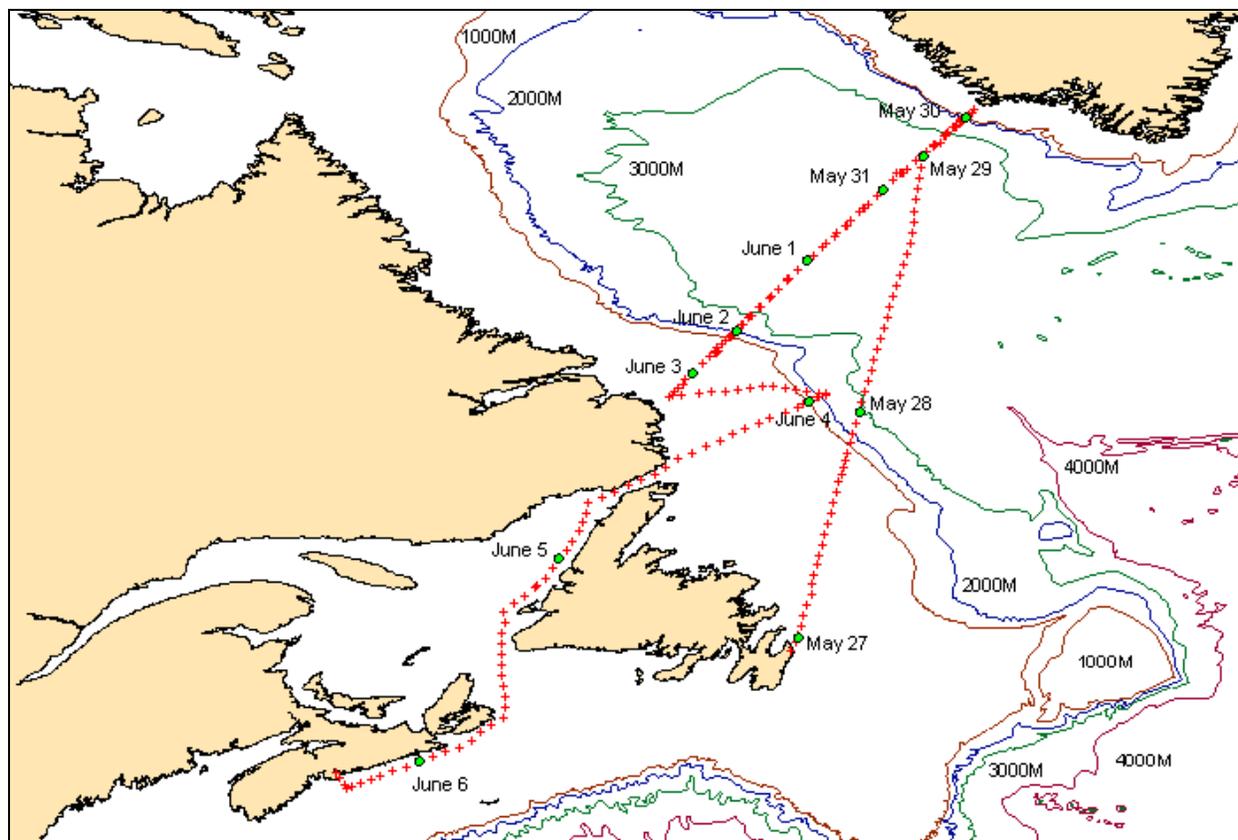


Figure A.2.1 Cruise track for 18HU2005016/1. The date labels indicate the ship's position at 0000Z.

b. Total Number of Stations Occupied

The CTD and ROS station positions are shown in [Figure A.2.2](#). The WHP stations are all contained in the box defined by 44-61°N and 54-64°W. [Table A.2.1](#) lists the science operations for 18HU2005016.

Cast Type	Number of Operations	Detailed Division	Operation Numbers
Rosette & CTD	31	28 regular AR7W Sites (L3 line) plus Sites 8.5, 25.3 and 25.7	see Table A.2.2
	1	Halifax Line Site 2	178
	4	Biology Casts not included in other tables	12, 46, 80, 113
	5	L4N Line (3, 4a, 4b, 5 and 6)	171 - 175
Moorings	2	1 recovery, 1 deployment	148, 150
	1	Release test	149
Floats	2	PROVOR floats deployed	52, 115
Biology	87	59, 200 µm net tows	1, 3, 5, 7, 9, 11, 14, 15, 17, 18, 22, 24, 26, 28, 33, 35, 43, 45, 53, 55, 61, 63, 69, 71, 77, 79, 87, 89, 95, 97, 104, 106, 110, 112, 118, 120, 123, 125, 128, 130, 132, 134, 136, 138, 140, 142, 144, 146, 151, 153, 155, 157, 159, 161, 163, 165, 167, 169, 176
		28, 76 µm net tows	2, 6, 10, 23, 27, 34, 44, 54, 62, 70, 78, 88, 96, 105, 111, 119, 124, 129, 133, 137, 141, 145, 152, 156, 160, 164, 168, 177
Chemistry	14	¹²⁹ I surface	25, 29, 36, 56, 64, 81, 90, 107, 114, 131, 143, 147, 162, 166
	5	¹²⁹ I profile	8, 47, 72, 98, 121
Other		257.9 hrs Ship Board ADCP	No number assigned
	45	XBT Deployments	30 - 32, 37 - 42, 48 - 51, 57 - 60, 65 - 68, 73 - 76, 82 - 86, 91 - 94, 99 - 103, 108, 109, 116, 117, 122, 127

Table A.2.1 Science operations conducted on 18HU2005016/1.

AR7W Site Number	2005016 Deep Cast Operation Number
1	170
2	166
3	162
4	158
5	154
6	147
7	143
8	139
8.5	135
9	131
10	126
11	121
12	114
13	107
14	98
15	90
16	81
17	72
18	64
19	56
20	47
21	4
22	36
23	8
24	29
25	13
25.3	20
25.7	21
26	25
27	19
28	16

Table A.2.2. AR7W (L3) sites and rosette and CTD operation numbers for 18HU2005016/1.

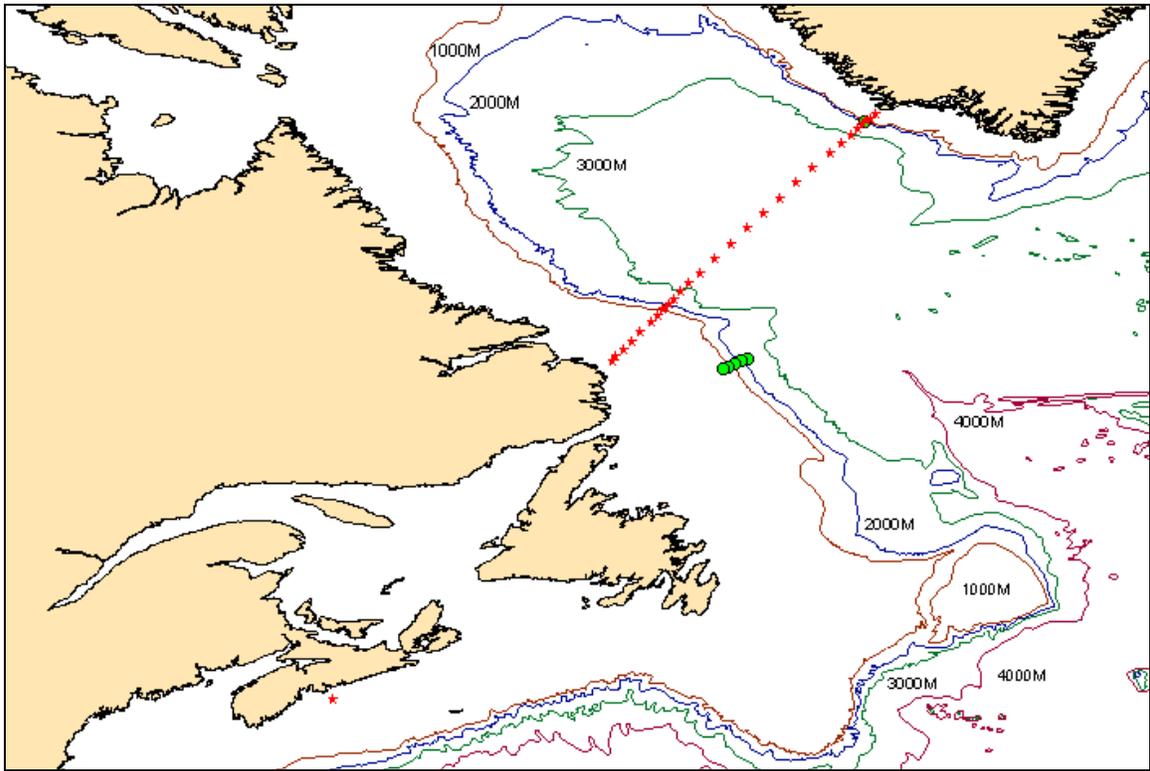


Figure A.2.2 This map shows the station positions for CTD only operations (green filled circles) and rosette/CTD operations (red filled star) for Hudson 18HU2005016/1.

Along AR7W, the stations were full-depth WHP small volume rosette casts with up to 24 rosette bottles. Water samples were analyzed for CFCs, carbon tetrachloride, total carbonate, alkalinity, oxygen, salinity, nutrients (nitrate, phosphate and silicate), total organic carbon (TOC), and bacteria abundance. Chlorophyll was analyzed at depths less than 200 m at all stations as well. On some casts, samples were collected for ^{129}I (iodine-129), nitrogen and oxygen stable isotopes.

c. Floats and Drifters deployed

Two Metocean PROVOR floats were deployed along the AR7W line. PROVOR MT-158 was deployed near station L3-19 at 58° 39.3041N and 050° 24.1092W in approximately 3440 meters of water. PROVOR MT-166 was deployed near station L3-12 at 55° 50.7535N and 053° 23.8087W in approximately 3080 meters of water. Both floats appeared to have started properly. Each sent Argos transmissions, gave 10 audible clicks from the solenoid valve and floated at the surface when deployed. Listed in table A.2.3 are the two PROVOR floats that were deployed.

PROVOR Float #	WMO #	Event Number	Launch Position		Start Date / Time	Launch Date / Time
			Latitude	Longitude		
MT-158	4900529	52	58° 39.3041N	050° 24.1092W	21:48 30 May 05	22:57 30 May 05
MT-166	4900537	115	55° 50.7535N	053° 23.8087W	14:20 1 June 05	14:42 1 June 05

Table A.2.3 PROVOR float deployments on Hudson 2005016

d. Moorings deployed or recovered

The Aanderaa current meter mooring near station L3-8 on the AR7W line was once again serviced on June 2nd. Mooring #1514 was recovered successfully under good sea conditions. The RCM8 appeared to have worked properly and all mooring tackle was in good condition. The replacement mooring #1555 was deployed successfully.

Deployment:

M 1555	55 07.1772 N 54 05.3113 W	Standard mooring consisting of one current meter positioned 20m below surface along AR7W on the Labrador Slope (12-month deployment) at the 1010 metres.
--------	------------------------------	--

Recovery:

M 1514	55 07.0731 N 54 05.2760 W	Standard mooring consisting of one current meter positioned 20m below surface along AR7W on the Labrador Slope (12-month deployment) at the 1035 metres.
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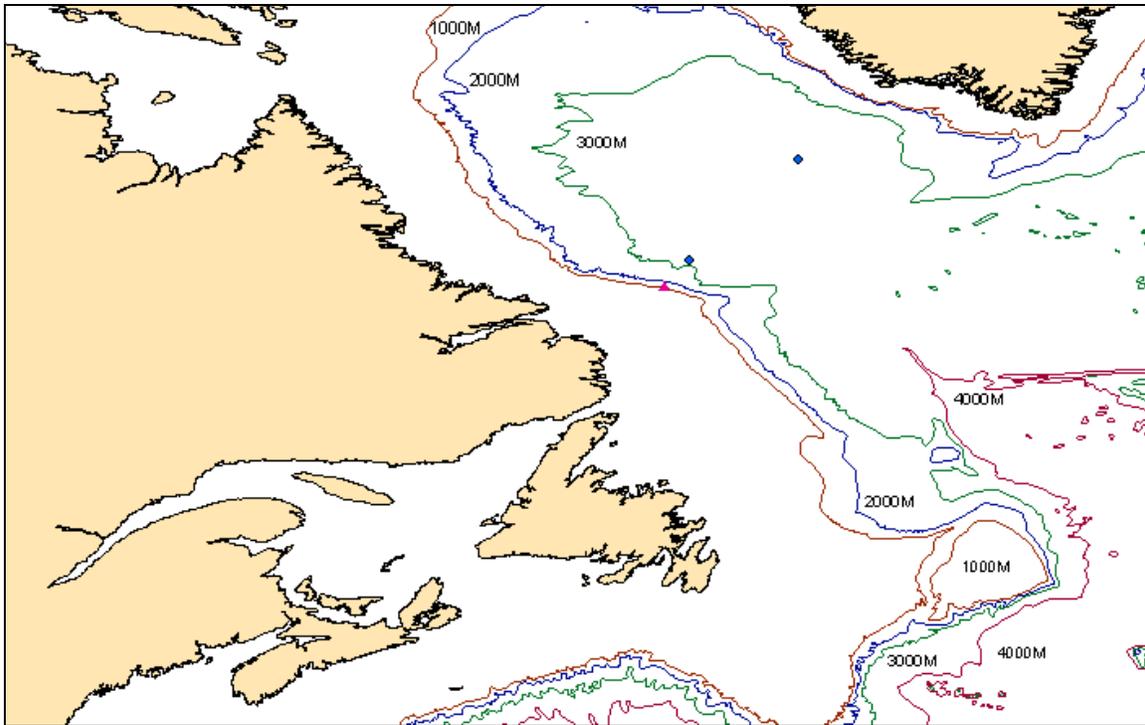


Figure A.2.3 Mooring operations (pink filled triangle - a mooring was recovered and a new one deployed in the same location) and float deployment locations (blue filled diamonds) for Hudson 18HU2005016/1.

3. List of Principal Investigators

Name	Affiliation	Responsibility
Allyn Clarke	BIO clarkea@mar.dfo-mpo.gc.ca	Senior scientist Overall co-ordination
Bob Gershey	BDR Research rgershey@fox.nstn.ns.ca	Alkalinity, carbonate, CFCs
Glen Harrison	BIO harrisong@mar.dfo-mpo.gc.ca	Coordinator biological program; carbon, nitrate and ammonium utilization by phytoplankton, sediment traps Labrador Sea.
Erica Head	BIO heade@mar.dfo-mpo.gc.ca	Macrozooplankton distribution, abundance and metabolism
Peter Jones	BIO jonesp@mar.dfo-mpo.gc.ca	Alkalinity, carbonate, CFC's
Paul Kepkay	BIO kepkayp@mar.dfo-mpo.gc.ca	Dissolved organic carbon, colloid chemistry and plankton respiration
Bill Li	BIO lib@mar.dfo-mpo.gc.ca	Pico-plankton distribution and abundance, bacterial abundance and productivity
Robert Pickart	WHOI pickart@rsp.who.edu	Lowered ADCP
John Smith	BIO smithjn@mar.dfo-mpo.gc.ca	Chemistry isotopes
Igor Yashayaev	BIO YashayaevI@mar.dfo-mpo.gc.ca	Hydrography and XBTs

Table A.3.1. List of Principal Investigators. See Section 7 for addresses.

4.1 Physical - Chemical Program

a. Narrative

This expedition was conducting operations in support of four ongoing scientific initiatives.

The first initiative is in support of the North Atlantic Oscillation and the Atlantic Thermohaline Circulation Principal Research Areas of the Climate Variability and Predictability (CLIVAR) project of the World Climate Research Programme (WCRP). The occupation of the Labrador Sea section and the recovery of the one Labrador Sea mooring provide a measure of the winter cooling and water mass transformations over the winters of 2004/2005. The resetting of the mooring on the 1000 metre isobath on the Labrador slope continues a 20+ year observation program of the Labrador Current.

The second initiative is the continuation of the Labrador Sea project concerned with the natural and anthropogenic carbon cycles. The biological program is designed to characterize the late spring biological processes in the Labrador Sea and its shelf regions and is discussed in a later section of this document. The physical/chemical oceanographic program observes nutrients, total carbonate, alkalinity and CFCs over the entire water column in order to document the vertical transport of carbon via winter convection in the Labrador Sea as well as the changes in carbon storage in the deep waters of the North Atlantic.

The third initiative is to observe the physical and chemical parameters at the Halifax Section Station 2 fixed-station monitoring site in support of DFO's Atlantic Zonal Monitoring Program (AZMP).

The fourth initiative was to deploy profiling floats (PROVOR) as a Canadian contribution to the International GODAE/Argo program. Two floats were deployed in the Labrador Sea.

b. Radioisotope Sampling Program

John Smith

Water samples were collected for ^{129}I from a near surface rosette bottle at 14 stations on the L3 (AR7W) line. Full depth sampling for ^{129}I was carried out at 5 stations on the same section. See [table A.2.1](#) for the list of operations during which ^{129}I was sampled.

4.2 Biological Program

a. Narrative

The biological program conducted as part of cruise 2005016, with some modifications, was a continuation of studies began in 1994 to describe the large-scale (spatial and temporal) variability in plankton biomass, productivity and biogenic carbon inventories in the Labrador Sea.

The program has consisted of essentially five elements:

- 1) a phytoplankton biomass/primary productivity program conducted by Jeff Anning with assistance from Tim Perry (for Glen Harrison),
- 2) a microbial program conducted by Jeff Anning and Tim Perry,
- 3) a mesozooplankton program conducted by Les Harris (for Erica Head),
- 4) a dissolved organic carbon/community respiration program conducted by Jay Bugden (for Paul Kepkay), and
- 5) an additional program, investigating the stable isotope (nitrogen) content of mesozooplankton (collected from net tows) related to Right Whale diets, was also conducted by Tucker Williamson, University of New England.

The ultimate aim of these studies is twofold:

- 1) to provide a description of the inventories in and export of biogenic carbon from the Labrador Sea, their turnover rates and variability in space and time as part of Ecosystem Research Division's (ERD) continuing climate-studies and
- 2) to provide a description of plankton life-cycles and productivity in the Labrador Sea and its influence or contribution to ecosystems downstream in support of ERD's fisheries-related research.

In addition to the Labrador Sea study, phytoplankton, mesozooplankton and nutrient samples were collected at the Halifax line Station 2 in support of ERD/OSD's obligations to the Atlantic Zone Monitoring Program (AZMP).

b. Zooplankton Sampling

L. Harris / E. Head

The zooplankton sampling is part of an ongoing program, the aim of which is to investigate the distribution, abundance and life history of the major zooplankton groups found in the Labrador Sea and its associated shelf systems. Particular emphasis is placed on the copepod species of the *Calanus* genus, which dominate the zooplankton in this region.

Vertical net tows were taken at 30 stations (1 on the Halifax Line and 29 on the L3 line). At all stations, tows were made from 100 meters to the surface using a 76 µmeter and a 200 µmeter ring net. At 27 of these stations an additional tow was made using a 200 µmeter ring net. See [Figure A.4.2.1](#) below for station locations where nets were used.

c. Measurements Of Copepod Reproduction Rates

L. Harris / E. Head

Egg production rates of *Calanus finmarchicus*, the dominant copepod species, were measured at 9 stations in the Labrador Sea and 3 stations on the Labrador Shelf.

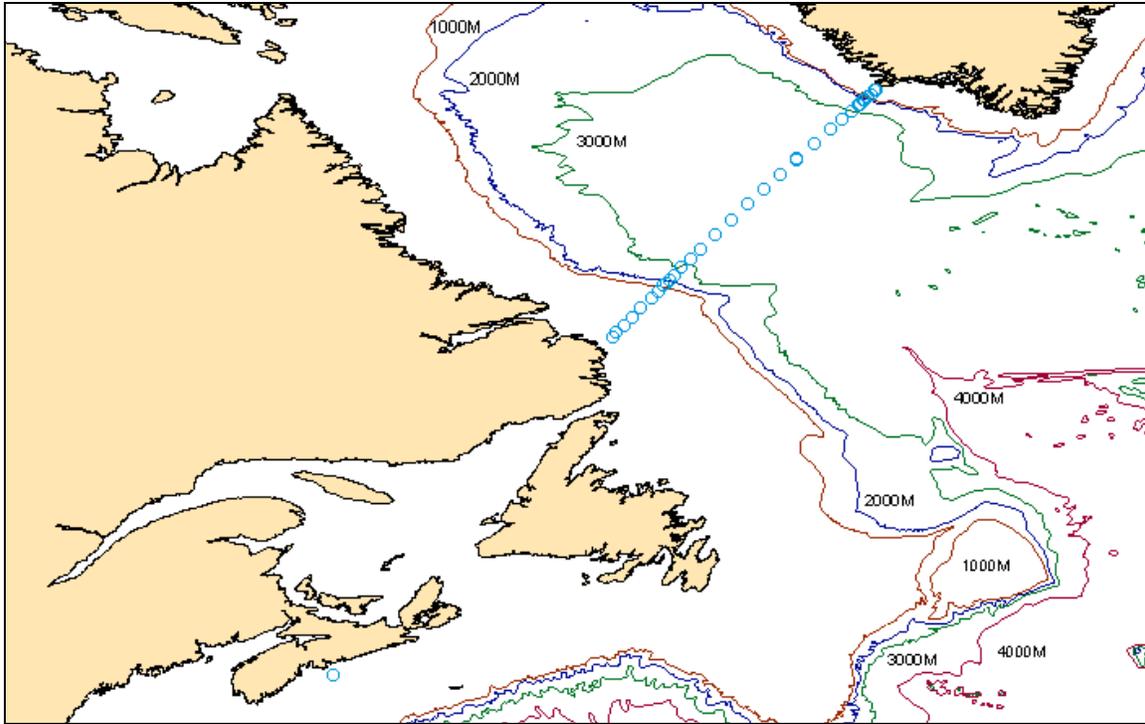


Figure A.4.2.1 Net tow (blue open circle) locations for 18HU2005016/1.

**d. Total Organic Carbon (TOC) and Microbial
Community Respiration**

Jay Bugden / Paul Kepkay

In order to better understand the cycling of carbon and the mechanisms controlling it in the Labrador Sea, it is necessary to examine the pool of total organic carbon (TOC), and look at the activity of the microbial community in the water column. By examining the rate of respiration and size fractionating the TOC, information on the fate of carbon in this marine environment may be elucidated.

During CCGS Hudson cruise 2005-016 five (5) stations were sampled at the surface and at the chlorophyll maximum (usually between 10 and 50m depth) for gross microbial community respiration, and for the same stations only the surface was sampled for size fractionation of TOC (ultrafiltration). The stations sampled are listed below. TOC depth profiles were also collected from the stations indicated in the table below.

Station	Respiration	Ultrafiltration	TOC Profile
AR7W site 1			X
AR7W site 2			X
AR7W site 3			X
AR7W site 4			X
AR7W site 5			X
AR7W site 6	X	X	X
AR7W site 7			X
AR7W site 8			X

AR7W site 8.5			
AR7W site 9			X
AR7W site 10			X
AR7W site 11			X
AR7W site 12	X	X	X
AR7W site 13			X
AR7W site 14			X
AR7W site 15			X
AR7W site 16	X	X	X
AR7W site 17			X
AR7W site 18			X
AR7W site 19			X
AR7W site 20	X	X	X
AR7W site 21			X
AR7W site 22			X
AR7W site 23			X
AR7W site 24			X
AR7W site 25	X	X	X
AR7W site 26			X
AR7W site 27			X
AR7W site 28			X

Table A.4.2.2 Ultrafiltration, respiration and TOC sampling on CCGS Hudson cruise 2005016.

e. Primary Production Measurements

Jeff Anning

Water samples for primary production experiments were collected from the rosette at 10 stations. For each incubation experiment, 33 aliquots were inoculated with ¹⁴C of sodium bicarbonate and then incubated at in situ temperatures at 30 light levels (+ 3 dark bottles) for approximately 3 hours. At the end of the incubation period the cells were harvested onto GF/F glass fibre filters for later counting in a scintillation counter. Duplicate chlorophyll, duplicate particulate organic carbon, one HPLC, and one Absorption Spectra sample were collected for each incubation experiment.

Photosynthesis/Irradiance incubations were conducted at the following stations:

Station	Event	Lat. (deg)	Lat. (min)	Long. (deg)	Long. (min)	Date	Time GMT	Depth	ID
L3-25	12	60	17.673	48	33.669	29-Jun-05	1218	2.0	285562
L3-25	12	60	17.673	48	33.669	29-Jun-05	1218	30.0	285557
L3-27	19	60	27.134	48	22.23	29-Jun-05	1829	2.0	285609
L3-27	19	60	27.134	48	22.23	29-Jun-05	1829	30.0	285605
L3-20	46	59	3.964	49	57.43	30-May-05	1717	2.0	285690
L3-20	46	59	3.964	49	57.43	30-May-05	1717	20.0	285686
L3-16	80	57	22.727	51	47.293	31-May-05	1550	2.0	285803

L3-16	80	57	22.727	51	47.293	31-May-05	1550	30.0	285798
L3-12	113	55	50.712	53	23.708	01-Jun-05	1206	2.0	285916
L3-12	113	55	50.712	53	23.708	01-Jun-05	1206	20.0	285911
L3-6	147	54	45.027	54	27.937	02-Jun-05	1100	2.0	286069
L3-6	147	54	45.027	54	27.937	02-Jun-05	1100	10.0	286066

Table A.4.2.3. Photosynthesis/Irradiance incubations were conducted at the above stations.

f. Bacterial Abundance and Production of Microbial Plankton

Jeff Anning / Tim Perry

At every depth a sample was collected for bacterial counting by flow cytometer. Duplicate chlorophyll samples were collected in the surface waters (100m to surface) and a single sample for both HPLC and Absorption spectrum analysis were collected from the surface.

Water samples were collected from various depths at 4 stations (25, 16, 12, 3) and incubated for between 3 – 24 hours after inoculation with ³H labeled leucine. The cells were collected by centrifugation and prepared for scintillation counting back on shore.

g. Isotope analysis of copepods

Tucker Williamson

This project involved the collection of *Calanus finmarchicus* for natural isotope (nitrogen) concentration analysis. These copepods were collected at each of the AR7W stations, by performing a plankton tow. This collection was done as part of Prof. Steve Zeeman's NASA grant research project on whales. He is trying to map their distribution and one way to do this is by using isotope analysis. Since *C. finmarchicus* are extremely abundant in the sampled water, it stands to reason that it would be a major component in the diet of certain baleen whales. Thus, by knowing the range of *C. finmarchicus* and how much of its isotope signature is present in a whale; it is possible to gain an understanding about the population distribution of these whales.

5. Major Problems and Goals Not Achieved

No major problems; all goals achieved. Despite fewer sea days available for this mission than requested, due to late return of HUDSON to BIO after refit, (a) favourable weather and coastal ice conditions (b) operation of the ship on 3-engines during extended transits and (c) trouble-free equipment operation, resulted in all L3 line station work being successfully completed. Four additional unscheduled CTD stations were occupied off the northern Newfoundland slope as well as Halifax Line Station 2 on the transit back to BIO. The program was completed with time to spare allowing the ship to return to BIO a day earlier than scheduled.

6. Other Incidents of Note

The scientific seawater source in the ship's forward lab, used for the Continuous Flow Multisensor Package (CFMP), was inaccessible on this mission due to the external access valve being improperly installed during refit (see B3 below).

7. List of Cruise Participants

Name	Responsibility	Affiliation
Jeff Anning	Primary Production	BIO
Carol Anstey	Nutrients	BIO
Kumiko Azetsu-Scott	Scientist, CO ₂ , CFCs, Alkalinity	BIO
Jay Bugden	TOC Levels, respiration rates	BIO
Rick Boyce	Salts, moorings	BIO
Pierre Clement	Chemistry assistance	BIO
Bob Gershey	Contract, CO ₂ , CFCs, Alkalinity	BDR
Les Harris	Zooplankton, Net Tows	BIO
Glen Harrison	Senior Scientist	BIO
Ross Hendry	Scientist, O ₂ , Computer Room	BIO
Jeff Jackson	Data management, Computer Room	BIO
Kassiem Jacobs	CTD/rosette assistance	DAL
Andy Lin	CTD/rosette assistance	DAL
Tim Perry	Bacterial activity	BIO
Bob Ryan	Moorings, instrumentation	BIO
Tucker Williamson	Student, vertical net tows	UNE
Igor Yashayaev	Assistant Scientist, Computer Room	BIO
Frank Zemlyak	Technician, CO ₂ , O ₂ , CFCs, Alkalinity	BIO

BIO Bedford Institute of Oceanography
 PO Box 1006
 Dartmouth, NS, B2Y 2A4
 Canada

BDR	BDR Research Ltd. Box 652, Station 'M' Halifax, NS, B3J 2T3 Canada
DAL	Dalhousie University Halifax, NS, B3H 4R2 Canada
UNE	University of New England Westbrook College Campus 716 Stevens Avenue Portland, Maine 04103

B. UNDERWAY MEASUREMENTS

1. Navigation and Bathymetry

Jeff Jackson

The navigation system onboard CCGS Hudson consists of a differential GPS receiver and AGCNAV. The receiver is one of many NMEA feeds into a multiplexer that provides all the NMEA strings to a PC on the bridge. The PC, which is running AGCNAV software, then rebroadcasts the NMEA strings to distribution units in the computer room, which provide 16 output lines for the working labs. The resulting broadcast navigation strings are at about 1 Hz. The navigation data are then logged at specified intervals on a PC. For this cruise the navigation was logged at 1 second, 10 seconds and 1 minute intervals during the cruise due to operator oversight. It was logged at a 30 second interval throughout the cruise.

AGCNAV is a PC based display and waypoint setting software package, developed at the Atlantic Geoscience Centre at BIO. This software graphically displays ship position, waypoints, course, speed, etc. to the various science working areas.

The echo sounder system used for collecting bathymetric data at station locations consisted of a Raytheon Line Scan Recorder, Model LSR 1811-1 (serial number A101) connected to a 12kHz transducer. The transducer beam width is 15 degrees. The sweep rate of the record was adjusted throughout the course of data collection to aid in identifying the bottom signal. One transducer is positioned on a Ram that can be lowered or raised depending on conditions. When the ram is up, the waterline to transducer offset is 6 m. When the ram is down, the offset is 8 m.

2. Vessel Mounted Acoustic Doppler Current Profiler

Murray Scotney

The Hudson was equipped with a hull mounted RDI Acoustic Doppler Current Profiler (ADCP). The transducer (serial number 177) had VM ADCP electronics (serial number 172). Logging, using Transect software on a 486 PC, was started on May 26 at 1925 Z leaving the St. John's Harbour.

The configuration used for logging resulted in 5-minute averages in 4 meter bins. The averaged data are stored to disk and backed up every few days. ADCP logging was stopped on June 6 at 13:20 Z in Halifax Harbour.

3. Continuous Flow Multisensor Package (CFMP)

Jeff Anning

Because of inaccessibility of scientific seawater system (external access valve improperly installed during ship's refit), the CFMP was not operational on this mission.

4. XBT and XCTD

Igor Yashayaev

Expendable Bathythermographs were routinely deployed along the AR7W line on the way from Greenland to Labrador. See figure B.4.1 for a map with the XBT drops indicated. The XBTs were model T7 from Sparton of Canada. These types of probes are capable of measuring to maximum depths of 800 m (T7) at the full cruising speed 15 knots. The vertical resolution of the measurements was about 0.6-0.8 m. There were 45 XBTs launched during the cruise (Table A.2.1 lists the operation numbers when these were deployed).

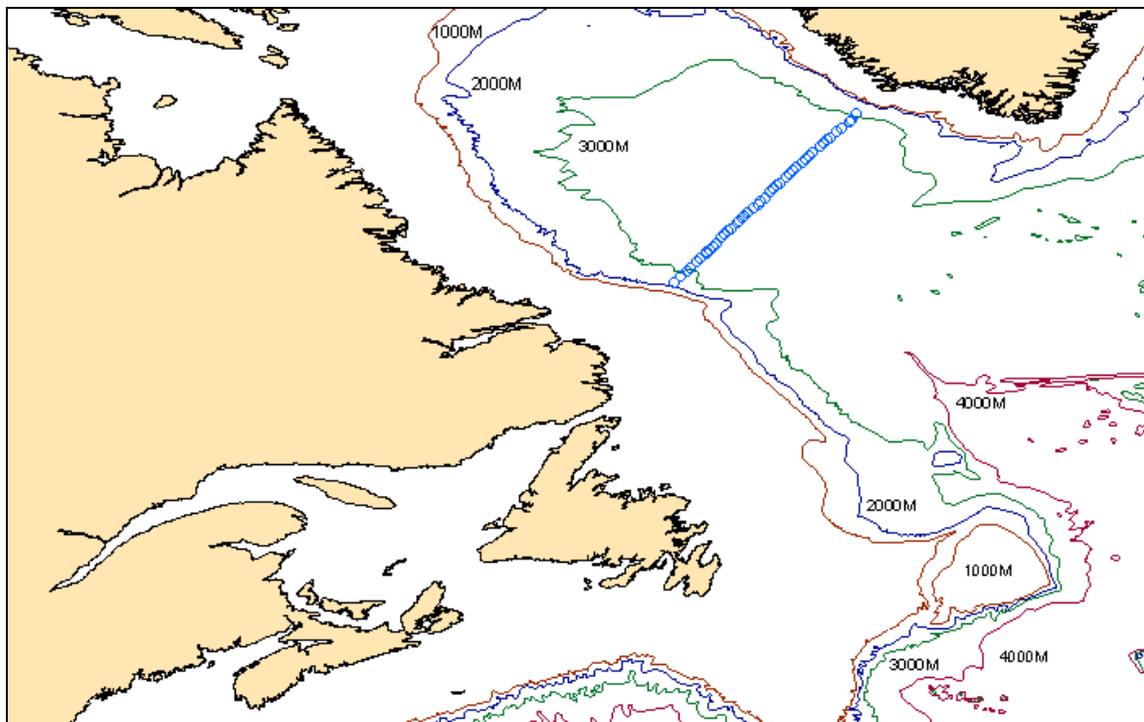


Figure B.4.1 XBT drop sites along the AR7W section (indicated by blue hollow circles).

5. Meteorological observations

The ship's crew logged routine reporting of meteorological variables.

6. Atmospheric Chemistry

There was no atmospheric chemistry program.

CCHDO Data Processing Notes

Date	Person	Data Type	Action	Summary
2010-08-03	<i>Carolina Berys</i>	SUM/CrsRpt	Website Update	Available under 'Preliminary/Unprocessed'
	Detailed Notes Zip file including SUM and Cruise Report submitted by Jeff Jackson on 2010-07-19 available under 'Preliminary/Unprocessed', unprocessed by CCHDO.			
2011-08-23	<i>Jeff Jackson</i>	CTD	Submitted	To go online
2011-08-30	<i>Carolina Berys</i>	CTD	Website Update	Available under 'Files as received'
	Detailed Notes File 18HU20050526_CTD.zip containing CTD data, submitted by Jeff Jackson on 2011-08-23, available under 'Files as received', unprocessed by CCHDO.			
2011-11-04	<i>Carolina Berys</i>	CTD/SUM	Website Update	files online
	Detailed Notes SUM file, changed EXPOCODE from 18HU200505_1 to 18HU20050526, put online today 2011-11-04 by C Berys. CTD files submitted on 2011-08-23, formatted and put online by S Diggs on 2011-09-06.			
2012-10-10	<i>CCHDO Staff</i>	BTL	Website Update	Available under 'Files as received'
	Detailed Notes The following files are now available online under 'Files as received', unprocessed by the CCHDO. 18HU20050526.exc.csv AR07W_2005do.pdf			
2012-10-10	<i>Bob Key</i>	BTL/CrsRpt	Submitted	to go online
	Detailed Notes 1. All of the data labeled NITRAT are actually NO ₃ +NO ₂ . This is noted in the header text, so if the column header is corrected, then the header text should be edited accordingly. 2. I ran all parameters of each cruise through QC. Many flags have been altered relative to the original submissions. In several cases I went back to the PI and got updates (mostly CTD calibrations).			
2012-10-25	<i>Jerry Kappa</i>	CrsRpt	Submitted	PDF version ready to go online
	Detailed Notes I've placed 1 new version of the cruise report: ar07w_2005ado.pdf into the co2clivar/atlantic/ar07w/ar07w_2005a/ directory. It includes summary pages and CCHDO data processing notes as well as a linked Table of Contents and links to figures, tables and appendices. It will be available on the cchdo website following the next update script run.			