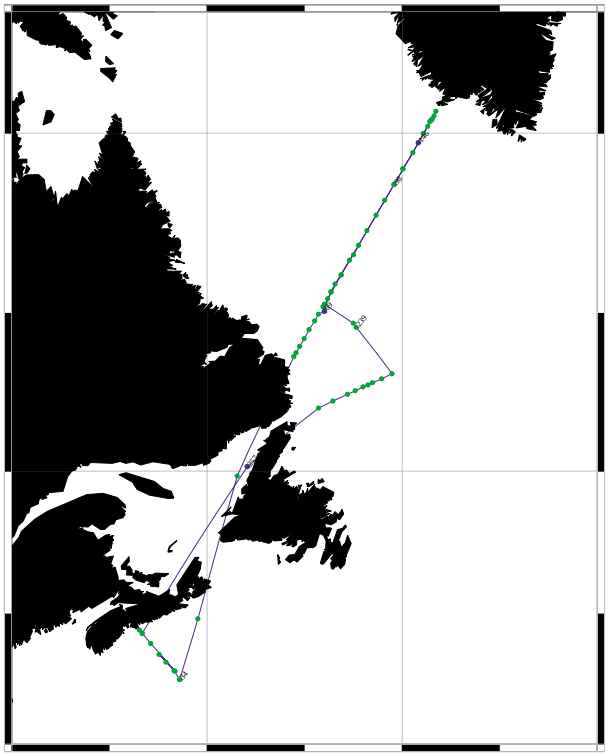
A. Cruise Narrative: AR07W_2001

(preliminary: 2002 JUL 11)



A.1. Highlights

WHP Cruise Summary Information

WOCE section designation	**AR07W_2001**
Expedition designation (EXPOCODE)	**18HU2001022_1**
Chief Scientist/affiliation	**R. Allyn Clarke/BIO**
Dates	2001 MAY 30 - 2001 JUN 15
Ship	*CCGS Hudson*
Ports of call	BIO, Dartmouth, NS, Canada
Number of stations	62 Rosette & CTD Stations
Stations' Geographic boundaries	60° 34.4' N 63° 38.88' W 48° 15.79' W 42° 31.26' N
Floats and drifters deployed	0
Moorings deployed or recovered	13: 5 recoveries, 5 deployments, 3 release tests

Contributing Authors

Jeff Anning	Jay Bugden	Paul Dickie	L. Harris	Glen Harrison	Brian Irwin
Anthony Isenor	Paul Kepkay	William Li	Gary Maillet	R.M. Moore	S. Punshon
	Murray Scotney	John Smith	R. Tokarczyk	Igor Yashayeav	

Chief Scientist Contact Information

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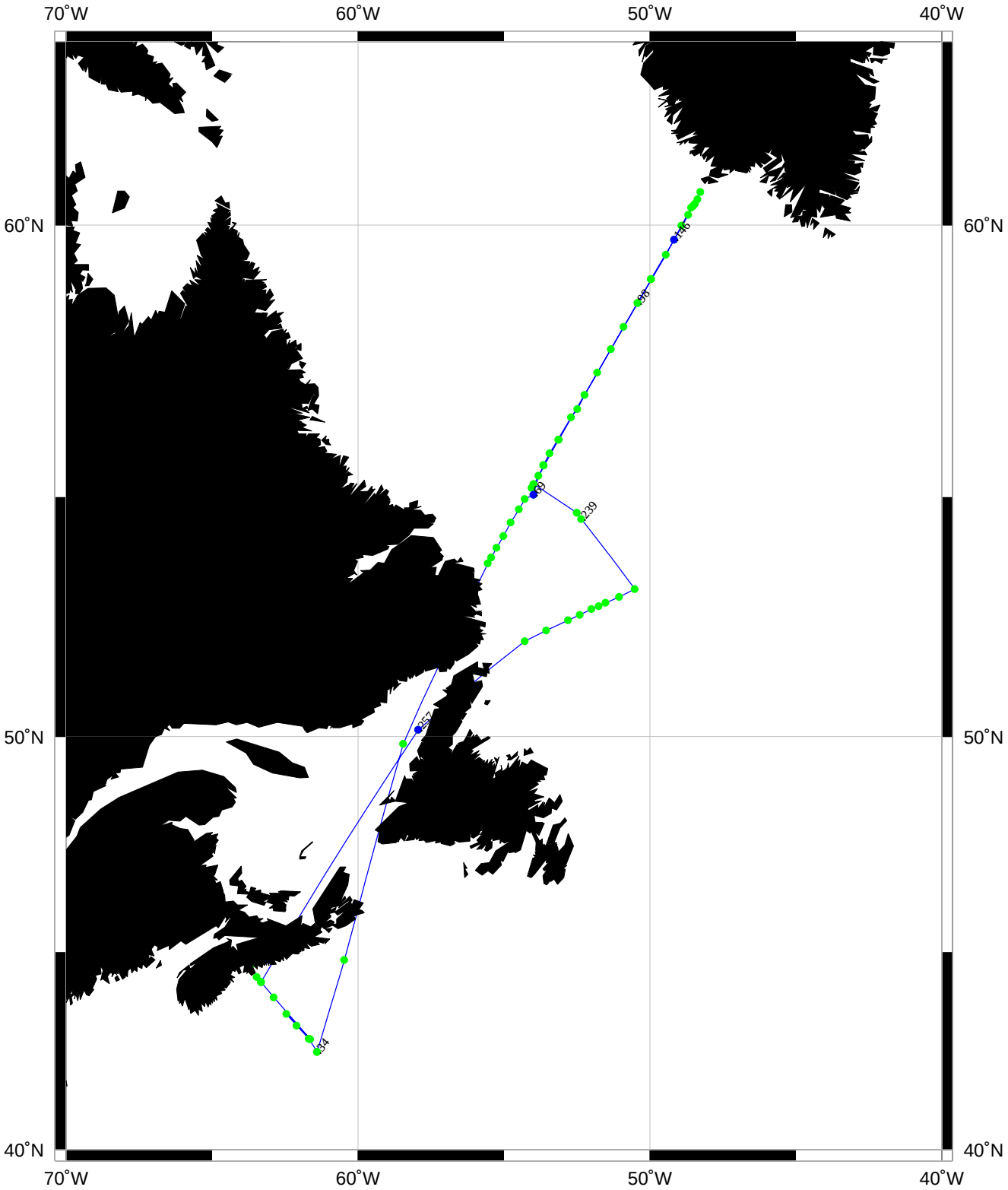
WHP Cruise and Data Information

Instructions: Click on headings below to locate primary reference or use navigation tools above. (Shaded headings were not available when this report was assembled)

Cruise Summary Information	**Hydrographic Measurements**
Description of scientific program	**CTD Data**
	CTD - general
Geographic boundaries of the survey	CTD - pressure
Cruise track: PI SIO	CTD - temperature
Description of stations	CTD - conductivity/salinity
Description of parameters sampled	CTD - dissolved oxygen
Bottle depth distributions (figure)	
Floats and drifters deployed	**Bottle Data**
Moorings deployed or recovered	Salinity
	Oxygen
Principal Investigators for all measurements	Nutrients
Cruise Participants	CFCs
	Helium
Problems and goals not achieved	Tritium
Other incidents of note	Radiocarbon
	CO2 system parameters
Underway Data Information	Other parameters
Navigation	**DQE Reports**
Bathymetry	
Acoustic Doppler Current Profiler (ADCP)	CTD
Thermosalinograph and related measurements	S/O2/nutrients
XBT and/or XCTD	CFCs
Meteorological observations	14C
Atmospheric chemistry data	
Acknowledgments **References**	**Data Processing Notes**

Station Locations for AR07W_2001 • Clarke • *CCGS Hudson*



Produced from .sum file by SIO

2. Cruise Summary Information

a. Cruise Track

A cruise track is shown in Figure 1. Ship position at 0000Z on each day of the cruise is indicated with a date label.

The WOCE cruise station summary file outlines the science operations conducted during the cruise. Note that additional cast types have been defined as: NET – Biological net tow; AGT – alongtrack temperature-salinity measurements. As well, additional time codes have been defined as: BD – Begin Descent; EA – End Ascent. These codes are used during Lowered ADCP casts. Finally, in the Comment section of the SUM file there is frequent mention of operation notes indicated by “Op Note”. These notes are included in Appendix 1.

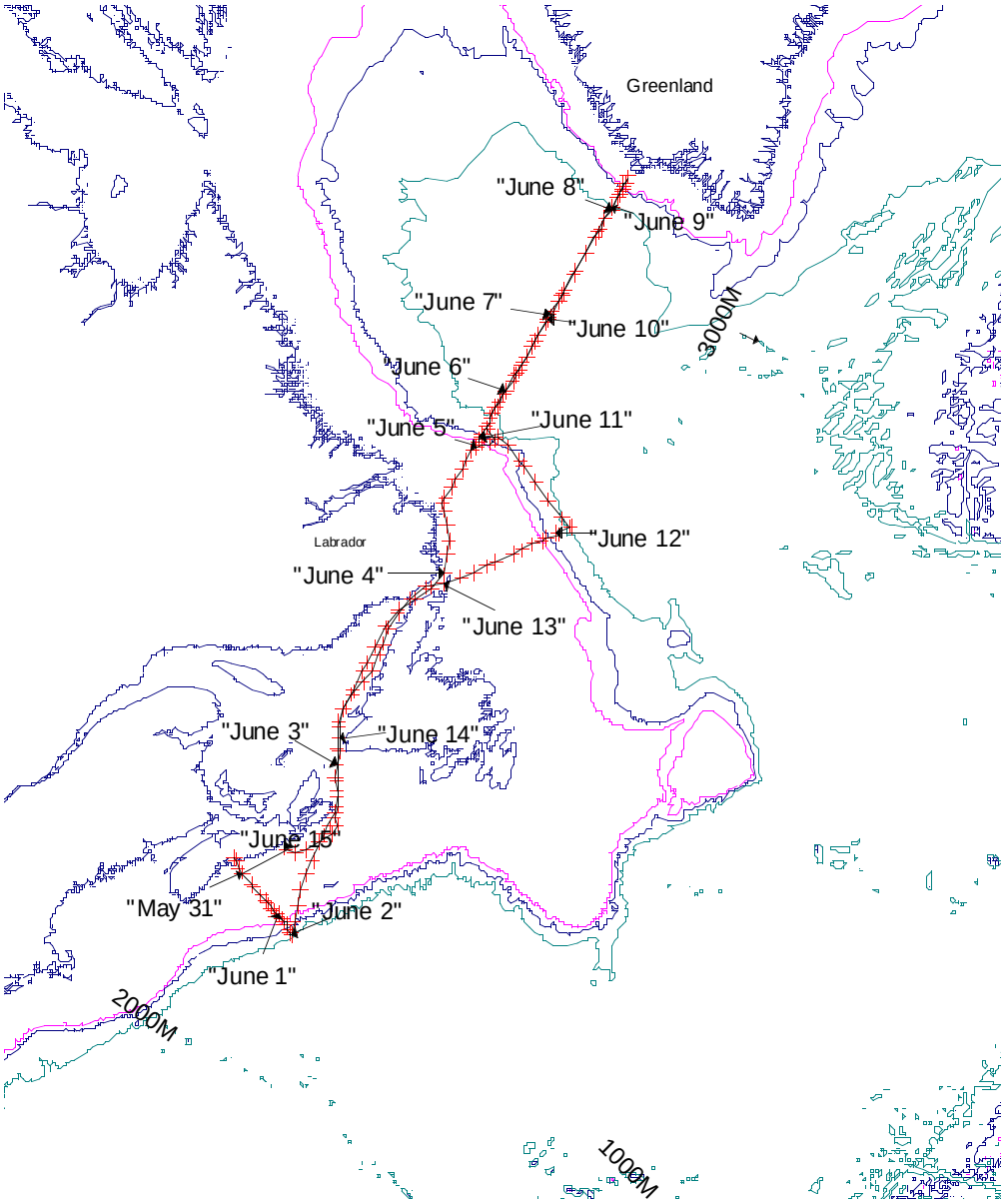


Figure 1. Cruise track for 18HU2001022_1. The date labels indicate the ships position at 0000Z.

Additional parameter codes have also been defined and appear in the parameter column of the WOCE SUM file. These codes are: 510 – extracted chlorophyll; 511 – phytoplankton count; 512 – High Pressure Liquid Chromatography (HPLC); 513 – Absorption Spectra; 516 - Protactinium (^{231}Pa) ; 517 - Iodine (^{129}I). Sections that follow in the cruise report describe these measurements.

b. Total Number of Stations Occupied

The CTD and ROS station positions are shown in Figure 2. The WHP stations are all contained in the box defined by 50-62°N and 43-60°W. Table 1 lists the science operations for 2001022.

Cast Type	Number of Operations	Detailed Division	Operation Numbers
Rosette & CTD	62	28 regular AR07W Sites plus Sites 8.5, 25.3 and 25.7	see Table 2
		8 Halifax Line Sites (Stn. 2 repeated)	see Table 3
		9 on L4 Line	see Table 4
		13 Biology Casts not included in other tables	18,30,33,39,44,72,86,96, 161,209,238,239,257
		1 Basin test	1
Moorings	13	5 recoveries	15, 16, 17, 85, 231
		5 deployments	21, 22, 23, 37, 232
		3 release tests	19, 20, 60
Biology	86	76, 200 µm net tows	2,4,5,8-13,25-28,31,32, 35,36,40,41,45,46,47,49,51,53, 55,57,59,62,64,66,68,70,73,74, 76,78,80,81,83,87,89,91,93,94, 97,99,101,103,104,106,109, 110,118,131,132,144,145,157, 158,160,163,182,210,233,235, 237,240,242,245,247,249,251, 253,255,262
		10, 75 µm net tows	50,56,67,77,82,88,92,100, 159,263
Chemistry		^{129}I	48,52,54,58,61,65,69,75,84, 95,105,162,164,211,236,241, 243,248,250,252,254,256
		^{231}Pa	75, 95, 105, 164
Other	100	Ship Board ADCP	no number assigned
		Along track t, s, and fluorescence	3
		92 XBT Deployments	
		7 MVP Deployments	42,43,166,184,192,212,258

Table 1. Science operations conducted on 18HU2001022_1.

AR07W Site Number	2001022 Deep Cast Operation Number
1	48
2	52
3	54
4	58
5	61
6	63
7	65
8	69
8.5	234
9	236
10	71
11	75
12	79
13	211
14	84
15	90
16	183
17	95
18	164
19	98
20	162
21	102
22	146
23	105
24	133
25	107
25.3	124
25.7	122
26	119
27	111
28	108

Table 2. AR07W sites and rosette and CTD/LADCP operation numbers for 18HU2001022_1.

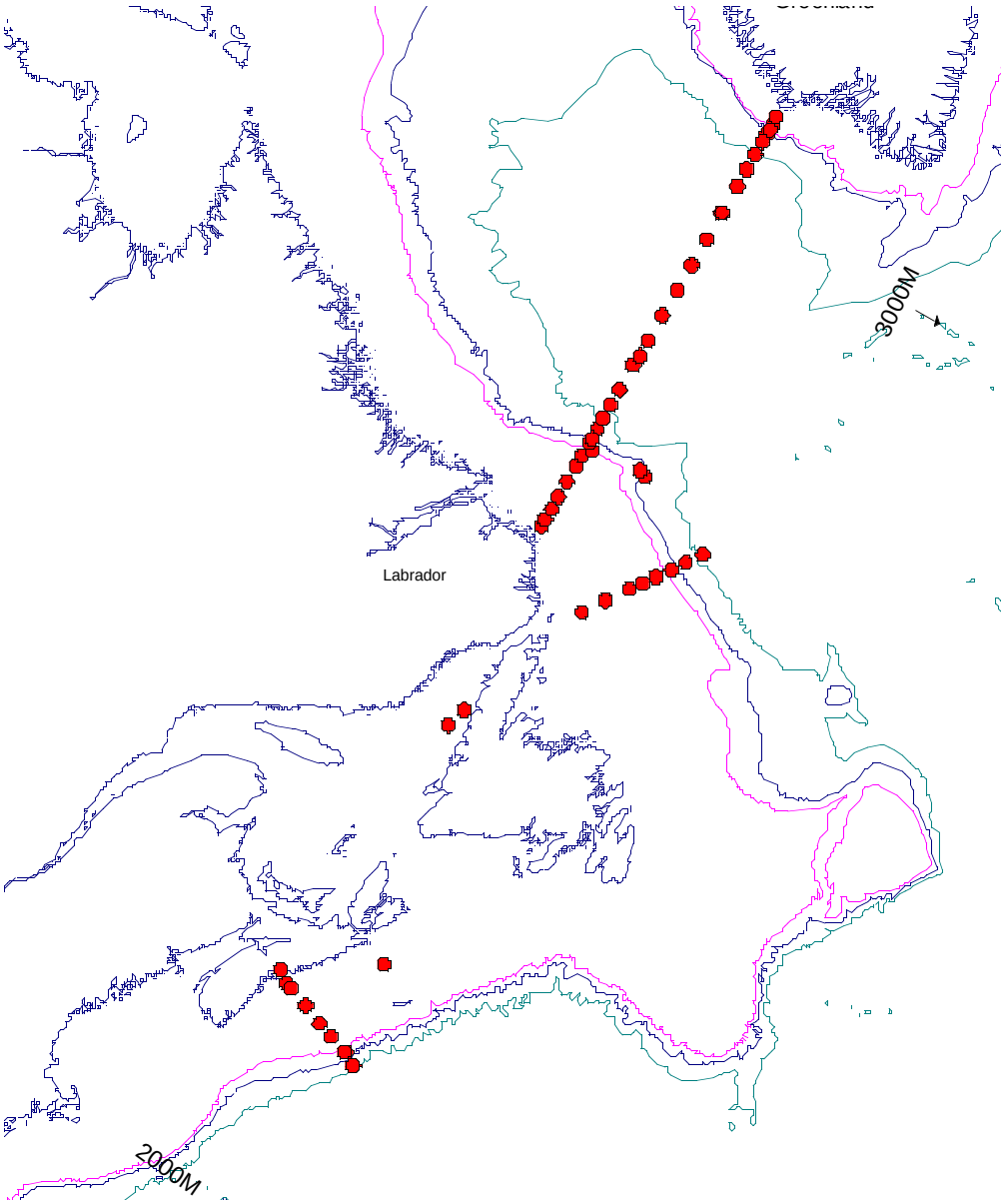


Figure 2. CTD, rosette and LADCP station positions on for Hudson 18HU2001022_1.

1000M

Halifax Line Number	2001022 Deep Cast Operation Number
1	6
2	7, 264
3	14
4	24
5	29
6	34
7	38

Table 3. Halifax Line sites and rosette operation numbers for 18HU2001022_1.

L4 Line Number	2001022 Deep Cast Operation Number
1	256
2	254
3	252
4	250
5	248
5.5	244
6	246
7	243
8	241

Table 4. Line L4 sites and rosette operation numbers for 18HU2001022_1.

Along AR07W, the stations were full depth WHP small volume rosette casts with up to 24 rosette bottles. Depending on the station, water samples were analyzed for CFC's, carbon tetrachloride, methyl chloroform, total carbonate, alkalinity, oxygen, salinity, nutrients, methyl halides and chlorinated compounds. On some casts, chemistry isotope sampling was also conducted for iodine 129 and protactinium 231.

c. Floats and Drifters deployed

No floats or drifters were deployed.

d. Moorings deployed or recovered

A total of 13 mooring related operations, consisting of 5 deployments, 5 recoveries and three release tests were conducted at various sites. The following summarizes the mooring operations.

Deployments:

1 M1387 multi-instrument mooring consisting of four current meters, four Microcats and an ADCP.

1 M1388 multi-instrument mooring consisting of five current meters and four Microcats.

1 M1395 mooring consisting of one pressure gauge.

1 M1396 standard mooring consisting of one current meter positioned 20m off bottom along AR07W on the Labrador Slope (12-month deployment) along the 1000m isobath.

1 M1397 mooring consisting of a shackle and wire test.

Recoveries:

1 M1350 standard mooring consisting of one current meter positioned 20m off bottom along AR07W on the Labrador Slope (12 month deployment) along the 1000m isobath.

1 M1349 multi-instrument mooring near OWS Bravo on AR07W. This mooring separated 88 days after deployment, on August 26, 2000. A portion of the upper section was recovered in October 2000 onboard the CCGS Des Groseilliers. The recovered section consisted of the main float, current meter and Seacat.

On 2001022, the lower section of this mooring was recovered. The recovered section consisted of a sediment trap, four Seacats, and four Aanderaa current meters.

A section of mooring between about 175 m and 880 m was lost. The separation occurred between two buoyancy packages. Lost were one sediment trap, two Seacats, a current meter and one set of buoyancy packages.

1 M1377 multi-instrument mooring consisting of four Microcats and four Aanderaa current meters.

1 M1378 mooring consisting of an ADCP.

1 M1379 mooring consisting of a pressure gauge.

3. List of Principal Investigators

Name/Affiliation	Email Address	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, CFC's
Glen Harrison/BIO	harrisong@mar.dfo-mpo.gc.ca	Coordinator biological program nitrate and ammonium utilization by phytoplankton
Erica Head/BIO	heade@mar.dfo-mpo.gc.ca	Macrozooplankton distribution, abundance and metabolism
Paul Kepkay/BIO	kepkayp@mar.dfo-mpo.gc.ca	Dissolved organic carbon, colloid chemistry and plankton respiration
Peter Jones/BIO	jonesp@mar.dfo-mpo.gc.ca	Alkalinity, carbonate, CFC's
John Lazier/BIO	lazierj@mar.dfo-mpo.gc.ca	CTD data, moored instrument data
Bill Li/BIO	lib@mar.dfo-mpo.gc.ca	Pico-plankton distribution and abundance, bacteria
Robert Moore/DU	rmoore@is.dal.ca	Halocarbons
Robert Pickart/WHOI	pickart@rsp.whoi.edu	Lowered ADCP
Peter Rhines/UW	rhines@killer.ocean.washington.edu	Moored instrument data
John Smith/BIO	smithjn@mar.dfo-mpo.gc.ca	Chemistry isotopes

Table 5. List of Principal Investigators. See Section 7 for addresses.

4.1 Physical - Chemical Program

a. Narrative

This expedition was conducting operations in support of three 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 two Labrador Sea moorings provide a measure of the winter cooling and water mass transformations over the winters of 2000/2001. 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 Labrador Sea project of the Canadian Joint Global Ocean Flux Study (JGOFS). 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 objective is to observe the physical and chemical parameters at the various stations of the Halifax Section in support of DFO's Atlantic Zonal Monitoring Program. In addition, the Moving Vessel Profiler (MVP) is to be deployed on an opportunity basis while the vessel is transiting between BIO and the Labrador Sea. These sections of opportunity will be observed to provide detailed estimates of the spatial structures of the Scotian shelf, Gulf of Saint Lawrence and Cabot Strait.

The fourth objective is to recover and set moorings on the continental slope at the end of the Halifax Section. These moorings are designed to provide information on the structure of the current field to provide information related to the exploration and exploitation of oil and gas under the deeper areas of the continental slope.

b. Processing of the measurements collected with the Moving Vehicle Profiler (MVP) (Igor Yashayaev)

Original MVP data files - The MVP acquisition software stores profile measurements and engineering data in nine ASCII files. These file sets are named evtXXX.YYY#, where XXX is the event number, YYY - a three-digit profile name, and # can be one of eight letters (a, c, d, e, g, h, s, t) or omitted. In the last case (the naming of the MVP files is reduced to evtXXX.YYY), the files contain the header information (PC-Time, PC-Date, GPS strings with position and time, bottom depth and ship speed) and unprocessed (raw MVP) measurements of pressure, conductivity and temperature at the original sampling rate of 25 Hertz.

MVP to CNV conversion - The Seabird processing software (hereafter Seasoft) represents a multifunctional and comprehensive processing system, providing complete processing capabilities of CTD data from the raw to final datasets. This motivated us to develop a utility for conversion of a raw MVP data file to a cnv file, which is the generic file format of the Seasoft. Another motivation for such conversion is in the popularity of Seabird CTD: many applications which are used with the cnv files will be applicable to MVP data. A utility was produced, mvp2cnv, to convert a raw MVP data file (evtXXX.YYY) to a cnv file (XXX_YYY.cnv). The utility adds a header containing instrument, time and position information, data description (these form a header) and raw data obtained from the original file. The raw data (scan, pressure, temperature, conductivity and flag) are stored in XXX_YYY.cnv in a Seasoft specific format (all integer and floating point values must be 11 bytes long - this is important for operation of the Seasoft modules). mvp2cnv finds the header template from a file named mvp.hdr, inheriting the structure of the Seasoft header. This header file can be edited (cruise information, chief scientist, comments, etc.). The brackets '<' and '>' in the header template indicate a position where the corresponding information (time, position, etc.) will be filled in by mvp2cnv.

To perform the conversion enter mvp2cnv evtXXX.YYY, or run a batch file listing mvp2cnv evtXXX.YYY lines with different XXX and YYY.

Finding the time advance for MVP temperature - Due to the difference in time response of pressure, temperature and conductivity sensors the corresponding measurements need to be filtered and aligned in time prior to use in analyses and computations (of salinity, density, sound velocity etc.). To determine the filtering options and the relative time advance of temperature and conductivity that provide the most consistent temperature-salinity-density-pressure data set, we developed a utility (alignmvp) to test the statistical and physical properties of observed and computed variables.

These tests were conducted for each T vs. C time advance. The various advances control: (1) the level of noise and spikiness in salinity and density, (2) the number and magnitude of density inversion, (3) the differences between downtrace and uptrace profiles and (4) the correlation between temperature and conductivity series. The tests

are being conducted for uptrace and downtrace separately (except 3) and summary of the tests stored in files: al*.cnv and alignmvp.sum.

To test different offsets of temperature measurements enter alignmvp evtXXX.YYY.

Processing of converted MVP files with Seabird Software - Once the MVP data were converted to Seabird file format, they could be processed with the Seasoft modules. A simple processing deck includes:

<wildedit>- to exclude obvious outliers in temperature and conductivity,
<alignctd>- to advance temperature and conductivity readings,
<filter>- to low-pass filter pressure, temperature and conductivity,
<derive>- to calculate salinity, potential temperature and density,
<binavg>- to bin average data in time bins,
<split>- to separate down and uptrace profiles and
<seaodf>- to convert processed cnv files to odf.

Preliminary XBT Data -
A preliminary plot of the XBT data is shown in Figure 3. See also section B.4 of this report.

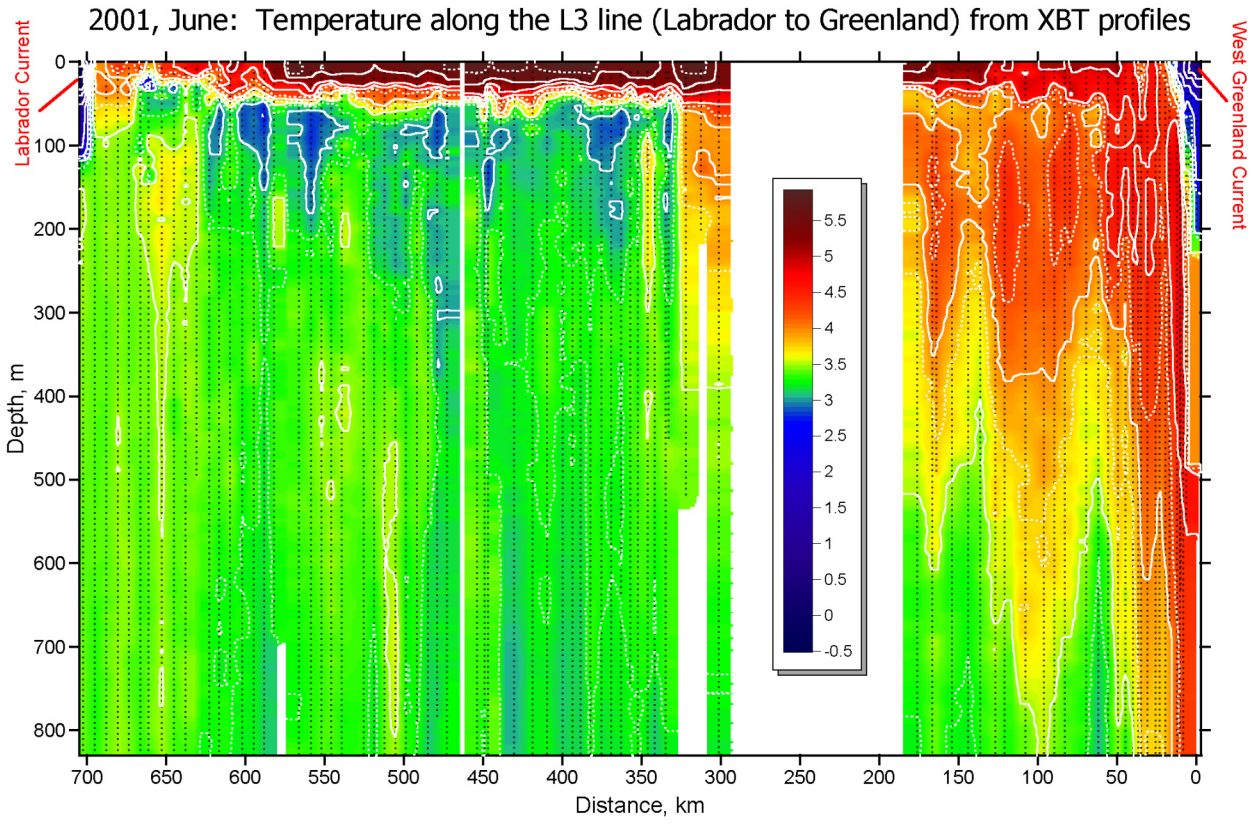


Figure 3. Section plot of preliminary XBT data along AR07W.

4.2 Biological Program

a. Narrative

The biological program conducted as part of cruise 2001022, 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 Glen Harrison and Brian Irwin (this year including Gary Maillet and Gadiel Alarcon),
2. a microbial program conducted by Bill Li and Paul Dickie,
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. a sediment trap program conducted by Glen Harrison and Brian Irwin.

The ultimate aim of these studies is twofold:

- 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 OSD's continuing climate-studies and
- 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 OSD's fisheries-related research.

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

b. Stable Isotope Studies of Carbon and Nitrogen (nitrate and ammonium) Utilization by Phytoplankton
(Glen Harrison)

This work represents a continuation of research begun in 1994 to determine the primary productivity (in terms of carbon and nitrogen) of phytoplankton in the Labrador Sea. Carbon dioxide (CO2), nitrate (NO3) and ammonium (NH4) utilization rates from eight depths in the photic zone (i.e. the 1% light level ranged from 30-50 m) were determined using stable isotope tracer (13C and 15N) methods. Incubations experiments were carried out in on-deck 'simulated in-situ' incubators. At a few stations, 14C incubations were done in parallel for comparison. A total of 13 experiments were conducted (see Table 6); 9 stations were occupied in the Labrador Sea, one in the NE Gulf of St Lawrence and one on the Scotian Shelf. Carbon and nitrogen-based primary productivity rates at these locations will be related to vertical fluxes of particulate biogenic carbon and nitrogen derived from our sediment trap deployed at 1,053 m on the "Bravo" mooring (M1349) during this the 2000-009 mission and recovered on this mission.

In addition to productivity measurements, samples from two deep casts were collected for determination of particulate organic carbon (POC) and nitrogen (PON) and NH4 to ~2,000 m.

Date	Site	ID#	Lat (N)	Lon (W)	Photic Depth (m)	$^{15}N/^{13}C$	^{14}C	POC/ PON	Deep NH_4
2-Jun-01	SS	39	44.81	-60.46	40	x			
3-Jun-01	NE-GSL	44	49.84	-58.45	45	x			
4-Jun-01	L3_02	52	53.79	-55.44	45	x	x		
5-Jun-01	L3_11	72	55.61	-53.63	30	x	x		
6-Jun-01	L3_14.4	86	56.70	-52.49	40	x			
7-Jun-01	L3_19	96	58.64	-50.42	50	x			
7-Jun-01	L3_19	98	58.64	-50.42	-			x	x
8-Jun-01	L3_28	108	60.57	-48.26	25	x			
9-Jun-01	L3_20	161	59.07	-49.96	45	x	x		
10-Jun-01	L3_13	209	56.11	-53.12	35	x	x		
10-Jun-01	L3_13	211	56.11	-53.12	-			x	x
11-Jun-01	S LAB	238	54.69	-52.50	50	x			
12-Jun-01	L4_05	248	52.73	-52.00	35	x			

Table 6. Sampling for stable isotopes.

c. Zooplankton Sampling

(L. Harris)

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 (Figure 4) were taken at 47 stations (9 on or near the Scotian Shelf, 1 in the Gulf and 37 from the Labrador Shelf/Labrador Sea) using a 3/4 metre 200 µm mesh ring net. At all stations, tows were made from 100 meters to the surface. Additional deep tows (2500 meters to the surface) were taken at 4 of the stations in the Labrador Sea. Samples will be analysed for species composition, copepod stage structure and biomass. Nine additional tows using a 30 cm 75 µm net were made.

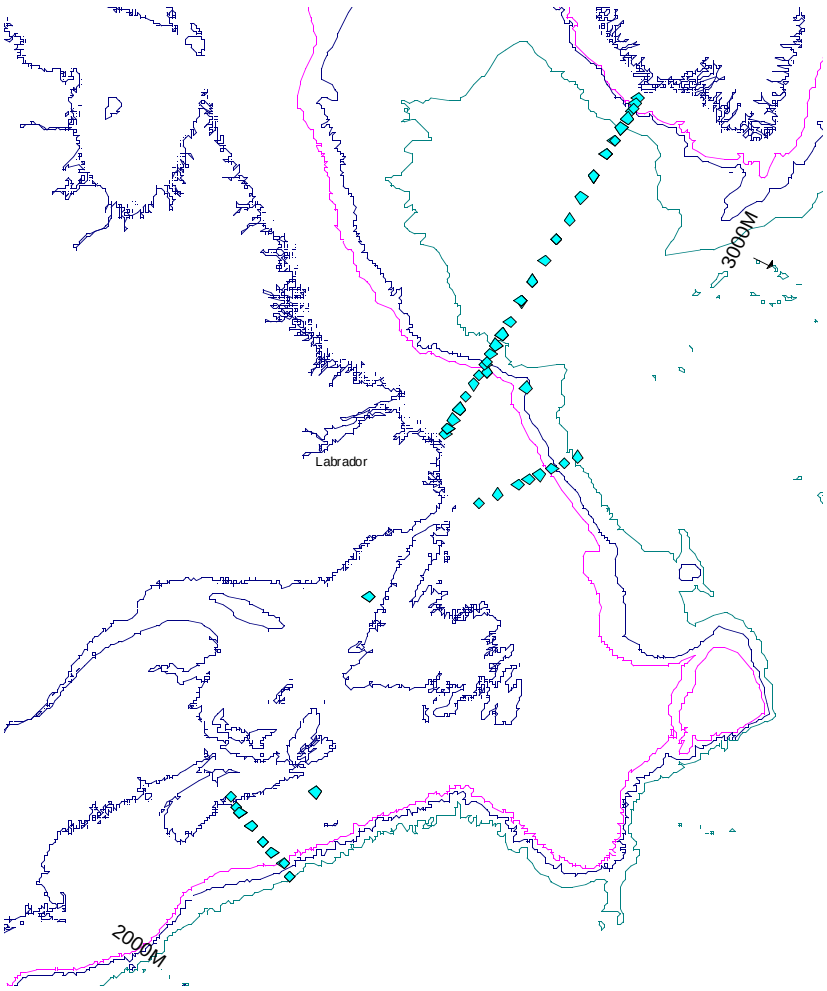


Figure 4. Net tow and multinet tow locations for 18HU2001022_1.

d. Measurements Of Copepod Reproduction Rates
(L. Harris)

Egg production rates of Calanus finmarchicus, the dominant copepod species, were measured at 14 stations (3 on the Scotian Shelf, 1 in the Gulf and 10 from the Labrador Shelf/Labrador Sea).

e. Total Organic Carbon (TOC) and Microbial Community Respiration
(Jay Bugden and 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 2001-022 eight (8) stations were sampled at a 10m and 40m depth, for gross microbial community respiration, and at 10m only ultrafiltrations were performed for size fractionation of TOC. The stations sampled are listed below. TOC depth profiles were also collected from all twenty-eight (28) stations listed below.

Table 7 lists the stations and what was sampled on CCGS Hudson cruise 2001-022. BRAVO is a mooring site located near the AR07W line. SLC is a biological station located between Line 3 (AR07W) and Line 4 at 54o 41.57N 52o 30.04W, • Operaton ID number 238.

Station	Respi-ration	Ultrafil-tration	DOC Profile	Station	Respi-ration	Ultrafil-tration	DOC Profile
AR07W site 1			X	AR07W site 15			X
AR07W site 2	X	X	X	AR07W site 16			X
AR07W site 3			X	AR07W site 17			X
AR07W site 4			X	AR07W site 18			X
AR07W site 5			X	AR07W site 19	X	X	X
AR07W site 6			X	AR07W site 20	X	X	X
AR07W site 7			X	AR07W site 21			X
AR07W site 8			X	AR07W site 22			X
AR07W site 9			X	AR07W site 23			X
AR07W site 10			X	AR07W site 24			X
AR07W site 11	X	X	X	AR07W site 25			X
AR07W site 12			X	AR07W site 26			X
AR07W site 13	X	X	X	AR07W site 27			X
AR07W site 14			X	AR07W site 28	X	X	X
BRAVO	X	X		SLC	X	X	

Table 7. Ultrafiltration, respiration and TOC sample collection.

f. Primary Production Measurements
(Brian Irwin)

Water samples for primary production experiments were collected from the rosette at fourteen (14) stations (see Table 8). Depths sampled were 10, 20 and 40m. For each sample, 33 aliquots were innoculated with sodium bicarbonate 14C and then incubated at in situ temperatures at 30 light levels (3 were dark bottles) for 2 to 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.

For each sample, three chlorophylls, three particulate carbons, one HPLC, one Absorption Spectra, one Dissolved Organic Carbon and one nutrient aliquot were collected and stored frozen for later analysis.

f. Primary Production Studies Using 14C
(Gary Maillet)

Measurement of primary production was conducted during Hudson Cruise 2001-022 using the radioisotope carbon-14 technique. Measurement of photosynthesis - irradiance experiments were conducted using two custom-built photosynthetrons. Primary production measurements were confined to the upper water column. Seawater samples were obtained from the CTD-rosette Niskin bottles at 10-40m depths and from a submersible pump (4m) at designated biological sampling stations (Table 9). Measurement of carbon-14 uptake experiments will be used to compute photosynthetic parameters and to estimate daily integrated production over the euphotic zone across the Labrador Sea transect. Results will also be compared with Glen Harrison and Brian Irwin's incubations to determine general applicability of photosynthetron system for estimation of photosynthetic parameters. Due to the unavailability of a scintillation counter aboard the Hudson, these results could not be completed prior to completion of the cruise.

g. Abundance and Production of Microbial Plankton
(William Li and Paul Dickie)

The abundance of phytoplankton was measured by shipboard flow cytometric analysis of single cells characterized by properties of light scatter and pigment fluorescence, using methods previously published (Li 1995. Marine Ecology Progress Series). A total of 334 samples were analyzed (see Table 10).

The abundance of bacterioplankton will be measured at a later date by flow cytometric analysis of samples cryogenically preserved in paraformaldehyde, using methods previously published (Li et al. 1995. Limnology and Oceanography). A toal of 834 samples were collected for this purpose.

Table 8. Sampling for primary production.

Date	Station	Lat	Long	Z	ID
May 31 2001	Event 18	4250.58	6138.39	40	236961
				20	236964
				10	236966
June 1 2001	HL 6	4251.15	6140.91	40	236995
				20	236998
				10	237000
June 2 2001	Event 39	4448.78	6027.52	40	237027
				20	237030
				10	237032
June 3 2001	Event 44	4950.57	5827.17	40	237040
				20	237043
				10	237045
June 4 2001	AR07W-2	5347.8	5526.2	40	237067
				20	237072
				10	237074
June 5 2001	AR07W-11	5536.88	5338.02	40	237194
				20	237197
				10	237199
June 5 2001	AR07W-10	5524.96	5349.03	4	205949
June 6 2001	BRAVO	5641.79	5229.44	40	237281
				20	237284
				10	237286
June 7 2001	AR07W-19	5838.35	5024.98	40	237344
				20	237347
				10	237349
June 8 2001	AR07W-28	6034.04	4815.78	40	237457
				20	237461
				10	237463
June 9 2001	AR07W-20	5903.33	4958.2	40	237550
				20	237553
				10	237555
June10 2001	AR07W-13	5606.82	5306.96	40	237637
				20	237640
				10	237642
June11 2001	Event # 238	5441.56	5230.07	40	237705
				20	237708
				10	237710
June12 2001	L4-5	5243.8	5159.9	40	237819
				20	237822
				10	237824
June13 2001	Event #257	5008.86	5756.22	40	237885
				20	237888
				10	237890

Table 9. Primary production station locations during AR07W transect across the Labrador Sea.

Date	Site	ID #	Latitude (N)	Longitude (W)	Sample Depth (m)
May 31,2001	SS	18	42.84	-61.64	10, 20
June 1, 2001	SS	24	43.47	-62.45	10, 20
June 2, 2001	SS	39	44.81	-60.46	10, 20
June 3, 2001	NE-GSL	44	49.84	-58.45	10, 20
June 4, 2001	L3_02	52	53.79	-55.44	10, 20
June 4, 2001	L3_03	54	53.99	-55.25	4
June 4, 2001	L3_04	58	54.22	-55.03	4
June 5, 2001	L3_10	71	55.42	-53.82	4
June 5, 2001	L3_11	72	55.61	-53.63	10, 20
June 6, 2001	L3_14.4	86	56.7	-52.49	10, 20
June 7, 2001	L3_19	96	58.64	-50.42	10, 20
June 8, 2001	L3_28	108	60.57	-48.26	10, 20
June 8, 2001	L3_26	119	60.37	-48.45	30, 40
June 9, 2001	L3_20	161	59.07	-49.96	10, 20
June 10, 2001	L3_13	209	56.11	-53.12	10, 20
June 11, 2001	SLAB	238	54.69	-52.5	10, 20
June 12, 2001	L4_05	248	52.73	-52.00	10, 20
June 12, 2001	L4_04	250	52.62	-52.40	10, 20
June 12, 2001	L4_03	252	52.50	-52.80	10, 20
June 12, 2001	L4_02	254	52.28	-53.55	10, 20
June 12, 2001	L4_01	256	52.07	-54.30	10, 20
June 13, 2001	NE-GSL	257	59.15	-57.94	10, 20

The biomass production of heterotrophic bacteria was assessed by the rate of incorporation of tritiated leucine into protein, using the microcentrifuge method of Smith and Azam (1992. Marine Microbial Food Webs). A total of 182 samples were assayed on board ship.

The abundance of heterotrophic nanozooplankton will be estimated at a later date by epifluorescence microscopy of DAPI-stained cells collected by gentle vacuum filtration and mounted on microscope slides, according to the protocols of Gifford and Caron (2000. ICES Zooplankton Methodlogy manual). A total of 19 samples were collected for this purpose.

Table 10. Sampling for microbial plankton.

Event	Station	Date	Lon	Lat	Sample	Depth	Phyto	Bacteria	BactProd	Nanozoo
6	HL_01	30-May-01	-63.47	44.40	236933	0	X	X	X	
6	HL_01	30-May-01	-63.47	44.40	236932	10	X	X	X	
6	HL_01	30-May-01	-63.47	44.40	236931	20	X	X	X	
6	HL_01	30-May-01	-63.47	44.40	236930	30	X	X	X	
6	HL_01	30-May-01	-63.47	44.40	236929	40	X	X	X	
6	HL_01	30-May-01	-63.47	44.40	236928	50	X	X	X	
6	HL_01	30-May-01	-63.47	44.40	236927	60	X	X	X	
6	HL_01	30-May-01	-63.47	44.40	236926	80	X	X	X	
6	HL_01	30-May-01	-63.47	44.40	236925	95	X	X	X	
7	HL_02	30-May-01	-63.32	44.27	236943	0	X	X	X	
7	HL_02	30-May-01	-63.32	44.27	236942	10	X	X	X	
7	HL_02	30-May-01	-63.32	44.27	236941	20	X	X	X	
7	HL_02	30-May-01	-63.32	44.27	236940	30	X	X	X	
7	HL_02	30-May-01	-63.32	44.27	236939	40	X	X	X	
7	HL_02	30-May-01	-63.32	44.27	236938	50	X	X	X	
7	HL_02	30-May-01	-63.32	44.27	236937	60	X	X	X	
7	HL_02	30-May-01	-63.32	44.27	236936	80	X	X	X	
7	HL_02	30-May-01	-63.32	44.27	236935	100	X	X	X	
7	HL_02	30-May-01	-63.32	44.27	236934	150	X	X		
14	HL_03	31-May-01	-62.88	43.89	236955	0	X	X		
14	HL_03	31-May-01	-62.88	43.89	236954	10	X	X		
14	HL_03	31-May-01	-62.88	43.89	236953	20	X	X		
14	HL_03	31-May-01	-62.88	43.89	236952	30	X	X		
14	HL_03	31-May-01	-62.88	43.89	236951	40	X	X		
14	HL_03	31-May-01	-62.88	43.89	236950	50	X	X		
14	HL_03	31-May-01	-62.88	43.89	236949	60	X	X		
14	HL_03	31-May-01	-62.88	43.89	236948	80	X	X		
14	HL_03	31-May-01	-62.88	43.89	236947	100	X	X		
14	HL_03	31-May-01	-62.88	43.89	236946	150		X		
14	HL_03	31-May-01	-62.88	43.89	236945	200		X		
14	HL_03	31-May-01	-62.88	43.89	236944	260		X		
24	HL_04	01-Jun-01	-62.45	43.48	236975	0	X	X		
24	HL_04	01-Jun-01	-62.45	43.48	236974	10	X	X		
24	HL_04	01-Jun-01	-62.45	43.48	236973	20	X	X		
24	HL_04	01-Jun-01	-62.45	43.48	236972	30	X	X		
24	HL_04	01-Jun-01	-62.45	43.48	236971	40	X	X		
24	HL_04	01-Jun-01	-62.45	43.48	236970	50	X	X		
24	HL_04	01-Jun-01	-62.45	43.48	236969	60	X	X		
29	HL_05	01-Jun-01	-62.10	43.18	236984	0	X	X		
29	HL_05	01-Jun-01	-62.10	43.18	236983	10	X	X		
29	HL_05	01-Jun-01	-62.10	43.18	236982	20	X	X		
29	HL_05	01-Jun-01	-62.10	43.18	236981	30	X	X		
29	HL_05	01-Jun-01	-62.10	43.18	236980	40	X	X		
29	HL_05	01-Jun-01	-62.10	43.18	236979	50	X	X		
29	HL_05	01-Jun-01	-62.10	43.18	236978	60	X	X		
29	HL_05	01-Jun-01	-62.10	43.18	236977	80	X	X		
29	HL_05	01-Jun-01	-62.10	43.18	236976	90	X	X		

Table 10. Sampling for microbial plankton.

Event	Station	Date	Lon	Lat	Sample	Depth	Phyto	Bacteria	BactProd	Nanozoo
30	HL_06	01-Jun-01	-61.68	42.85	237001	0	X	X		
30	HL_06	01-Jun-01	-61.68	42.85	237999	10	X	X		
30	HL_06	01-Jun-01	-61.68	42.85	237997	20	X	X		
30	HL_06	01-Jun-01	-61.68	42.85	237996	30	X	X		
30	HL_06	01-Jun-01	-61.68	42.85	237994	40	X	X		
30	HL_06	01-Jun-01	-61.68	42.85	237993	50	X	X		
30	HL_06	01-Jun-01	-61.68	42.85	237992	60	X	X		
30	HL_06	01-Jun-01	-61.68	42.85	237991	80	X	X		
30	HL_06	01-Jun-01	-61.68	42.85	237990	100	X	X		
30	HL_06	01-Jun-01	-61.68	42.85	237989	150		X		
30	HL_06	01-Jun-01	-61.68	42.85	237988	200		X		
30	HL_06	01-Jun-01	-61.68	42.85	237987	250		X		
30	HL_06	01-Jun-01	-61.68	42.85	237986	500		X		
30	HL_06	01-Jun-01	-61.68	42.85	237985	1000		X		
34	HL_07	01-Jun-01	-61.40	42.53	237021	0	X	X		
34	HL_07	01-Jun-01	-61.40	42.53	237020	10	X	X		
34	HL_07	01-Jun-01	-61.40	42.53	237019	20	X	X		
34	HL_07	01-Jun-01	-61.40	42.53	237018	30	X	X		
34	HL_07	01-Jun-01	-61.40	42.53	237017	40	X	X		
34	HL_07	01-Jun-01	-61.40	42.53	237016	50	X	X		
34	HL_07	01-Jun-01	-61.40	42.53	237015	60	X	X		
34	HL_07	01-Jun-01	-61.40	42.53	237014	80	X	X		
34	HL_07	01-Jun-01	-61.40	42.53	237013	100	X	X		
34	HL_07	01-Jun-01	-61.40	42.53	237012	150		X		
34	HL_07	01-Jun-01	-61.40	42.53	237011	200		X		
34	HL_07	01-Jun-01	-61.40	42.53	237010	250		X		
34	HL_07	01-Jun-01	-61.40	42.53	237009	500		X		
34	HL_07	01-Jun-01	-61.40	42.53	237008	750		X		
34	HL_07	01-Jun-01	-61.40	42.53	237007	1000		X		
34	HL_07	01-Jun-01	-61.40	42.53	237006	1250		X		
34	HL_07	01-Jun-01	-61.40	42.53	237005	1500		X		
34	HL_07	01-Jun-01	-61.40	42.53	237004	2000		X		
34	HL_07	01-Jun-01	-61.40	42.53	237003	2500		X		
34	HL_07	01-Jun-01	-61.40	42.53	237002	2760		X		
39	Transit	02-Jun-01	-60.46	44.81	237033	0	X	X	X	
39	Transit	02-Jun-01	-60.46	44.81	237031	10	X	X	X	
39	Transit	02-Jun-01	-60.46	44.81	237029	20	X	X	X	
39	Transit	02-Jun-01	-60.46	44.81	237028	30	X	X	X	
39	Transit	02-Jun-01	-60.46	44.81	237026	40	X	X	X	
39	Transit	02-Jun-01	-60.46	44.81	237025	50	X	X	X	
39	Transit	02-Jun-01	-60.46	44.81	237024	60	X	X	X	
39	Transit	02-Jun-01	-60.46	44.81	237023	80	X	X	X	
39	Transit	02-Jun-01	-60.46	44.81	237022	100	X	X	X	
44	BelleIsle	03-Jun-01	-58.45	49.84	237046	0	X	X	X	
44	BelleIsle	03-Jun-01	-58.45	49.84	237044	10	X	X	X	
44	BelleIsle	03-Jun-01	-58.45	49.84	237042	20	X	X	X	
44	BelleIsle	03-Jun-01	-58.45	49.84	237041	30	X	X	X	
44	BelleIsle	03-Jun-01	-58.45	49.84	237039	40	X	X	X	
44	BelleIsle	03-Jun-01	-58.45	49.84	237038	50	X	X	X	
44	BelleIsle	03-Jun-01	-58.45	49.84	237037	60	X	X	X	
44	BelleIsle	03-Jun-01	-58.45	49.84	237036	80	X	X	X	
44	BelleIsle	03-Jun-01	-58.45	49.84	237035	100	X	X	X	

Table 10. Sampling for microbial plankton.

Event	Station	Date	Lon	Lat	Sample	Depth	Phyto	Bacteria	BactProd	Nanozoo
48	L3-01	04-Jun-01	-55.55	53.68	237058	0	X	X		
48	L3-01	04-Jun-01	-55.55	53.68	237056	10	X	X		
48	L3-01	04-Jun-01	-55.55	53.68	237055	20	X	X		
48	L3-01	04-Jun-01	-55.55	53.68	237054	30	X	X		
48	L3-01	04-Jun-01	-55.55	53.68	237053	40	X	X		
48	L3-01	04-Jun-01	-55.55	53.68	237052	50	X	X		
48	L3-01	04-Jun-01	-55.55	53.68	237051	60	X	X		
48	L3-01	04-Jun-01	-55.55	53.68	237050	80	X	X		
48	L3-01	04-Jun-01	-55.55	53.68	237049	100	X	X		
48	L3-01	04-Jun-01	-55.55	53.68	237048	125		X		
48	L3-01	04-Jun-01	-55.55	53.68	237047	150		X		
52	L3-02	04-Jun-01	-55.44	53.79	237078	0	X	X	X	
52	L3-02	04-Jun-01	-55.44	53.79	237073	10	X	X	X	
52	L3-02	04-Jun-01	-55.44	53.79	237071	20	X	X	X	
52	L3-02	04-Jun-01	-55.44	53.79	237070	30	X	X	X	
52	L3-02	04-Jun-01	-55.44	53.79	237067	40	X	X	X	
52	L3-02	04-Jun-01	-55.44	53.79	237066	50	X	X	X	
52	L3-02	04-Jun-01	-55.44	53.79	237065	60	X	X	X	
52	L3-02	04-Jun-01	-55.44	53.79	237064	80	X	X	X	
52	L3-02	04-Jun-01	-55.44	53.79	237063	100	X	X	X	
52	L3-02	04-Jun-01	-55.44	53.79	237062	125	X	X	X	
52	L3-02	04-Jun-01	-55.44	53.79	237061	150	X	X		
52	L3-02	04-Jun-01	-55.44	53.79	237060	180	X	X		
52	L3-02	04-Jun-01	-55.44	53.79	237059	210	X	X		
54	L3-03	04-Jun-01	-55.25	53.99	237090	0	X	X		
54	L3-03	04-Jun-01	-55.25	53.99	237088	10	X	X		
54	L3-03	04-Jun-01	-55.25	53.99	237087	20	X	X		
54	L3-03	04-Jun-01	-55.25	53.99	237086	30	X	X		
54	L3-03	04-Jun-01	-55.25	53.99	237085	40	X	X		
54	L3-03	04-Jun-01	-55.25	53.99	237084	50	X	X		
54	L3-03	04-Jun-01	-55.25	53.99	237083	60	X	X		
54	L3-03	04-Jun-01	-55.25	53.99	237082	80	X	X		
54	L3-03	04-Jun-01	-55.25	53.99	237081	100	X	X		
54	L3-03	04-Jun-01	-55.25	53.99	237080	120	X	X		
58	L3-04	04-Jun-01	-55.02	54.22	237103	0	X	X		
58	L3-04	04-Jun-01	-55.02	54.22	237101	10	X	X		
58	L3-04	04-Jun-01	-55.02	54.22	237100	20	X	X		
58	L3-04	04-Jun-01	-55.02	54.22	237099	30	X	X		
58	L3-04	04-Jun-01	-55.02	54.22	237098	40	X	X		
58	L3-04	04-Jun-01	-55.02	54.22	237097	50	X	X		
58	L3-04	04-Jun-01	-55.02	54.22	237096	60	X	X		
58	L3-04	04-Jun-01	-55.02	54.22	237095	80	X	X		
58	L3-04	04-Jun-01	-55.02	54.22	237094	100	X	X		
58	L3-04	04-Jun-01	-55.02	54.22	237093	120	X	X		
58	L3-04	04-Jun-01	-55.02	54.22	237092	140	X	X		
58	L3-04	04-Jun-01	-55.02	54.22	237091	170	X	X		

Table 10. Sampling for microbial plankton.

Event	Station	Date	Lon	Lat	Sample	Depth	Phyto	Bacteria	BactProd	Nanozoo
61	L3-05	04-Jun-01	-54.76	54.49	237116	0	X	X	X	
61	L3-05	04-Jun-01	-54.76	54.49	237114	10	X	X	X	
61	L3-05	04-Jun-01	-54.76	54.49	237113	20	X	X	X	
61	L3-05	04-Jun-01	-54.76	54.49	237112	30	X	X	X	
61	L3-05	04-Jun-01	-54.76	54.49	237111	40	X	X	X	
61	L3-05	04-Jun-01	-54.76	54.49	237110	50	X	X	X	
61	L3-05	04-Jun-01	-54.76	54.49	237109	60	X	X	X	
61	L3-05	04-Jun-01	-54.76	54.49	237108	80	X	X	X	
61	L3-05	04-Jun-01	-54.76	54.49	237107	100	X	X	X	
61	L3-05	04-Jun-01	-54.76	54.49	237106	125	X	X	X	
61	L3-05	04-Jun-01	-54.76	54.49	237105	150	X	X		
61	L3-05	04-Jun-01	-54.76	54.49	237104	190	X	X		
63	L3-06	04-Jun-01	-54.49	54.76	237130	0	X	X		
63	L3-06	04-Jun-01	-54.49	54.76	237129	10	X	X		
63	L3-06	04-Jun-01	-54.49	54.76	237127	20	X	X		
63	L3-06	04-Jun-01	-54.49	54.76	237126	30	X	X		
63	L3-06	04-Jun-01	-54.49	54.76	237125	40	X	X		
63	L3-06	04-Jun-01	-54.49	54.76	237124	50	X	X		
63	L3-06	04-Jun-01	-54.49	54.76	237123	60	X	X		
63	L3-06	04-Jun-01	-54.49	54.76	237122	80	X	X		
63	L3-06	04-Jun-01	-54.49	54.76	237121	100	X	X		
63	L3-06	04-Jun-01	-54.49	54.76	237120	125	X	X		
63	L3-06	04-Jun-01	-54.49	54.76	237119	150	X	X		
63	L3-06	04-Jun-01	-54.49	54.76	237118	200	X	X		
63	L3-06	04-Jun-01	-54.49	54.76	237117	235		X		
65	L3-07	04-Jun-01	-54.29	54.96	237147	0	X	X		
65	L3-07	04-Jun-01	-54.29	54.96	237146	10	X	X		
65	L3-07	04-Jun-01	-54.29	54.96	237144	20	X	X		
65	L3-07	04-Jun-01	-54.29	54.96	237143	30	X	X		
65	L3-07	04-Jun-01	-54.29	54.96	237142	40	X	X		
65	L3-07	04-Jun-01	-54.29	54.96	237141	50	X	X		
65	L3-07	04-Jun-01	-54.29	54.96	237140	60	X	X		
65	L3-07	04-Jun-01	-54.29	54.96	237139	80	X	X		
65	L3-07	04-Jun-01	-54.29	54.96	237138	100	X	X		
65	L3-07	04-Jun-01	-54.29	54.96	237137	125	X	X		
65	L3-07	04-Jun-01	-54.29	54.96	237136	150	X	X		
65	L3-07	04-Jun-01	-54.29	54.96	237135	200	X	X		
65	L3-07	04-Jun-01	-54.29	54.96	237134	250		X		
65	L3-07	04-Jun-01	-54.29	54.96	237133	290		X		
65	L3-07	04-Jun-01	-54.29	54.96	237132	330		X		
65	L3-07	04-Jun-01	-54.29	54.96	237131	360		X		

Table 10. Sampling for microbial plankton.

Event	Station	Date	Lon	Lat	Sample	Depth	Phyto	Bacteria	BactProd	Nanozoo
69	L3-08	04-Jun-01	-53.99	55.05	237166	0	X	X	X	
69	L3-08	04-Jun-01	-53.99	55.05	237165	10	X	X	X	
69	L3-08	04-Jun-01	-53.99	55.05	237163	20	X	X	X	
69	L3-08	04-Jun-01	-53.99	55.05	237162	30	X	X	X	
69	L3-08	04-Jun-01	-53.99	55.05	237161	40	X	X	X	
69	L3-08	04-Jun-01	-53.99	55.05	237160	50	X	X	X	
69	L3-08	04-Jun-01	-53.99	55.05	237159	60	X	X	X	
69	L3-08	04-Jun-01	-53.99	55.05	237158	80	X	X	X	
69	L3-08	04-Jun-01	-53.99	55.05	237157	100	X	X	X	
69	L3-08	04-Jun-01	-53.99	55.05	237156	170	X	X	X	
69	L3-08	04-Jun-01	-53.99	55.05	237155	260		X		
69	L3-08	04-Jun-01	-53.99	55.05	237154	360		X		
69	L3-08	04-Jun-01	-53.99	55.05	237153	470		X		
69	L3-08	04-Jun-01	-53.99	55.05	237152	590		X		
69	L3-08	04-Jun-01	-53.99	55.05	237151	700		X		
69	L3-08	04-Jun-01	-53.99	55.05	237150	790		X		
69	L3-08	04-Jun-01	-53.99	55.05	237149	860		X		
69	L3-08	04-Jun-01	-53.99	55.05	237148	900		X		
71	L3-10	05-Jun-01	-53.82	55.42	237188	0		X		
71	L3-10	05-Jun-01	-53.82	55.42	237187	20		X		
71	L3-10	05-Jun-01	-53.82	55.42	237186	50		X		
71	L3-10	05-Jun-01	-53.82	55.42	237185	100		X		
71	L3-10	05-Jun-01	-53.82	55.42	237184	150		X		
71	L3-10	05-Jun-01	-53.82	55.42	237183	250		X		
71	L3-10	05-Jun-01	-53.82	55.42	237182	370		X		
71	L3-10	05-Jun-01	-53.82	55.42	237181	510		X		
71	L3-10	05-Jun-01	-53.82	55.42	237180	670		X		
71	L3-10	05-Jun-01	-53.82	55.42	237179	850		X		
71	L3-10	05-Jun-01	-53.82	55.42	237178	1030		X		
71	L3-10	05-Jun-01	-53.82	55.42	237177	1210		X		
71	L3-10	05-Jun-01	-53.82	55.42	237176	1410		X		
71	L3-10	05-Jun-01	-53.82	55.42	237175	1610		X		
71	L3-10	05-Jun-01	-53.82	55.42	237174	1810		X		
71	L3-10	05-Jun-01	-53.82	55.42	237173	1990		X		
71	L3-10	05-Jun-01	-53.82	55.42	237172	2150		X		
71	L3-10	05-Jun-01	-53.82	55.42	237171	2290		X		
71	L3-10	05-Jun-01	-53.82	55.42	237170	2410		X		
71	L3-10	05-Jun-01	-53.82	55.42	237169	2510		X		
71	L3-10	05-Jun-01	-53.82	55.42	237168	2590		X		
71	L3-10	05-Jun-01	-53.82	55.42	237167	2650		X		
72	L3-11	05-Jun-01	-53.63	55.61	237203	0	X	X	X	
72	L3-11	05-Jun-01	-53.63	55.61	237198	10	X	X	X	
72	L3-11	05-Jun-01	-53.63	55.61	237196	20	X	X	X	
72	L3-11	05-Jun-01	-53.63	55.61	237195	30	X	X	X	
72	L3-11	05-Jun-01	-53.63	55.61	237193	40	X	X	X	
72	L3-11	05-Jun-01	-53.63	55.61	237192	50	X	X	X	
72	L3-11	05-Jun-01	-53.63	55.61	237191	60	X	X	X	
72	L3-11	05-Jun-01	-53.63	55.61	237190	80	X	X	X	
72	L3-11	05-Jun-01	-53.63	55.61	237189	100	X	X	X	

Table 10. Sampling for microbial plankton.

Event	Station	Date	Lon	Lat	Sample	Depth	Phyto	Bacteria	BactProd	Nanozoo
75	L3-11	05-Jun-01	-53.65	55.62	237227	0		X		
75	L3-11	05-Jun-01	-53.65	55.62	237226	20		X		
75	L3-11	05-Jun-01	-53.65	55.62	237225	50		X		
75	L3-11	05-Jun-01	-53.65	55.62	237224	100		X		
75	L3-11	05-Jun-01	-53.65	55.62	237223	150		X		
75	L3-11	05-Jun-01	-53.65	55.62	237222	250		X		
75	L3-11	05-Jun-01	-53.65	55.62	237221	370		X		
75	L3-11	05-Jun-01	-53.65	55.62	237220	510		X		
75	L3-11	05-Jun-01	-53.65	55.62	237219	670		X		
75	L3-11	05-Jun-01	-53.65	55.62	237218	850		X		
75	L3-11	05-Jun-01	-53.65	55.62	237217	1030		X		
75	L3-11	05-Jun-01	-53.65	55.62	237216	1230		X		
75	L3-11	05-Jun-01	-53.65	55.62	237215	1430		X		
75	L3-11	05-Jun-01	-53.65	55.62	237214	1630		X		
75	L3-11	05-Jun-01	-53.65	55.62	237213	1810		X		
75	L3-11	05-Jun-01	-53.65	55.62	237212	1990		X		
75	L3-11	05-Jun-01	-53.65	55.62	237211	2150		X		
75	L3-11	05-Jun-01	-53.65	55.62	237210	2290		X		
75	L3-11	05-Jun-01	-53.65	55.62	237209	2430		X		
75	L3-11	05-Jun-01	-53.65	55.62	237208	2560		X		
75	L3-11	05-Jun-01	-53.65	55.62	237207	2690		X		
75	L3-11	05-Jun-01	-53.65	55.62	237206	2810		X		
75	L3-11	05-Jun-01	-53.65	55.62	237205	2890		X		
75	L3-11	05-Jun-01	-53.65	55.62	237204	2940		X		
79	L3-12	05-Jun-01	-53.42	55.85	237251	0		X		
79	L3-12	05-Jun-01	-53.42	55.85	237250	20		X		
79	L3-12	05-Jun-01	-53.42	55.85	237249	50		X		
79	L3-12	05-Jun-01	-53.42	55.85	237248	110		X		
79	L3-12	05-Jun-01	-53.42	55.85	237247	190		X		
79	L3-12	05-Jun-01	-53.42	55.85	237246	290		X		
79	L3-12	05-Jun-01	-53.42	55.85	237245	400		X		
79	L3-12	05-Jun-01	-53.42	55.85	237244	550		X		
79	L3-12	05-Jun-01	-53.42	55.85	237243	710		X		
79	L3-12	05-Jun-01	-53.42	55.85	237242	890		X		
79	L3-12	05-Jun-01	-53.42	55.85	237241	1090		X		
79	L3-12	05-Jun-01	-53.42	55.85	237240	1310		X		
79	L3-12	05-Jun-01	-53.42	55.85	237239	1550		X		
79	L3-12	05-Jun-01	-53.42	55.85	237238	1790		X		
79	L3-12	05-Jun-01	-53.42	55.85	237237	2010		X		
79	L3-12	05-Jun-01	-53.42	55.85	237236	2230		X		
79	L3-12	05-Jun-01	-53.42	55.85	237235	2410		X		
79	L3-12	05-Jun-01	-53.42	55.85	237234	2560		X		
79	L3-12	05-Jun-01	-53.42	55.85	237233	2690		X		
79	L3-12	05-Jun-01	-53.42	55.85	237232	2810		X		
79	L3-12	05-Jun-01	-53.42	55.85	237231	2920		X		
79	L3-12	05-Jun-01	-53.42	55.85	237230	3020		X		
79	L3-12	05-Jun-01	-53.42	55.85	237229	3100		X		
79	L3-12	05-Jun-01	-53.42	55.85	237228	3160		X		

Table 10. Sampling for microbial plankton.

Event	Station	Date	Lon	Lat	Sample	Depth	Phyto	Bacteria	BactProd	Nanozoo
84	L3-14	06-Jun-01	-52.70	56.54	237275	0		X	X	
84	L3-14	06-Jun-01	-52.70	56.54	237274	35		X	X	
84	L3-14	06-Jun-01	-52.70	56.54	237273	70		X	X	
84	L3-14	06-Jun-01	-52.70	56.54	237272	140		X	X	
84	L3-14	06-Jun-01	-52.70	56.54	237271	240		X	X	
84	L3-14	06-Jun-01	-52.70	56.54	237270	360		X	X	
84	L3-14	06-Jun-01	-52.70	56.54	237269	510		X	X	
84	L3-14	06-Jun-01	-52.70	56.54	237268	680		X	X	
84	L3-14	06-Jun-01	-52.70	56.54	237267	870		X	X	
84	L3-14	06-Jun-01	-52.70	56.54	237266	1070		X	X	
84	L3-14	06-Jun-01	-52.70	56.54	237265	1280		X	X	
84	L3-14	06-Jun-01	-52.70	56.54	237264	1500		X	X	
84	L3-14	06-Jun-01	-52.70	56.54	237263	1730		X	X	
84	L3-14	06-Jun-01	-52.70	56.54	237262	1970		X	X	
84	L3-14	06-Jun-01	-52.70	56.54	237261	2210		X	X	
84	L3-14	06-Jun-01	-52.70	56.54	237260	2440		X	X	
84	L3-14	06-Jun-01	-52.70	56.54	237259	2660		X	X	
84	L3-14	06-Jun-01	-52.70	56.54	237258	2860		X	X	
84	L3-14	06-Jun-01	-52.70	56.54	237257	3030		X	X	
84	L3-14	06-Jun-01	-52.70	56.54	237256	3160		X	X	
84	L3-14	06-Jun-01	-52.70	56.54	237255	3280		X	X	
84	L3-14	06-Jun-01	-52.70	56.54	237254	3380		X	X	
84	L3-14	06-Jun-01	-52.70	56.54	237253	3460		X	X	
84	L3-14	06-Jun-01	-52.70	56.54	237252	3530		X	X	
86	M1349	06-Jun-01	-52.49	56.70	237290	0	X	X	X	
86	M1349	06-Jun-01	-52.49	56.70	237285	10	X	X	X	
86	M1349	06-Jun-01	-52.49	56.70	237283	20	X	X	X	
86	M1349	06-Jun-01	-52.49	56.70	237282	30	X	X	X	
86	M1349	06-Jun-01	-52.49	56.70	237280	40	X	X	X	
86	M1349	06-Jun-01	-52.49	56.70	237279	50	X	X	X	
86	M1349	06-Jun-01	-52.49	56.70	237278	60	X	X	X	
86	M1349	06-Jun-01	-52.49	56.70	237277	80	X	X	X	
86	M1349	06-Jun-01	-52.49	56.70	237276	100	X	X	X	

Table 10. Sampling for microbial plankton.

Event	Station	Date	Lon	Lat	Sample	Depth	Phyto	Bacteria	BactProd	Nanozoo
90	L3-15	06-Jun-01	-52.23	56.96	237314	0		X		
90	L3-15	06-Jun-01	-52.23	56.96	237313	35		X		
90	L3-15	06-Jun-01	-52.23	56.96	237312	70		X		
90	L3-15	06-Jun-01	-52.23	56.96	237311	140		X		
90	L3-15	06-Jun-01	-52.23	56.96	237310	240		X		
90	L3-15	06-Jun-01	-52.23	56.96	237309	360		X		
90	L3-15	06-Jun-01	-52.23	56.96	237308	510		X		
90	L3-15	06-Jun-01	-52.23	56.96	237307	680		X		
90	L3-15	06-Jun-01	-52.23	56.96	237306	870		X		
90	L3-15	06-Jun-01	-52.23	56.96	237305	1070		X		
90	L3-15	06-Jun-01	-52.23	56.96	237304	1290		X		
90	L3-15	06-Jun-01	-52.23	56.96	237303	1530		X		
90	L3-15	06-Jun-01	-52.23	56.96	237302	1770		X		
90	L3-15	06-Jun-01	-52.23	56.96	237301	2010		X		
90	L3-15	06-Jun-01	-52.23	56.96	237300	2250		X		
90	L3-15	06-Jun-01	-52.23	56.96	237299	2470		X		
90	L3-15	06-Jun-01	-52.23	56.96	237298	2680		X		
90	L3-15	06-Jun-01	-52.23	56.96	237297	2870		X		
90	L3-15	06-Jun-01	-52.23	56.96	237296	3030		X		
90	L3-15	06-Jun-01	-52.23	56.96	237295	3170		X		
90	L3-15	06-Jun-01	-52.23	56.96	237294	3290		X		
90	L3-15	06-Jun-01	-52.23	56.96	237293	3400		X		
90	L3-15	06-Jun-01	-52.23	56.96	237292	3490		X		
90	L3-15	06-Jun-01	-52.23	56.96	237291	3560		X		
95	L3-17	06-Jun-01	-51.34	57.80	237338	0		X	X	
95	L3-17	06-Jun-01	-51.34	57.80	237337	35		X	X	
95	L3-17	06-Jun-01	-51.34	57.80	237336	70		X	X	
95	L3-17	06-Jun-01	-51.34	57.80	237335	140		X	X	
95	L3-17	06-Jun-01	-51.34	57.80	237334	240		X		
95	L3-17	06-Jun-01	-51.34	57.80	237333	355		X		
95	L3-17	06-Jun-01	-51.34	57.80	237332	200		X		
95	L3-17	06-Jun-01	-51.34	57.80	237331	660		X		
95	L3-17	06-Jun-01	-51.34	57.80	237330	820		X		
95	L3-17	06-Jun-01	-51.34	57.80	237329	970		X		
95	L3-17	06-Jun-01	-51.34	57.80	237328	1300		X		
95	L3-17	06-Jun-01	-51.34	57.80	237327	1550		X		
95	L3-17	06-Jun-01	-51.34	57.80	237326	1790		X		
95	L3-17	06-Jun-01	-51.34	57.80	237325	2040		X		
95	L3-17	06-Jun-01	-51.34	57.80	237324	2290		X		
95	L3-17	06-Jun-01	-51.34	57.80	237323	2520		X		
95	L3-17	06-Jun-01	-51.34	57.80	237322	2740		X		
95	L3-17	06-Jun-01	-51.34	57.80	237321	2940		X		
95	L3-17	06-Jun-01	-51.34	57.80	237320	3120		X		
95	L3-17	06-Jun-01	-51.34	57.80	237319	3250		X		
95	L3-17	06-Jun-01	-51.34	57.80	237318	3380		X		
95	L3-17	06-Jun-01	-51.34	57.80	237317	3490		X		
95	L3-17	06-Jun-01	-51.34	57.80	237316	3590		X		
95	L3-17	06-Jun-01	-51.34	57.80	237315	3675		X		

Table 10. Sampling for microbial plankton.

Event	Station	Date	Lon	Lat	Sample	Depth	Phyto	Bacteria	BactProd	Nanozoo
96	L3-19	07-Jun-01	-50.42	58.64	237353	0	X	X	X	X
96	L3-19	07-Jun-01	-50.42	58.64	237348	10	X	X	X	X
96	L3-19	07-Jun-01	-50.42	58.64	237346	20	X	X	X	X
96	L3-19	07-Jun-01	-50.42	58.64	237345	30	X	X	X	X
96	L3-19	07-Jun-01	-50.42	58.64	237343	40	X	X	X	X
96	L3-19	07-Jun-01	-50.42	58.64	237342	50	X	X	X	X
96	L3-19	07-Jun-01	-50.42	58.64	237341	60	X	X	X	X
96	L3-19	07-Jun-01	-50.42	58.64	237340	80	X	X	X	X
96	L3-19	07-Jun-01	-50.42	58.64	237339	100	X	X	X	X
98	L3-19	07-Jun-01	-50.42	58.64	237377	0		X		
98	L3-19	07-Jun-01	-50.42	58.64	237376	35		X		
98	L3-19	07-Jun-01	-50.42	58.64	237375	70		X		
98	L3-19	07-Jun-01	-50.42	58.64	237374	140		X		
98	L3-19	07-Jun-01	-50.42	58.64	237373	240		X		
98	L3-19	07-Jun-01	-50.42	58.64	237372	360		X		
98	L3-19	07-Jun-01	-50.42	58.64	237371	510		X		
98	L3-19	07-Jun-01	-50.42	58.64	237370	680		X		
98	L3-19	07-Jun-01	-50.42	58.64	237369	870		X		
98	L3-19	07-Jun-01	-50.42	58.64	237368	1070		X		
98	L3-19	07-Jun-01	-50.42	58.64	237367	1290		X		
98	L3-19	07-Jun-01	-50.42	58.64	237366	1530		X		
98	L3-19	07-Jun-01	-50.42	58.64	237365	1770		X		
98	L3-19	07-Jun-01	-50.42	58.64	237364	2020		X		
98	L3-19	07-Jun-01	-50.42	58.64	237363	2270		X		
98	L3-19	07-Jun-01	-50.42	58.64	237362	2500		X		
98	L3-19	07-Jun-01	-50.42	58.64	237361	2710		X		
98	L3-19	07-Jun-01	-50.42	58.64	237360	2900		X		
98	L3-19	07-Jun-01	-50.42	58.64	237359	3060		X		
98	L3-19	07-Jun-01	-50.42	58.64	237358	3200		X		
98	L3-19	07-Jun-01	-50.42	58.64	237357	3320		X		
98	L3-19	07-Jun-01	-50.42	58.64	237356	3430		X		
98	L3-19	07-Jun-01	-50.42	58.64	237355	3520		X		
98	L3-19	07-Jun-01	-50.42	58.64	237354	3590		X		

Table 10. Sampling for microbial plankton.

Event	Station	Date	Lon	Lat	Sample	Depth	Phyto	Bacteria	BactProd	Nanozoo
102	L3-21	07-Jun-01	-49.47	59.49	237401	0		X		
102	L3-21	07-Jun-01	-49.47	59.49	237400	35		X		
102	L3-21	07-Jun-01	-49.47	59.49	237399	70		X		
102	L3-21	07-Jun-01	-49.47	59.49	237398	140		X		
102	L3-21	07-Jun-01	-49.47	59.49	237397	240		X		
102	L3-21	07-Jun-01	-49.47	59.49	237396	360		X		
102	L3-21	07-Jun-01	-49.47	59.49	237395	510		X		
102	L3-21	07-Jun-01	-49.47	59.49	237394	680		X		
102	L3-21	07-Jun-01	-49.47	59.49	237393	870		X		
102	L3-21	07-Jun-01	-49.47	59.49	237392	1070		X		
102	L3-21	07-Jun-01	-49.47	59.49	237391	1280		X		
102	L3-21	07-Jun-01	-49.47	59.49	237390	1500		X		
102	L3-21	07-Jun-01	-49.47	59.49	237389	1730		X		
102	L3-21	07-Jun-01	-49.47	59.49	237388	1960		X		
102	L3-21	07-Jun-01	-49.47	59.49	237387	2190		X		
102	L3-21	07-Jun-01	-49.47	59.49	237386	2410		X		
102	L3-21	07-Jun-01	-49.47	59.49	237385	2610		X		
102	L3-21	07-Jun-01	-49.47	59.49	237384	2790		X		
102	L3-21	07-Jun-01	-49.47	59.49	237383	2950				
102	L3-21	07-Jun-01	-49.47	59.49	237382	3080				
102	L3-21	07-Jun-01	-49.47	59.49	237381	3200				
102	L3-21	07-Jun-01	-49.47	59.49	237380	3300				
102	L3-21	07-Jun-01	-49.47	59.49	237379	3380				
102	L3-21	07-Jun-01	-49.47	59.49	237378	3440				
105	L3-23	08-Jun-01	-48.90	59.99	237425	10	X	X	X	
105	L3-23	08-Jun-01	-48.90	59.99	237424	20	X	X	X	
105	L3-23	08-Jun-01	-48.90	59.99	237423	50	X	X	X	
105	L3-23	08-Jun-01	-48.90	59.99	237422	100	X	X	X	
105	L3-23	08-Jun-01	-48.90	59.99	237421	160		X	X	
105	L3-23	08-Jun-01	-48.90	59.99	237420	260		X		
105	L3-23	08-Jun-01	-48.90	59.99	237419	380		X		
105	L3-23	08-Jun-01	-48.90	59.99	237418	500		X		
105	L3-23	08-Jun-01	-48.90	59.99	237417	640		X		
105	L3-23	08-Jun-01	-48.90	59.99	237416	800		X		
105	L3-23	08-Jun-01	-48.90	59.99	237415	980		X		
105	L3-23	08-Jun-01	-48.90	59.99	237414	1180		X		
105	L3-23	08-Jun-01	-48.90	59.99	237413	1380		X		
105	L3-23	08-Jun-01	-48.90	59.99	237412	1580		X		
105	L3-23	08-Jun-01	-48.90	59.99	237411	1780		X		
105	L3-23	08-Jun-01	-48.90	59.99	237410	1980		X		
105	L3-23	08-Jun-01	-48.90	59.99	237409	2160		X		
105	L3-23	08-Jun-01	-48.90	59.99	237408	2340		X		
105	L3-23	08-Jun-01	-48.90	59.99	237407	2500		X		
105	L3-23	08-Jun-01	-48.90	59.99	237406	2640		X		
105	L3-23	08-Jun-01	-48.90	59.99	237405	2760		X		
105	L3-23	08-Jun-01	-48.90	59.99	237404	2860		X		
105	L3-23	08-Jun-01	-48.90	59.99	237403	2940		X		
105	L3-23	08-Jun-01	-48.90	59.99	237402	3000		X		

Table 10. Sampling for microbial plankton.

Event	Station	Date	Lon	Lat	Sample	Depth	Phyto	Bacteria	BactProd	Nanozoo
107	L3-25	08-Jun-01	-48.55	60.30	237449	0	X	X		
107	L3-25	08-Jun-01	-48.55	60.30	237448	10	X	X		
107	L3-25	08-Jun-01	-48.55	60.30	237447	20	X	X		
107	L3-25	08-Jun-01	-48.55	60.30	237446	30	X	X		
107	L3-25	08-Jun-01	-48.55	60.30	237445	50	X	X		
107	L3-25	08-Jun-01	-48.55	60.30	237444	100	X	X		
107	L3-25	08-Jun-01	-48.55	60.30	237443	150		X		
107	L3-25	08-Jun-01	-48.55	60.30	237442	250		X		
107	L3-25	08-Jun-01	-48.55	60.30	237441	370		X		
107	L3-25	08-Jun-01	-48.55	60.30	237440	510		X		
107	L3-25	08-Jun-01	-48.55	60.30	237439	670		X		
107	L3-25	08-Jun-01	-48.55	60.30	237438	850		X		
107	L3-25	08-Jun-01	-48.55	60.30	237437	1030		X		
107	L3-25	08-Jun-01	-48.55	60.30	237436	1230		X		
107	L3-25	08-Jun-01	-48.55	60.30	237435	1430		X		
107	L3-25	08-Jun-01	-48.55	60.30	237434	1630		X		
107	L3-25	08-Jun-01	-48.55	60.30	237433	1810		X		
107	L3-25	08-Jun-01	-48.55	60.30	237432	1990		X		
107	L3-25	08-Jun-01	-48.55	60.30	237431	2150		X		
107	L3-25	08-Jun-01	-48.55	60.30	237430	2290		X		
107	L3-25	08-Jun-01	-48.55	60.30	237429	2410		X		
107	L3-25	08-Jun-01	-48.55	60.30	237428	2510		X		
107	L3-25	08-Jun-01	-48.55	60.30	237427	2590		X		
107	L3-25	08-Jun-01	-48.55	60.30	237426	2630		X		
108	L3-28	08-Jun-01	-48.26	60.57	237467	0	X	X	X	
108	L3-28	08-Jun-01	-48.26	60.57	237462	10	X	X	X	
108	L3-28	08-Jun-01	-48.26	60.57	237460	20	X	X	X	
108	L3-28	08-Jun-01	-48.26	60.57	237459	30	X	X	X	
108	L3-28	08-Jun-01	-48.26	60.57	237456	40	X	X	X	
108	L3-28	08-Jun-01	-48.26	60.57	237455	50	X	X	X	
108	L3-28	08-Jun-01	-48.26	60.57	237454	60	X	X	X	
108	L3-28	08-Jun-01	-48.26	60.57	237453	80	X	X	X	
108	L3-28	08-Jun-01	-48.26	60.57	237452	100	X	X	X	
108	L3-28	08-Jun-01	-48.26	60.57	237451	120	X	X	X	
108	L3-28	08-Jun-01	-48.26	60.57	237450	135	X	X		
111	L3-27	08-Jun-01	-48.36	60.45	237477	0	X	X		
111	L3-27	08-Jun-01	-48.36	60.45	237476	10	X	X		
111	L3-27	08-Jun-01	-48.36	60.45	237475	20	X	X		
111	L3-27	08-Jun-01	-48.36	60.45	237474	30	X	X		
111	L3-27	08-Jun-01	-48.36	60.45	237473	40	X	X		
111	L3-27	08-Jun-01	-48.36	60.45	237472	50	X	X		
111	L3-27	08-Jun-01	-48.36	60.45	237471	60	X	X		
111	L3-27	08-Jun-01	-48.36	60.45	237470	80	X	X		
111	L3-27	08-Jun-01	-48.36	60.45	237469	100	X	X		
111	L3-27	08-Jun-01	-48.36	60.45	237468	135	X	X		

Table 10. Sampling for microbial plankton.

Event	Station	Date	Lon	Lat	Sample	Depth	Phyto	Bacteria	BactProd	Nanozoo
119	L3-26	08-Jun-01	-48.45	60.36	237494	0	X	X	X	
119	L3-26	08-Jun-01	-48.45	60.36	237493	10	X	X	X	
119	L3-26	08-Jun-01	-48.45	60.36	237492	20	X	X	X	
119	L3-26	08-Jun-01	-48.45	60.36	237491	30	X	X	X	
119	L3-26	08-Jun-01	-48.45	60.36	237490	40	X	X	X	
119	L3-26	08-Jun-01	-48.45	60.36	237489	50	X	X	X	
119	L3-26	08-Jun-01	-48.45	60.36	237488	60	X	X	X	
119	L3-26	08-Jun-01	-48.45	60.36	237487	80	X	X	X	
119	L3-26	08-Jun-01	-48.45	60.36	237486	100	X	X	X	
119	L3-26	08-Jun-01	-48.45	60.36	237485	170	X	X	X	
119	L3-26	08-Jun-01	-48.45	60.36	237484	260		X		
119	L3-26	08-Jun-01	-48.45	60.36	237483	360		X		
119	L3-26	08-Jun-01	-48.45	60.36	237482	470		X		
119	L3-26	08-Jun-01	-48.45	60.36	237481	550		X		
119	L3-26	08-Jun-01	-48.45	60.36	237480	630		X		
119	L3-26	08-Jun-01	-48.45	60.36	237479	700		X		
119	L3-26	08-Jun-01	-48.45	60.36	237478	770		X		
133	L3-24	08-Jun-01	-48.68	60.18	237520	0		X		
133	L3-24	08-Jun-01	-48.68	60.18	237519	35		X		
133	L3-24	08-Jun-01	-48.68	60.18	237518	80		X		
133	L3-24	08-Jun-01	-48.68	60.18	237517	140		X		
133	L3-24	08-Jun-01	-48.68	60.18	237516	240		X		
133	L3-24	08-Jun-01	-48.68	60.18	237515	340		X		
133	L3-24	08-Jun-01	-48.68	60.18	237514	460		X		
133	L3-24	08-Jun-01	-48.68	60.18	237513	580		X		
133	L3-24	08-Jun-01	-48.68	60.18	237512	720		X		
133	L3-24	08-Jun-01	-48.68	60.18	237511	880		X		
133	L3-24	08-Jun-01	-48.68	60.18	237510	1060		X		
133	L3-24	08-Jun-01	-48.68	60.18	237509	1260		X		
133	L3-24	08-Jun-01	-48.68	60.18	237508	1460		X		
133	L3-24	08-Jun-01	-48.68	60.18	237507	1660		X		
133	L3-24	08-Jun-01	-48.68	60.18	237506	1860		X		
133	L3-24	08-Jun-01	-48.68	60.18	237505	2040		X		
133	L3-24	08-Jun-01	-48.68	60.18	237504	2240		X		
133	L3-24	08-Jun-01	-48.68	60.18	237503	2400		X		
133	L3-24	08-Jun-01	-48.68	60.18	237502	2540		X		
133	L3-24	08-Jun-01	-48.68	60.18	237501	2660		X		
133	L3-24	08-Jun-01	-48.68	60.18	237500	2760		X		
133	L3-24	08-Jun-01	-48.68	60.18	237499	2840		X		
133	L3-24	08-Jun-01	-48.68	60.18	237498	2900		X		

Table 10. Sampling for microbial plankton.

Event	Station	Date	Lon	Lat	Sample	Depth	Phyto	Bacteria	BactProd	Nanozoo
146	L3-22	09-Jun-01	-49.17	59.75	237544	0		X		
146	L3-22	09-Jun-01	-49.17	59.75	237543	25		X		
146	L3-22	09-Jun-01	-49.17	59.75	237542	50		X		
146	L3-22	09-Jun-01	-49.17	59.75	237541	100		X		
146	L3-22	09-Jun-01	-49.17	59.75	237540	210		X		
146	L3-22	09-Jun-01	-49.17	59.75	237539	330		X		
146	L3-22	09-Jun-01	-49.17	59.75	237538	480		X		
146	L3-22	09-Jun-01	-49.17	59.75	237537	660		X		
146	L3-22	09-Jun-01	-49.17	59.75	237536	815		X		
146	L3-22	09-Jun-01	-49.17	59.75	237535	1020		X		
146	L3-22	09-Jun-01	-49.17	59.75	237534	1245		X		
146	L3-22	09-Jun-01	-49.17	59.75	237533	1429		X		
146	L3-22	09-Jun-01	-49.17	59.75	237532	1719		X		
146	L3-22	09-Jun-01	-49.17	59.75	237531	1880		X		
146	L3-22	09-Jun-01	-49.17	59.75	237530	2060		X		
146	L3-22	09-Jun-01	-49.17	59.75	237529	2260		X		
146	L3-22	09-Jun-01	-49.17	59.75	237528	2460		X		
146	L3-22	09-Jun-01	-49.17	59.75	237527	2620		X		
146	L3-22	09-Jun-01	-49.17	59.75	237526	2770		X		
146	L3-22	09-Jun-01	-49.17	59.75	237525	2900		X		
146	L3-22	09-Jun-01	-49.17	59.75	237524	3020		X		
146	L3-22	09-Jun-01	-49.17	59.75	237523	3120		X		
146	L3-22	09-Jun-01	-49.17	59.75	237522	3200		X		
146	L3-22	09-Jun-01	-49.17	59.75	237521	3255		X		
161	L3-20	09-Jun-01	-49.96	59.07	237559	0	X	X	X	
161	L3-20	09-Jun-01	-49.96	59.07	237554	10	X	X	X	
161	L3-20	09-Jun-01	-49.96	59.07	237552	20	X	X	X	
161	L3-20	09-Jun-01	-49.96	59.07	237551	30	X	X	X	
161	L3-20	09-Jun-01	-49.96	59.07	237549	40	X	X	X	
161	L3-20	09-Jun-01	-49.96	59.07	237548	50	X	X	X	
161	L3-20	09-Jun-01	-49.96	59.07	237547	60	X	X	X	
161	L3-20	09-Jun-01	-49.96	59.07	237546	80	X	X	X	
161	L3-20	09-Jun-01	-49.96	59.07	237545	100	X	X	X	

Table 10. Sampling for microbial plankton.

Event	Station	Date	Lon	Lat	Sample	Depth	Phyto	Bacteria	BactProd	Nanozoo
162	L3-20	09-Jun-01	-49.95	59.07	237583	0		X		
162	L3-20	09-Jun-01	-49.95	59.07	237582	35		X		
162	L3-20	09-Jun-01	-49.95	59.07	237581	70		X		
162	L3-20	09-Jun-01	-49.95	59.07	237580	140		X		
162	L3-20	09-Jun-01	-49.95	59.07	237579	240		X		
162	L3-20	09-Jun-01	-49.95	59.07	237578	360		X		
162	L3-20	09-Jun-01	-49.95	59.07	237577	510		X		
162	L3-20	09-Jun-01	-49.95	59.07	237576	680		X		
162	L3-20	09-Jun-01	-49.95	59.07	237575	870		X		
162	L3-20	09-Jun-01	-49.95	59.07	237574	1070		X		
162	L3-20	09-Jun-01	-49.95	59.07	237573	1280		X		
162	L3-20	09-Jun-01	-49.95	59.07	237572	1500		X		
162	L3-20	09-Jun-01	-49.95	59.07	237571	1730		X		
162	L3-20	09-Jun-01	-49.95	59.07	237570	1970		X		
162	L3-20	09-Jun-01	-49.95	59.07	237569	2210		X		
162	L3-20	09-Jun-01	-49.95	59.07	237568	2440		X		
162	L3-20	09-Jun-01	-49.95	59.07	237567	2660		X		
162	L3-20	09-Jun-01	-49.95	59.07	237566	2860		X		
162	L3-20	09-Jun-01	-49.95	59.07	237565	3020		X		
162	L3-20	09-Jun-01	-49.95	59.07	237564	3150		X		
162	L3-20	09-Jun-01	-49.95	59.07	237563	3270		X		
162	L3-20	09-Jun-01	-49.95	59.07	237562	3370		X		
162	L3-20	09-Jun-01	-49.95	59.07	237561	3450		X		
162	L3-20	09-Jun-01	-49.95	59.07	237560	3510		X		
163	L3-16	10-Jun-01	-51.79	57.38	237631	0		X		
163	L3-16	10-Jun-01	-51.79	57.38	237630	10		X		
163	L3-16	10-Jun-01	-51.79	57.38	237629	70		X		
163	L3-16	10-Jun-01	-51.79	57.38	237628	140		X		
163	L3-16	10-Jun-01	-51.79	57.38	237627	240		X		
163	L3-16	10-Jun-01	-51.79	57.38	237626	340		X		
163	L3-16	10-Jun-01	-51.79	57.38	237625	450		X		
163	L3-16	10-Jun-01	-51.79	57.38	237624	620		X		
163	L3-16	10-Jun-01	-51.79	57.38	237623	900		X		
163	L3-16	10-Jun-01	-51.79	57.38	237622	1100		X		
163	L3-16	10-Jun-01	-51.79	57.38	237621	1300		X		
163	L3-16	10-Jun-01	-51.79	57.38	237620	1530		X		
163	L3-16	10-Jun-01	-51.79	57.38	237619	1770		X		
163	L3-16	10-Jun-01	-51.79	57.38	237618	2010		X		
163	L3-16	10-Jun-01	-51.79	57.38	237617	2250		X		
163	L3-16	10-Jun-01	-51.79	57.38	237616	2480		X		
163	L3-16	10-Jun-01	-51.79	57.38	237615	2690		X		
163	L3-16	10-Jun-01	-51.79	57.38	237614	2880		X		
163	L3-16	10-Jun-01	-51.79	57.38	237613	3040		X		
163	L3-16	10-Jun-01	-51.79	57.38	237612	3180		X		
163	L3-16	10-Jun-01	-51.79	57.38	237611	3300		X		
163	L3-16	10-Jun-01	-51.79	57.38	237610	3410		X		
163	L3-16	10-Jun-01	-51.79	57.38	237609	3500		X		
163	L3-16	10-Jun-01	-51.79	57.38	237608	3590		X		

Table 10. Sampling for microbial plankton.

Event	Station	Date	Lon	Lat	Sample	Depth	Phyto	Bacteria	BactProd	Nanozoo
164	L3-18	09-Jun-01	-50.88	58.21	237607	0		X		
164	L3-18	09-Jun-01	-50.88	58.21	237606	35		X		
164	L3-18	09-Jun-01	-50.88	58.21	237605	70		X		
164	L3-18	09-Jun-01	-50.88	58.21	237604	140		X		
164	L3-18	09-Jun-01	-50.88	58.21	237603	240		X		
164	L3-18	09-Jun-01	-50.88	58.21	237602	360		X		
164	L3-18	09-Jun-01	-50.88	58.21	237601	510		X		
164	L3-18	09-Jun-01	-50.88	58.21	237600	680		X		
164	L3-18	09-Jun-01	-50.88	58.21	237599	870		X		
164	L3-18	09-Jun-01	-50.88	58.21	237598	1070		X		
164	L3-18	09-Jun-01	-50.88	58.21	237597	1290		X		
164	L3-18	09-Jun-01	-50.88	58.21	237596	1530		X		
164	L3-18	09-Jun-01	-50.88	58.21	237595	1770		X		
164	L3-18	09-Jun-01	-50.88	58.21	237594	2020		X		
164	L3-18	09-Jun-01	-50.88	58.21	237593	2270		X		
164	L3-18	09-Jun-01	-50.88	58.21	237592	2500		X		
164	L3-18	09-Jun-01	-50.88	58.21	237591	2710		X		
164	L3-18	09-Jun-01	-50.88	58.21	237590	2900		X		
164	L3-18	09-Jun-01	-50.88	58.21	237589	3060		X		
164	L3-18	09-Jun-01	-50.88	58.21	237588	3200		X		
164	L3-18	09-Jun-01	-50.88	58.21	237587	3320		X		
164	L3-18	09-Jun-01	-50.88	58.21	237586	3430		X		
164	L3-18	09-Jun-01	-50.88	58.21	237585	3520		X		
164	L3-18	09-Jun-01	-50.88	58.21	237584	3590		X		
209	L3-13	10-Jun-01	-53.12	56.11	237646	0	X	X	X	
209	L3-13	10-Jun-01	-53.12	56.11	237641	10	X	X	X	
209	L3-13	10-Jun-01	-53.12	56.11	237639	20	X	X	X	
209	L3-13	10-Jun-01	-53.12	56.11	237638	30	X	X	X	
209	L3-13	10-Jun-01	-53.12	56.11	237636	40	X	X	X	
209	L3-13	10-Jun-01	-53.12	56.11	237635	50	X	X	X	
209	L3-13	10-Jun-01	-53.12	56.11	237634	60	X	X	X	
209	L3-13	10-Jun-01	-53.12	56.11	237633	80	X	X	X	
209	L3-13	10-Jun-01	-53.12	56.11	237632	100	X	X	X	

Table 10. Sampling for microbial plankton.

Event	Station	Date	Lon	Lat	Sample	Depth	Phyto	Bacteria	BactProd	Nanozoo
211	L3-13	10-Jun-01	-53.12	56.11	237670	0		X		
211	L3-13	10-Jun-01	-53.12	56.11	237669	10		X		
211	L3-13	10-Jun-01	-53.12	56.11	237668	60		X		
211	L3-13	10-Jun-01	-53.12	56.11	237667	120		X		
211	L3-13	10-Jun-01	-53.12	56.11	237666	200		X		
211	L3-13	10-Jun-01	-53.12	56.11	237665	310		X		
211	L3-13	10-Jun-01	-53.12	56.11	237664	430		X		
211	L3-13	10-Jun-01	-53.12	56.11	237663	580		X		
211	L3-13	10-Jun-01	-53.12	56.11	237662	760		X		
211	L3-13	10-Jun-01	-53.12	56.11	237661	960		X		
211	L3-13	10-Jun-01	-53.12	56.11	237660	1180		X		
211	L3-13	10-Jun-01	-53.12	56.11	237659	1400		X		
211	L3-13	10-Jun-01	-53.12	56.11	237658	1640		X		
211	L3-13	10-Jun-01	-53.12	56.11	237657	1880		X		
211	L3-13	10-Jun-01	-53.12	56.11	237656	2100		X		
211	L3-13	10-Jun-01	-53.12	56.11	237655	2320		X		
211	L3-13	10-Jun-01	-53.12	56.11	237654	2520		X		
211	L3-13	10-Jun-01	-53.12	56.11	237653	2700		X		
211	L3-13	10-Jun-01	-53.12	56.11	237652	2860		X		
211	L3-13	10-Jun-01	-53.12	56.11	237651	3000		X		
211	L3-13	10-Jun-01	-53.12	56.11	237650	3120		X		
211	L3-13	10-Jun-01	-53.12	56.11	237649	3220		X		
211	L3-13	10-Jun-01	-53.12	56.11	237648	3300		X		
211	L3-13	10-Jun-01	-53.12	56.11	237647	3360		X		
236	L3-09	10-Jun-01	-53.98	55.26	237699	0		X		
236	L3-09	10-Jun-01	-53.98	55.26	237698	10		X		
236	L3-09	10-Jun-01	-53.98	55.26	237697	20		X		
236	L3-09	10-Jun-01	-53.98	55.26	237696	30		X		
236	L3-09	10-Jun-01	-53.98	55.26	237695	40		X		
236	L3-09	10-Jun-01	-53.98	55.26	237694	50		X		
236	L3-09	10-Jun-01	-53.98	55.26	237693	60		X		
236	L3-09	10-Jun-01	-53.98	55.26	237692	80		X		
236	L3-09	10-Jun-01	-53.98	55.26	237691	100		X		
236	L3-09	10-Jun-01	-53.98	55.26	237690	150		X		
236	L3-09	10-Jun-01	-53.98	55.26	237689	250		X		
236	L3-09	10-Jun-01	-53.98	55.26	237688	370		X		
236	L3-09	10-Jun-01	-53.98	55.26	237687	470		X		
236	L3-09	10-Jun-01	-53.98	55.26	237686	620		X		
236	L3-09	10-Jun-01	-53.98	55.26	237685	800		X		
236	L3-09	10-Jun-01	-53.98	55.26	237684	1060		X		
236	L3-09	10-Jun-01	-53.98	55.26	237683	1210		X		
236	L3-09	10-Jun-01	-53.98	55.26	237682	1390		X		
236	L3-09	10-Jun-01	-53.98	55.26	237681	1550		X		
236	L3-09	10-Jun-01	-53.98	55.26	237680	1690		X		
236	L3-09	10-Jun-01	-53.98	55.26	237679	1820		X		
236	L3-09	10-Jun-01	-53.98	55.26	237678	1920		X		
236	L3-09	10-Jun-01	-53.98	55.26	237677	2000		X		
236	L3-09	10-Jun-01	-53.98	55.26	237676	2050		X		

Table 10. Sampling for microbial plankton.

Event	Station	Date	Lon	Lat	Sample	Depth	Phyto	Bacteria	BactProd	Nanozoo
238	Transit	11-Jun-01	-52.50	54.69	237714	0	X	X	X	
238	Transit	11-Jun-01	-52.50	54.69	237709	10	X	X	X	
238	Transit	11-Jun-01	-52.50	54.69	237707	20	X	X	X	
238	Transit	11-Jun-01	-52.50	54.69	237706	30		X	X	
238	Transit	11-Jun-01	-52.50	54.69	237704	40	X	X	X	
238	Transit	11-Jun-01	-52.50	54.69	237703	50	X	X	X	
238	Transit	11-Jun-01	-52.50	54.69	237702	60	X	X	X	
238	Transit	11-Jun-01	-52.50	54.69	237701	80	X	X	X	
238	Transit	11-Jun-01	-52.50	54.69	237700	100	X	X	X	
241	L4-08	11-Jun-01	-50.53	53.15	237762	0		X		
241	L4-08	11-Jun-01	-50.53	53.15	237761	20		X		
241	L4-08	11-Jun-01	-50.53	53.15	237760	50		X		
241	L4-08	11-Jun-01	-50.53	53.15	237759	110		X		
241	L4-08	11-Jun-01	-50.53	53.15	237758	190		X		
241	L4-08	11-Jun-01	-50.53	53.15	237757	290		X		
241	L4-08	11-Jun-01	-50.53	53.15	237756	400		X		
241	L4-08	11-Jun-01	-50.53	53.15	237755	550		X		
241	L4-08	11-Jun-01	-50.53	53.15	237754	710		X		
241	L4-08	11-Jun-01	-50.53	53.15	237753	890		X		
241	L4-08	11-Jun-01	-50.53	53.15	237752	1090		X		
241	L4-08	11-Jun-01	-50.53	53.15	237751	1310		X		
241	L4-08	11-Jun-01	-50.53	53.15	237750	1550		X		
241	L4-08	11-Jun-01	-50.53	53.15	237749	1790		X		
241	L4-08	11-Jun-01	-50.53	53.15	237748	2010		X		
241	L4-08	11-Jun-01	-50.53	53.15	237747	2230		X		
241	L4-08	11-Jun-01	-50.53	53.15	237746	2410		X		
241	L4-08	11-Jun-01	-50.53	53.15	237745	2560		X		
241	L4-08	11-Jun-01	-50.53	53.15	237744	2690		X		
241	L4-08	11-Jun-01	-50.53	53.15	237743	2810		X		
241	L4-08	11-Jun-01	-50.53	53.15	237742	2930		X		
241	L4-08	11-Jun-01	-50.53	53.15	237741	3040		X		
241	L4-08	11-Jun-01	-50.53	53.15	237740	3130		X		
241	L4-08	11-Jun-01	-50.53	53.15	237739	3200		X		

Table 10. Sampling for microbial plankton.

Event	Station	Date	Lon	Lat	Sample	Depth	Phyto	Bacteria	BactProd	Nanozoo
243	L4-07	12-Jun-01	-51.05	53.00	237786	0	X	X		
243	L4-07	12-Jun-01	-51.05	53.00	237785	10	X	X		
243	L4-07	12-Jun-01	-51.05	53.00	237784	20	X	X		
243	L4-07	12-Jun-01	-51.05	53.00	237783	30	X	X		
243	L4-07	12-Jun-01	-51.05	53.00	237782	50	X	X		
243	L4-07	12-Jun-01	-51.05	53.00	237781	100	X	X		
243	L4-07	12-Jun-01	-51.05	53.00	237780	150	X	X		
243	L4-07	12-Jun-01	-51.05	53.00	237779	250		X		
243	L4-07	12-Jun-01	-51.05	53.00	237778	370		X		
243	L4-07	12-Jun-01	-51.05	53.00	237777	510		X		
243	L4-07	12-Jun-01	-51.05	53.00	237776	670		X		
243	L4-07	12-Jun-01	-51.05	53.00	237775	850		X		
243	L4-07	12-Jun-01	-51.05	53.00	237774	1030		X		
243	L4-07	12-Jun-01	-51.05	53.00	237773	1210		X		
243	L4-07	12-Jun-01	-51.05	53.00	237772	1410		X		
243	L4-07	12-Jun-01	-51.05	53.00	237771	1610		X		
243	L4-07	12-Jun-01	-51.05	53.00	237770	1810		X		
243	L4-07	12-Jun-01	-51.05	53.00	237769	2000		X		
243	L4-07	12-Jun-01	-51.05	53.00	237768	2170		X		
243	L4-07	12-Jun-01	-51.05	53.00	237767	2320		X		
243	L4-07	12-Jun-01	-51.05	53.00	237766	2440		X		
243	L4-07	12-Jun-01	-51.05	53.00	237765	2440		X		
243	L4-07	12-Jun-01	-51.05	53.00	237764	2630		X		
243	L4-07	12-Jun-01	-51.05	53.00	237763	2700		X		
246	L4-06	12-Jun-01	-51.52	52.87	237810	0	X	X		
246	L4-06	12-Jun-01	-51.52	52.87	237809	10	X	X		
246	L4-06	12-Jun-01	-51.52	52.87	237808	20	X	X		
246	L4-06	12-Jun-01	-51.52	52.87	237807	30	X	X		
246	L4-06	12-Jun-01	-51.52	52.87	237806	40	X	X		
246	L4-06	12-Jun-01	-51.52	52.87	237805	50	X	X		
246	L4-06	12-Jun-01	-51.52	52.87	237804	60	X	X		
246	L4-06	12-Jun-01	-51.52	52.87	237803	80		X		
246	L4-06	12-Jun-01	-51.52	52.87	237802	100		X		
246	L4-06	12-Jun-01	-51.52	52.87	237801	150		X		
246	L4-06	12-Jun-01	-51.52	52.87	237800	250		X		
246	L4-06	12-Jun-01	-51.52	52.87	237799	370		X		
246	L4-06	12-Jun-01	-51.52	52.87	237798	500		X		
246	L4-06	12-Jun-01	-51.52	52.87	237797	650		X		
246	L4-06	12-Jun-01	-51.52	52.87	237796	790		X		
246	L4-06	12-Jun-01	-51.52	52.87	237795	890		X		
246	L4-06	12-Jun-01	-51.52	52.87	237794	1000		X		
246	L4-06	12-Jun-01	-51.52	52.87	237793	1120		X		
246	L4-06	12-Jun-01	-51.52	52.87	237792	1230		X		
246	L4-06	12-Jun-01	-51.52	52.87	237791	1330		X		
246	L4-06	12-Jun-01	-51.52	52.87	237790	1420		X		
246	L4-06	12-Jun-01	-51.52	52.87	237789	1490		X		
246	L4-06	12-Jun-01	-51.52	52.87	237788	1540		X		
246	L4-06	12-Jun-01	-51.52	52.87	237787	1590		X		

Table 10. Sampling for microbial plankton.

Event	Station	Date	Lon	Lat	Sample	Depth	Phyto	Bacteria	BactProd	Nanozoo
248	L4-05	12-Jun-01	-52.00	52.73	237829	0	X	X	X	
248	L4-05	12-Jun-01	-52.00	52.73	237823	10	X	X	X	
248	L4-05	12-Jun-01	-52.00	52.73	237821	20	X	X	X	
248	L4-05	12-Jun-01	-52.00	52.73	237820	30	X	X	X	
248	L4-05	12-Jun-01	-52.00	52.73	237818	40	X	X	X	
248	L4-05	12-Jun-01	-52.00	52.73	237817	50	X	X	X	
248	L4-05	12-Jun-01	-52.00	52.73	237816	60	X	X	X	
248	L4-05	12-Jun-01	-52.00	52.73	237815	80	X	X	X	
248	L4-05	12-Jun-01	-52.00	52.73	237814	100	X	X	X	
248	L4-05	12-Jun-01	-52.00	52.73	237813	150		X		
248	L4-05	12-Jun-01	-52.00	52.73	237812	200		X		
248	L4-05	12-Jun-01	-52.00	52.73	237811	300		X		
250	L4-04	12-Jun-01	-52.41	52.62	237841	0	X	X		
250	L4-04	12-Jun-01	-52.41	52.62	237839	10	X	X		
250	L4-04	12-Jun-01	-52.41	52.62	237838	20	X	X		
250	L4-04	12-Jun-01	-52.41	52.62	237837	30	X	X		
250	L4-04	12-Jun-01	-52.41	52.62	237836	40	X	X		
250	L4-04	12-Jun-01	-52.41	52.62	237835	50	X	X		
250	L4-04	12-Jun-01	-52.41	52.62	237834	60	X	X		
250	L4-04	12-Jun-01	-52.41	52.62	237833	80	X	X		
250	L4-04	12-Jun-01	-52.41	52.62	237832	100	X	X		
250	L4-04	12-Jun-01	-52.41	52.62	237831	200		X		
250	L4-04	12-Jun-01	-52.41	52.62	237830	250		X		
252	L4-03	12-Jun-01	-52.80	52.50	237853	0	X	X		
252	L4-03	12-Jun-01	-52.80	52.50	237851	10	X	X		
252	L4-03	12-Jun-01	-52.80	52.50	237850	20	X	X		
252	L4-03	12-Jun-01	-52.80	52.50	237849	30	X	X		
252	L4-03	12-Jun-01	-52.80	52.50	237848	40	X	X		
252	L4-03	12-Jun-01	-52.80	52.50	237847	50	X	X		
252	L4-03	12-Jun-01	-52.80	52.50	237846	60	X	X		
252	L4-03	12-Jun-01	-52.80	52.50	237845	80	X	X		
252	L4-03	12-Jun-01	-52.80	52.50	237844	100	X	X		
252	L4-03	12-Jun-01	-52.80	52.50	237843	200		X		
252	L4-03	12-Jun-01	-52.80	52.50	237842	250		X		
254	L4-02	12-Jun-01	-53.56	52.29	237867	0	X	X		
254	L4-02	12-Jun-01	-53.56	52.29	237865	10	X	X		
254	L4-02	12-Jun-01	-53.56	52.29	237864	20	X	X		
254	L4-02	12-Jun-01	-53.56	52.29	237863	30	X	X		
254	L4-02	12-Jun-01	-53.56	52.29	237862	40	X	X		
254	L4-02	12-Jun-01	-53.56	52.29	237861	50	X	X		
254	L4-02	12-Jun-01	-53.56	52.29	237860	60	X	X		
254	L4-02	12-Jun-01	-53.56	52.29	237859	80	X	X		
254	L4-02	12-Jun-01	-53.56	52.29	237858	100	X	X		
254	L4-02	12-Jun-01	-53.56	52.29	237857	150		X		
254	L4-02	12-Jun-01	-53.56	52.29	237856	200		X		
254	L4-02	12-Jun-01	-53.56	52.29	237855	300		X		
254	L4-02	12-Jun-01	-53.56	52.29	237854	400		X		

Table 10. Sampling for microbial plankton.

Event	Station	Date	Lon	Lat	Sample	Depth	Phyto	Bacteria	BactProd	Nanozoo
256	L4-01	12-Jun-01	-54.29	52.07	237879	0	X	X		X
256	L4-01	12-Jun-01	-54.29	52.07	237877	10	X	X		X
256	L4-01	12-Jun-01	-54.29	52.07	237876	20	X	X		X
256	L4-01	12-Jun-01	-54.29	52.07	237875	30	X	X		X
256	L4-01	12-Jun-01	-54.29	52.07	237874	40	X	X		X
256	L4-01	12-Jun-01	-54.29	52.07	237873	50	X	X		X
256	L4-01	12-Jun-01	-54.29	52.07	237872	60	X	X		X
256	L4-01	12-Jun-01	-54.29	52.07	237871	80	X	X		X
256	L4-01	12-Jun-01	-54.29	52.07	237870	100	X	X		X
256	L4-01	12-Jun-01	-54.29	52.07	237869	150	X	X		X
256	L4-01	12-Jun-01	-54.29	52.07	237868	200	X	X		
257	BelleIsle	13-Jun-01	-57.94	50.15	237894	0	X	X		
257	BelleIsle	13-Jun-01	-57.94	50.15	237889	10	X	X		
257	BelleIsle	13-Jun-01	-57.94	50.15	237887	20	X	X		
257	BelleIsle	13-Jun-01	-57.94	50.15	237886	30	X	X		
257	BelleIsle	13-Jun-01	-57.94	50.15	237884	40	X	X		
257	BelleIsle	13-Jun-01	-57.94	50.15	237883	50	X	X		
257	BelleIsle	13-Jun-01	-57.94	50.15	237882	60	X	X		
257	BelleIsle	13-Jun-01	-57.94	50.15	237881	80	X	X		
257	BelleIsle	13-Jun-01	-57.94	50.15	237880	100	X	X		
Number of samples							334	834	182	19

h. Mooring Sediment Traps
(Glen Harrison and Brian Irwin)

Two sediment traps were deployed at the "BRAVO" mooring (at 175 m and 1,053 m) during the 2000-009 mission. The trap design employed was developed at BIO (Bioflux traps), has a 24-cup capacity and internal Tattletale computer for programming particle collection intervals. Cups were programmed to collect material for two-week intervals starting 12:01AM (GMT), 01 June, 2000.

Due to a failure in the mooring line, only one (1,053 m) trap was recovered during the 2001-022 mission. The trap was recovered upright and based on preliminary inspection of the sampling cups, the deployment appeared to be successful as evidenced by significant biological material presence in all 24 cups. Analysis of the pressure record from the Seacat immediately below the trap indicated that the trap collected material at the nominal deployment depth for the first 88 days. Then, the trap was displaced some 1,300 m deeper at the time of the mooring line failure where it remained for the rest of the deployment.

Judging from the nature and quantity of collected material, it appears that major vertical particulate transport occurred during the fall and early winter of 2000 and virtually no transport occurred in spring 2001. The samples will be processed back at BIO for particulate and dissolved biogenic (organic) carbon and nitrogen content as well as other constituents. These particle fluxes will provide the first direct estimates of seasonal variability and annual magnitude of the "Biological Pump" and its contribution to carbon sequestering in the region.

h. Methyl Halides and Chlorinated Compounds
(R.M. Moore, S. Punshon and R. Tokarczyk)

Measurements were made in seawater samples for methyl halides and a suite of chlorinated compounds that have short atmospheric lifetimes. These include dichloromethane, chloroform, trichloroethylene and tetrachloroethylene (also referred to as perchloroethylene or PCE). The objective of these measurements is to quantify the relative magnitudes of anthropogenic and marine sources of these compounds and to identify potential tracer applications. Water samples were analyzed by purge-and-trap and gas chromatography-mass spectrometry. Preliminary results indicate good results for most of the compounds, but difficulties were experienced with PCE almost certainly as a result of its occasional use on the vessel as a cleaning or degreasing agent. On L4 7 profiles were analyzed in addition to 3 taken earlier – casts 34, 39 and 44. A small number of air samples were collected in canisters and analyzed on board for the same compounds. The site number or operation number of sampled locations are given in Table 11. The locations are shown in Figure 5.

Potential production rates of nitrous oxide (N2O) resulting from nitrification and denitrification were measured using stable isotope techniques to assess the relative importance of these processes in the upper water column of the Labrador Sea. N2O depth profiles down to 100m were measured at nine of the shallow biological stations. At six of these stations, samples from three depths, typically 20, 60, and 100m were incubated in glass syringes with added 15-N ammonium and nitrate. Time-series measurements of 15-N labelled nitrous oxide concentration within these samples were made using a second purge-and-trap GC-MS system over a 24 hour period. Preliminary results show nitrification at the base of the euphotic zone to be a source of nitrous oxide. The operation numbers of sampled locations are given in Table 12 and shown in Figure 5.

Date	AR07W Site/Operation ID
June 1	/34
June	/39
June 3	/44
June 4	2/52
June 4	4/58
June 4	5/61
June 5	10/72
June 6	14/86
June 7	19/98
June 8	28/108
June 9	20/161
June 10	13/209

Table 11. Sampling for methyl halides and chlorinated compounds.

Date	AR07W Site/Operation ID
June 1	/34
June 3	/44
June 5	10/72
June 6	14/86
June 7	19/98
June 8	28/108
June 9	20/161
June 10	13/209
June 11	/238

Table 12. Sampling for nitrous oxide.

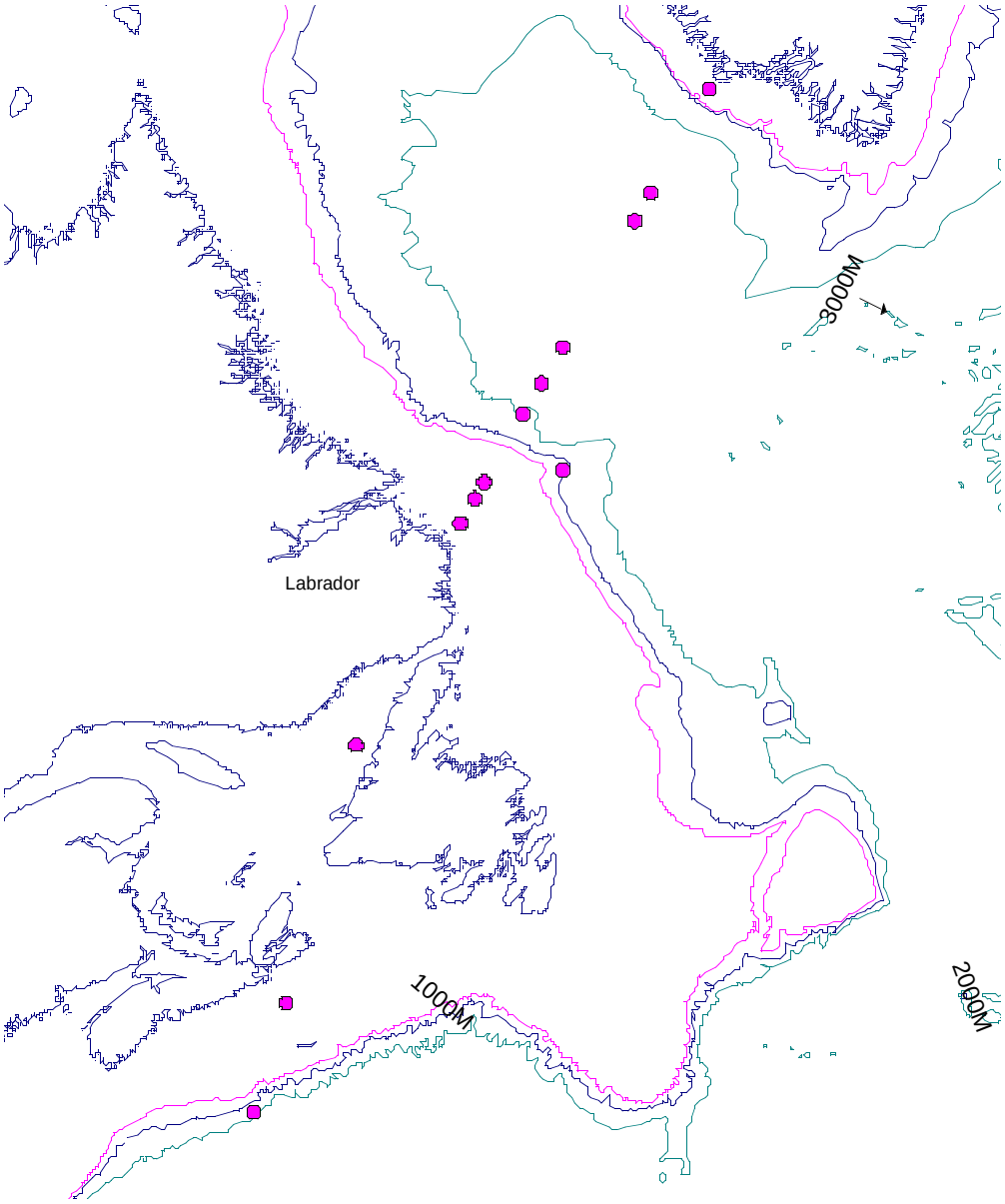


Figure 5. Sampling locations for methyl halides and chlorinated compounds.

h. Radioisotope Sampling Program
(John Smith)

Water samples were collected from the rosette bottles at 22 stations on the AR07W line for Iodine (129I) and from four stations for Protactinium (231Pa). See Table 1 for operation numbers of the sampling locations.

5. Major Problems and Goals Not Achieved
none

6. Other Incidents of Note
none

7. List of Cruise Participants

Name	Responsibility	Affiliation
Gadiel Alarcon	Fluorometric measurements for chlor-a	UdeC
Carol Anstey	Nutrients	BIO
Jay Bugden	DOC Levels, respiration rates	BIO
Rick Boyce	Salts, moorings	BIO
Derek Britten	MVP, moorings	BIO
Victoria Brudett-Coutts	Oxygens	BDR
Allyn Clarke	Senior Scientist	BIO
Paul Dickie	Bacterial activity	BIO
Jennifer Dixon	CO_2	BDR
Bob Gershey	Scientist, CO_2, CFC's, Alkalinity	BDR
Les Harris	Zooplankton, Net Tows	BIO
Glen Harrison	Assistant Scientist	BIO
Brian Irwin	Primary Production	BIO
Anthony Isenor	Data Manager	BIO
Bill Li	Bacterial abundance and activity	BIO
Gary Maillet	Primary Production	DFO NFLD
Robert Moore	Assistant Scientist, Halocarbons	DU
Stephen Punshon	Halocarbons	DU
Bob Ryan	CTD Technician, MVP	BIO
Murray Scotney	Moorings, instrumentation	BIO
Ryszard Tokarczyk	Halocarbons	DU
Igor Yashayaev	Scientist	BDR
Frank Zemlyak	Technician, CO_2, CFC's, Alkalinity	BIO

BIO	Bedford Institute of Oceanography PO Box 1006 Dartmouth, NS, B2Y 2A4 Canada	**UdeC**	University of Concepcion Program for Regional Studies in Physical Oceanography and Climate Casilla 160-C, Concepcion 3, Chile
BDR	BDR Research Ltd. Box 652, Station 'M' Halifax, NS, B3J 2T3 Canada	**URI**	University of Rhode Island Graduate School of Oceanography South Ferry Road Narragansett, RI 02882 USA
DFO NFLD	Department of Fisheries and Oceans P.O. Box 5667 St. John's, Newfoundland Canada A1C 5X1	**UW**	University of Washington Seattle, WA 98195 USA
DU	Dalhousie University Department of Oceanography Halifax, Nova Scotia	**WHOI**	Woods Hole Oceanographic Institution Woods Hole, MA 02543 USA

B. UNDERWAY MEASUREMENTS

1. Navigation and Bathymetry

(Anthony W. Isenor)

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 one second intervals on a PC.

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 hull mounted 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 31 at 0120 Z in Halifax Harbour.

Two different configurations were used for logging. From Halifax Harbour to Site 1 on AR07W, the configuration resulted in 5 minute averages in 4 metre bins. From Site 1 onward (June 4, 2001 at 0920 Z), the configuration resulted in 5 minute averages and 8 metre bins. The averaged data are stored to disk and backed up every few days. ADCP logging was stopped on June 15 at 0909 Z in Halifax Harbour.

3. Continuous Flow Multisensor Package (CFMP)

(Jeff Anning)

The Continuous Flow Multisensor Package Water used during this cruise is a new design as compared to past years. The Ocean Physic Section at BIO developed the CFMP. The package receives water from a ship intake line located at approximately 4m depth. The package was setup in the forward lab.

The package measures and logs temperature, conductivity and fluorescence. The system was setup with Seabird temperature (SN 032169) and conductivity (SN 041656) sensors and a Wetlabs fluorometer (SN WS1S-621PSS). Exact time and positions were provided by a Northstar GPS and logged with the other data. In addition discrete water samples were collected every 15 minutes by an Alpkem auto sampler for later analysis for nitrate and silicate. The computer also logged the time and position of these samples.

4. XBT and XCTD

(Igor Yashayeav)

Expendable Bathythermographs were deployed along the AR07W line on the way from Greenland to Labrador. The XBTs were model 7 from Sparton of Canada. This type of probes is capable of measuring to maximum depths of 800 m at the full cruising speed 15 knots). The vertical resolution of the measurements was about 0.6-0.8 m. 92 XBTs were launched during the cruise.

Continuous deployment of XBT along the AR07W line at 2-4 kilometer intervals revealed inhomogeneities in the thermal structure of the upper layer. Dominant scales appear to be between 20 and 40 kilometers. Preliminary data are shown in Figure 3.

5. Meteorological observations

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

6. Atmospheric Chemistry

There was no atmospheric chemistry program.

Appendix 1: Operation Notes Report

As Completed On: 28/Jun/2001
Cruise Number: 2001022

Note #1	• Entry Time: 03/Jun/2001 10:17:16 • Note Made By: Anthony Isenor • Operation ID: 38 The NMEA strings were not being broadcast from the bridge computer. The NMEA and time string in the Seabird HDR file were added based on NMEA position strings available on the bridge.
Note #3	• Entry Time: 04/Jun/2001 15:20:23 • Note Made By: Anthony Isenor • Operation ID: 54 After the station, Murray worked on the carousel and loosed up the trip mechanism for the number one bottle.
Note #2	• Entry Time: 04/Jun/2001 13:26:32 • Note Made By: Anthony Isenor • Operation ID: 54 About 2 minutes spent at the bottom due to problems with the CTD winch.
Note #4	• Entry Time: 04/Jun/2001 18:30:19 • Note Made By: Anthony Isenor • Operation ID: 60 This was a mooring release test.
Note #5	• Entry Time: 05/Jun/2001 10:33:58 • Note Made By: Anthony Isenor • Operation ID: 71 Had to stop at 600 dbar for a brief period due to problems spooling the CTD winch.
Note #7	• Entry Time: 05/Jun/2001 14:35:42 • Note Made By: Anthony Isenor • Operation ID: 72 After this operation, Murray replaced the top Orings on bottles 2, 10, 17 and 19. Also replaced the small O ring around the air vent on bottle 17 and 19, and on 19 replaced the air vent plug.
Note #6	• Entry Time: 05/Jun/2001 13:26:10 • Note Made By: Anthony Isenor • Operation ID: 73 Start time is wrong
Note #8	• Entry Time: 05/Jun/2001 20:08:55 • Note Made By: Anthony Isenor • Operation ID: 79 A long wait at 224 dbars due to meter block problems.
Note #9	• Entry Time: 06/Jun/2001 20:25:34 • Note Made By: Murray Scotney • Operation ID: 90 Changed bottle in position 21 after operation 90. New bottle is S003.
Note #10	• Entry Time: 07/Jun/2001 09:37:59 • Note Made By: Anthony Isenor • Operation ID: 95 When I started the next cast. Same thing happened, I prepared the sample IDs and sampling, then went to Operation Initiate and Bottle trips - nothing there. I noticed the size of the database, about 3 Mb. That seemed large so I compacted the database. Then, going back into ODIN on the same PC and the problem was not there.
Note #11	• Entry Time: 07/Jun/2001 11:48:07 • Note Made By: Anthony Isenor • Operation ID: 98 Stopped at about 1856 dbars on down cast due to problems with winch.
Note #12	• Entry Time: 07/Jun/2001 19:34:02 • Note Made By: Anthony Isenor • Operation ID: 102 Had a long wait at 280 dbars due to problems with the metering block. About 25 minutes at this depth.
Note #13	• Entry Time: 08/Jun/2001 10:01:44 • Note Made By: Anthony Isenor • Operation ID: 105 The CTD cast that was initially operation 106 was changed to 105.
Note #15	• Entry Time: 10/Jun/2001 14:55:29 • Note Made By: Anthony Isenor • Operation ID: 211 The dry deck sheet has the secondary sensor salinity and temperature for all bottles. This is because we think the primary sensor has stopped functioning properly
Note #14	• Entry Time: 10/Jun/2001 13:57:53 • Note Made By: Anthony Isenor • Operation ID: 211 It appears that the CTD primary system has problems. Both the primary salinity and oxygen are providing bad data. We suspect the primary pump.
Note #16	• Entry Time: 10/Jun/2001 20:47:44 • Note Made By: Anthony Isenor • Operation ID: 211 After the CTD was recovered, the primary pump was changed. Took off pump model 5T SN 051775. Put on pump model 5-02 SN 050675.
Note #17	• Entry Time: 11/Jun/2001 10:07:07 • Note Made By: Anthony Isenor • Operation ID: 236 After this operation, both the primary and secondary lines were flushed with Triton X100.
Note #18	• Entry Time: 11/Jun/2001 19:03:06 • Note Made By: Anthony Isenor • Operation ID: 239 After completing this operation, the primary pump was replaced with pump SN 050538, model 5-02. This was because tests showed the pump was not pumping as fast as it should (used ALIGNCTD tests to show the offset was about 7 scans).
Note #20	• Entry Time: 12/Jun/2001 13:58:47 • Note Made By: Brian Irwin • Operation ID: 241 Seacat calibration cast.
Note #19	• Entry Time: 12/Jun/2001 12:14:16 • Note Made By: Anthony Isenor • Operation ID: 243 Primary pump gave more problems on this cast. After cast, the original pump was put back on and a new cable was used.

Data Processing Notes

07/11/02	Isenor	SUM / DOC	Submitted
	The file: C:\hud2001022_sum.txt - 95654 bytes has been saved as: 20020711.054408_ISENOR_AR07W_hud2001022_sum.txt In the directory: 20020711.054408_ISENOR_AR07W The data disposition is: Public The file format is: WOCE Format (ASCII) The archive type is: NONE - Individual File The data type(s) is: Summary (navigation) Documentation The file contains these water sample identifiers: Cast Number (CASTNO) Station Number (STATNO) ISENOR, ANTHONY would like the following action(s) taken on the data: Place Data Online		
06/10/04	Kappa	DOC	Cruise report converted to PDF and TEXT formats
	Added CCHDO-generated Station Locaton Plot to PDF version Added PDF links between figures and related locations in the body of the report Added CCHDO Cruise Summary Pages (pp 1-2) to PDF version and p1 to the TEXT version Linked headings in p2 of the PDF version to related locations in the body of the report Added these Data Processing Notes to both PDF and TEXT versions		