



Université du Québec

**Institut national de la recherche scientifique**

Eau, Terre et Environnement

DISTRIBUTION OF TEMPERATURE AND SALINITY IN THE CANADIAN  
ARCTIC ARCHIPELAGO DURING THE 2005 ARCTICNET SAMPLING  
EXPEDITION  
(FROM AUGUST 5<sup>TH</sup> TO OCTOBER 27<sup>TH</sup> 2005)

By

Annie Simard<sup>1</sup>, Marie-Emmanuelle Rail<sup>1</sup> and Yves Gratton<sup>1</sup>

<sup>1</sup>INRS-Eau, Terre et Environnement  
490, de la Couronne  
Québec, Qc  
Canada, G1K 9A9

MARCH 2010

© 2010, INRS-Eau, terre et environnement

**CORRECT CITATION FOR THIS PUBLICATION :**

Simard, A., M.E. Rail and Y. Gratton. 2010. Distribution of temperature and salinity in the Canadian Arctic Archipelago during the 2005 ARCTICNET sampling expedition (from August 5<sup>th</sup> to October 27<sup>th</sup> 2005). Report No R1126, INRS-ETE, Québec (Qc): vi + 79 p.

## **ABSTRACT**

This report presents the CTD (Conductivity, Temperature and Depth) data obtained during the 2005 ArcticNet expedition held between August 5<sup>th</sup> and October 27<sup>th</sup> in the Canadian High Arctic. The report also contains information about data obtained by the Moving Vessel Profiler (MVP), Self Contained Autonomous Micro Profiler (SCAMP), moorings and ship mounted Acoustic Doppler Current Profiler (SM-ADCP) which were recorded during the same expedition. Detailed maps of sampling sites for each arctic region are included. CTD's temperature and salinity data are presented as contour plots following West-East or South-North sections. Examples of ADCP and SCAMP data are also included.

## **RÉSUMÉ**

Ce rapport présente les données de CTD (conductivité, température et profondeur) recueillies au cours de la mission ArcticNet 2005 qui s'est déroulée dans l'Arctique canadien du 5 août au 27 octobre 2005. Il présente également de l'information sur les données de Moving Vessel Profiler (MVP), Self Contained Autonomous Micro Profiler (SCAMP), Acoustic Doppler Current Profiler (ADCP) de coque et des données de mouillage enregistrées au cours de la même mission. Des cartes détaillées montrant les sites d'échantillonnage pour chacune des régions arctiques y sont incluses. Les données de température et de salinité du CTD y sont illustrées sous forme de contours effectués le long de sections ouest-est ou sud-nord. Deux exemples des données enregistrées par le SCAMP et un ADCP sont présentés.

## TABLE OF CONTENTS

|   |     |
|---|-----|
| ABSTRACT.....   | iii |
| TABLE OF CONTENTS.....                                  | iv  |
| LIST OF FIGURES.....                                    | v   |
| LIST OF TABLES.....                                     | v   |
| LIST OF APPENDICES.....                                 | v   |
| FOREWORD.....   | vi  |
| <br>  |     |
| 1. INTRODUCTION.....                                    | 1   |
| 2. SAMPLING PROGRAM.....                                | 3   |
| ROSETTE.....  | 3   |
| MOVING VESSEL PROFILER (mvp) .....                      | 4   |
| SELF CONTAINED AUTONOMOUS MICRO PROFILER (scamp).....   | 4   |
| MOORINGS.....   | 5   |
| SHIP MOUNTED ACOUSTIC DOPPLER CURRENT PROFILER (adcp).. | 6   |
| 3. DATA PROCESSING AND QUALITY CONTROL.....             | 8   |
| ROSETTE-CTD DATA.....                                   | 8   |
| MOORINGS DATA.....                                      | 8   |
| MOORED ADCP DATA.....                                   | 8   |
| 4. DISCUSSION.....                                      | 9   |
| 5. ACKNOWLEDGMENTS.....                                 | 10  |
| 6. REFERENCES.....                                      | 10  |
| <br>  |     |
| TABLES.....   | 12  |
| APPENDICES.....   | 16  |

## LIST OF FIGURES

|          |  |   |
|----------|--|---|
| FIGURE 1 | ArcticNet study area in 2005.....                      | 1 |
| FIGURE 2 | Rosette sampling sites.....                            | 3 |
| FIGURE 3 | SCAMP sampling sites.....                              | 5 |
| FIGURE 4 | Moorings locations (2004-2005) .....                   | 6 |
| FIGURE 5 | Moorings locations (2005-2006) .....                   | 6 |
| FIGURE 6 | Moored-ADCP and ship-mounted ADCP sampling sites ..... | 7 |

## LIST OF TABLES

|         |  |    |
|---------|--|----|
| TABLE 1 | Rosette and MVP sensor specifications.....       | 12 |
| TABLE 2 | Summary of Rosette sampling.....                 | 12 |
| TABLE 3 | List of Rosette sections and casts.....          | 13 |
| TABLE 4 | Summary of moored instruments 2004-2005.....     | 14 |
| TABLE 5 | Content of the ASCII Rosette-CTD data files..... | 15 |

## LIST OF APPENDICES

|            |  |    |
|------------|--|----|
| APPENDIX 1 | Higher resolution maps of Arctic areas where Rosette-CTD,<br>SCAMP and moorings data were collected..... | 16 |
| APPENDIX 2 | Rosette-CTD data logbook.....  | 23 |
| APPENDIX 3 | SCAMP data logbook.....  | 31 |
| APPENDIX 4 | SCAMP data example.....  | 36 |
| APPENDIX 5 | Plots of salinity and potential temperature, Leg 1.....  | 39 |
| APPENDIX 6 | Plots of salinity and potential temperature, Leg 2.....  | 57 |
| APPENDIX 7 | ADCP stick diagram example.....  | 78 |

## **FOREWORD : ARCTICNET AND THE NETWORK OF CENTRES OF EXCELLENCE**

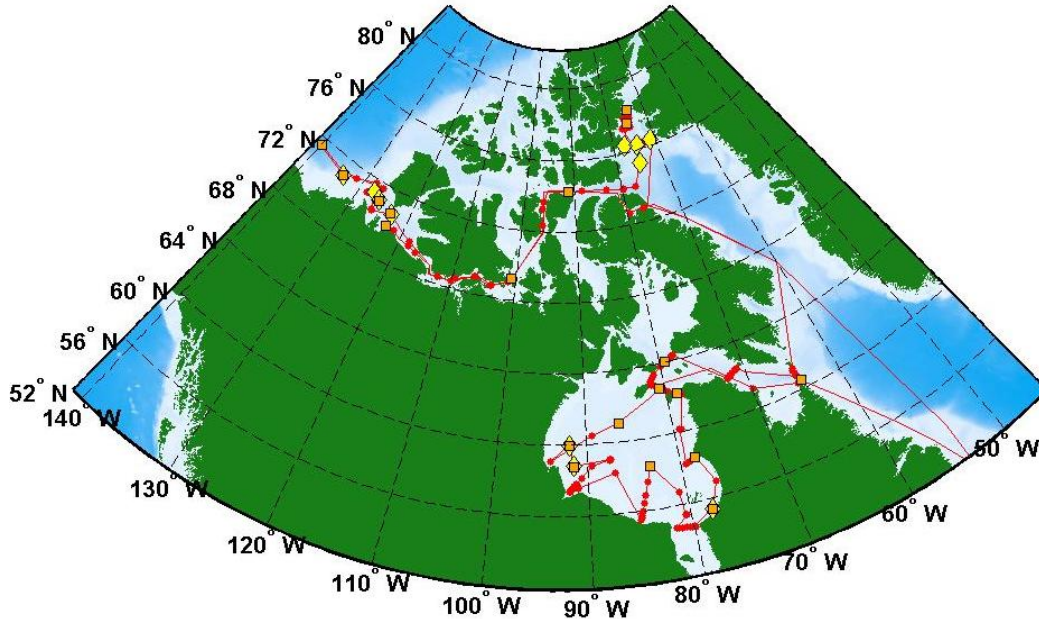
The Canadian Network of Centres of Excellence (NCE) is a unique joint program that brings together several universities, government agencies, industrial companies and non-profit organizations. Their mission is to increase Canada's economy and social benefits through research and entrepreneurial programs. Three Canadian federal granting agencies – the Canadian Institutes for Health Research (CIHR), the Natural Sciences and Engineering Research Council of Canada (NSERC) and the Social Sciences and Humanities Research Council of Canada (SSHRC) – and Industry Canada, have combined their efforts to financially support and oversee the initiatives of the NCE. (NCE web site at <http://www.nce.gc.ca>)

ArcticNet is one of the NCE networks and brings together scientists and managers in the natural, environmental, social sciences and human health. Several Inuit organizations, northern communities, as well as government and industrial agencies have joined ArcticNet in their mission. More than 100 ArcticNet researchers and students from 28 Canadian universities and 5 Federal departments collaborate on 27 research projects with teams from U.S.A., Japan, Denmark, Norway, Poland, the U.K., Spain, Russia, Greenland and France.

The ArcticNet Network investigators study the impacts of climate change in Canadian Arctic to assess the effect of ongoing warming and modernization on Canadian Arctic ecosystems, economies and societies, and help Canadians face the impacts and opportunities that may occur due to climate change in the Arctic. ArcticNet's structure is set to translate the growing understanding of the changing Arctic ecosystem into national policies, adaptation strategies and impact assessment studies conducted on societies and marine / terrestrial coastal ecosystems in the Canadian High Arctic, the Eastern Arctic, Hudson Bay and Eastern Sub Arctic. (Please see the ArcticNet Annual Report 2004-2005 for more information). (ArcticNet web site at <http://www.arcticnet.ulaval.ca>)

## 1. INTRODUCTION

ArcticNet's 2005 expedition was carried out from August 5<sup>th</sup> to October 27<sup>th</sup>. During the first six weeks (leg 1 or 0501), the ship covered the coastal Canadian Arctic (Fig. 1) from Beaufort Sea in the West to the coast of Greenland in the East. On September 15<sup>th</sup>, it sailed to Hudson Bay where the second sampling part (leg 2 or 0502) took place.



**FIGURE 1.** ArcticNet 2005 study area. Ship track is illustrated as a red line, Rosette-CTD sampling locations are represented by red dots. Yellow diamond-shaped dots show mooring sites while SCAMP sampling stations are represented by orange squares.

This report provides the ArcticNet community with a synthesis of the available data recorded during this 3-month expedition. The data set includes 263 Rosette-CTD (Conductivity Temperature Depth profiler), 91 MVP (Moving Vessel Profiler) and 86 SCAMP (Self Contained Autonomous Profiler) profiles. Also included are information about the 2004-2005 data recorded by 18 different instruments attached to five (recuperated) mooring lines, and current data recorded along the ship track by a ship mounted ADCP (Acoustic Doppler Current Profiler).

### *Related Studies*

Several published studies and scientific papers have reported on the physical oceanographic processes in the Canadian Arctic. Extensive CTD profiles were collected in the polynyas of the North Water (NOW) in northern Baffin Bay. Gratton *et al.* (2006) presents the NOW program data in their report and two special issues have been

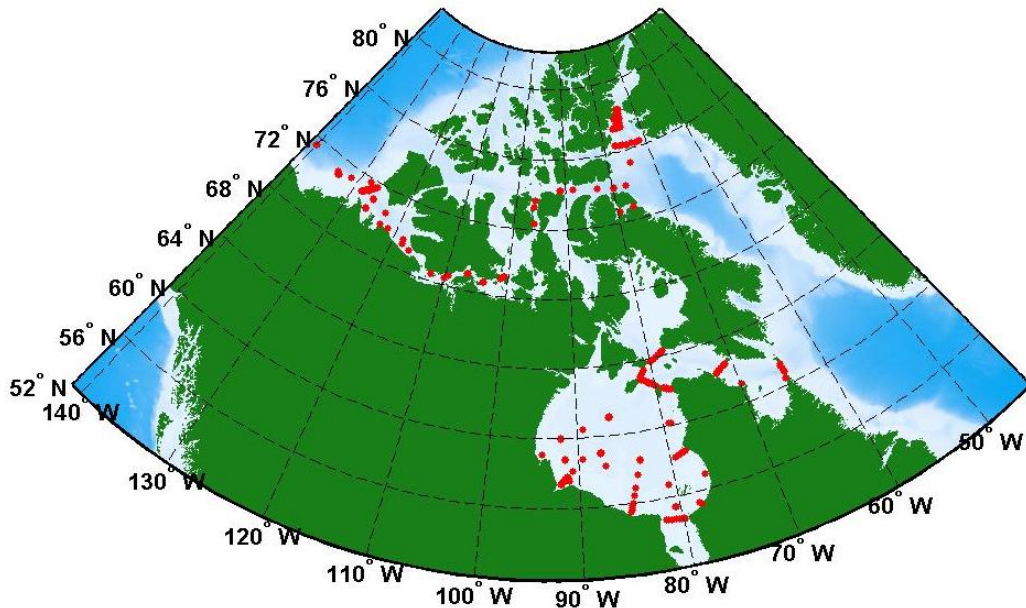
published, Atmosphere-Ocean (volume 29, n°3, 2001) and Deep-Sea Research II (volume 49, n°22-23, 2002), with studies of the North Water Polynya. Stewart and Lockhart (2005) have recently carried out an extensive study on the Hudson Bay region. The oceanography of the Northwest Passage was the subject of a chapter in a special issue of «The Sea» (volume 14, part B, 2005). In this paper, McLaughlin *et al.* presented their comprehensive study of all the oceanographic aspects and processes encountered in the Northwest Passage and explain in details the physical and chemical oceanography of this area. The Beaufort Sea and Amundsen Gulf are the Canadian Arctic regions that have been studied the most extensively over the years, especially during the Canadian Arctic Shelf Exchange Study (CASES) program and subsequently during ArcticNet expeditions and later on this year during various projects involved with the Circumpolar Flaw Lead System Study (CFL) and the International Polar Year (IPY) programs. All the publications regarding the CASES projects can be found on the CASES website (at <http://www.cases.quebec-ocean.ulaval.ca>). In 2008, the Journal of Geophysical Research published eleven papers from the CASES program in a special issue, volume 113, number C3. The same year, a book containing a synthesis of the work performed in every main research subject of the program was edited by L. Fortier, D. Barber and J. Michaud. It was titled : *On thin Ice*. Simard *et al.* (2008) have also prepared a synthesis report regarding the CTD profiles and other physics data generated during the CASES 2002-2004 expeditions. The oceanography of the Beaufort Sea was also discussed by Ingram *et al.* in part «A» of the special issue of «The Sea» (volume 14, part A, 2005).



## 2. SAMPLING PROGRAM

### *Rosette*

During the 2005 expedition, the rosette was equipped with 24 «Niskin» 12 L bottles, a CTD SeaBird 911+ and eight independent sensors (see Table 1 for sensors specifications). It was deployed from the ship and lowered into the water column at a rate of  $1 \text{ m s}^{-1}$ . CTD profiles were carried out in the Canadian Arctic and Hudson Bay (see Fig. 2 and Appendix 1A) along 8 sections, 80 stations and 137 casts during Leg 0501 and 10 sections, 90 stations and 126 casts during Leg 0502 (see Table 2 and Table 3). A summary and the «Logbook» of the CTD profiles available for all stations are presented in Appendix 2 and in Rail (2005a and 2005b) sampling reports. Appendix 2 also presents the «Logbook» of the 29 CTD profiles performed in 2004 during the first ArcticNet mooring deployment expedition (Leg 0408) on the CCGS Laurier.



**FIGURE 2.** 2005 Rosette sampling sites

The processing and quality control of CTD data are presented in section 3 of this report. As a general «rule of thumb» CTD data are reserved for the ArcticNet Network Investigators for a period of 3 years. After this period, data will be hosted on the Integrated Service Data Management (ISDM) website (<http://www.meds-sdmm.dfo-mpo.gc.ca/>) and will be available to the international community. All the meta-data may be found in the Polar Data Catalogue (<http://www.polardata.ca/>).

### ***Moving Vessel Profiler (MVP)***

The Moving Vehicle Profiler (MVP) is a towed CTD (with fluorescence and dissolved oxygen sensors). It is usually used in automatic mode. The “fish” (right) freefalls at  $\sim 5 \text{ m s}^{-1}$  and is automatically winched back to 10 m under the surface after each cast. We lose the first 10 and last 10 meters of the water column. It is a MVP300-1700 model, meaning that it is equipped with 1700 m of cable and can profile down to 300 m at 12 knots. The slower the cruising speed the deeper the MVP can reach.



Few 2005 MVP profiles could be reported because the instrument was lost in Labrador Sea during Leg 0501 (August 9 to August 11). Ninety-one casts of 300 m were performed in the eastern part of the Hudson Strait around  $60^{\circ}\text{N}$  and  $60^{\circ}\text{W}$  at a rate of one cast every 30 minutes. See Table 1 for sensors specifications. Raw data are available upon request.

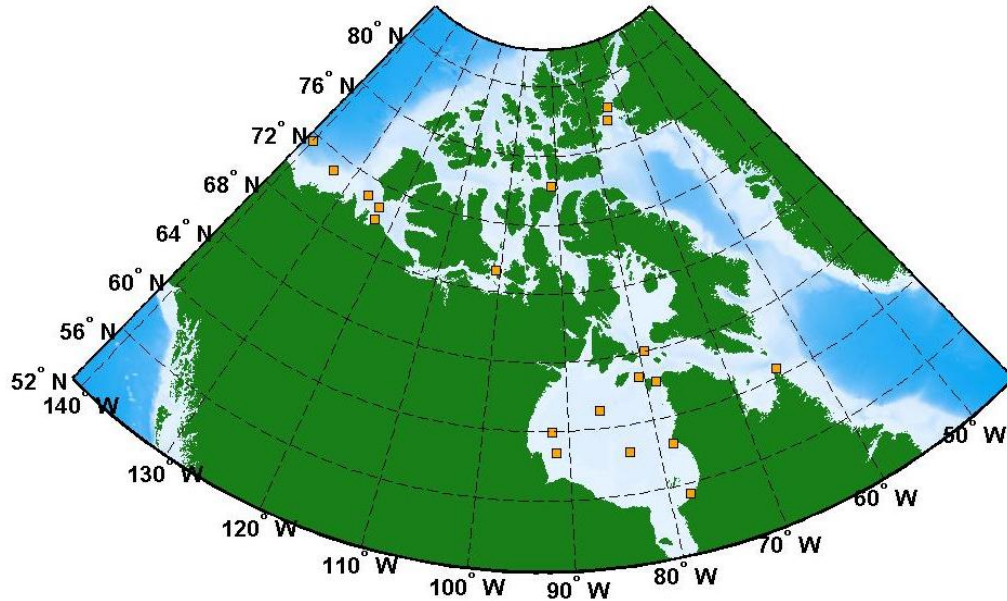
### ***Self Contained Autonomous Micro Profiler (SCAMP)***

The SCAMP is a CTD-type profiler. It samples at a frequency of 100 Hz (i.e. 100 times per second). It free falls at approximately  $10 \text{ cm s}^{-1}$ , resulting in a vertical resolution of approximately one (1) millimetre, down to a maximum depth of 100 m. The instrument measures the temperature and salinity fluctuations at the micro-scale in order to estimate the turbulent mixing occurring in the water column. To properly measure (as opposed to “estimate”) turbulence we should also be measuring the velocity fluctuations. Unfortunately, we do not have velocity sensors (due to budget limitations). The current sensors on the SCAMP include temperature (three sensors), salinity (i.e. conductivity; two sensors), a PAR (Photosynthetically Active Radiation) and fluorescence.



SCAMP profiles were carried out in Baffin Bay, Victoria Strait, Beaufort Sea and Amundsen Gulf, Foxe Basin, Hudson Strait and Hudson Bay (see Fig. 3 and Appendix 1B). Measurements were taken at 10 stations (46 casts) during leg 0501 and 11 stations (40 casts) during leg 0502 for a total of 86 different profiles. The logbook of SCAMP

profiles is presented in Appendix 3. An example of data profile is presented in Appendix 4. Scamp data are not available yet. When available, processing and quality control protocols will be provided at the same time as the scamp data.

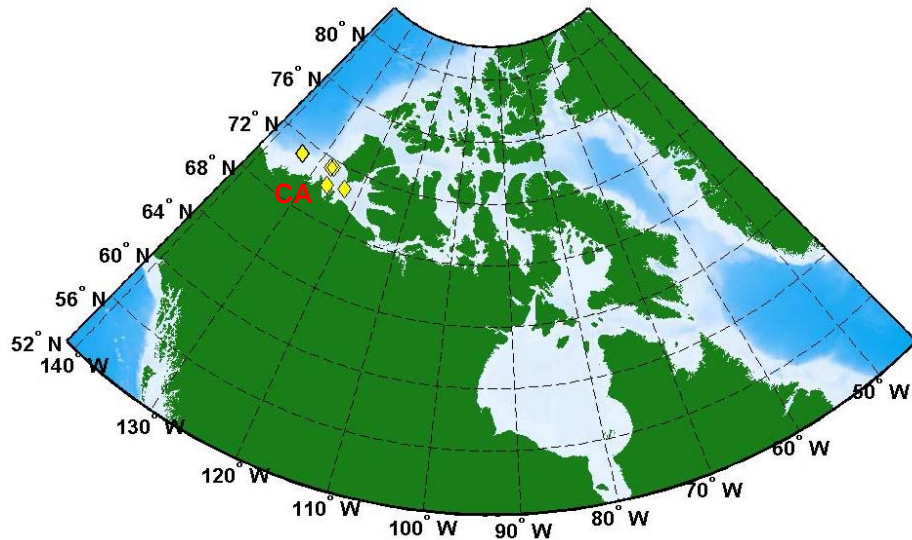


**FIGURE 3.** SCAMP sampling sites

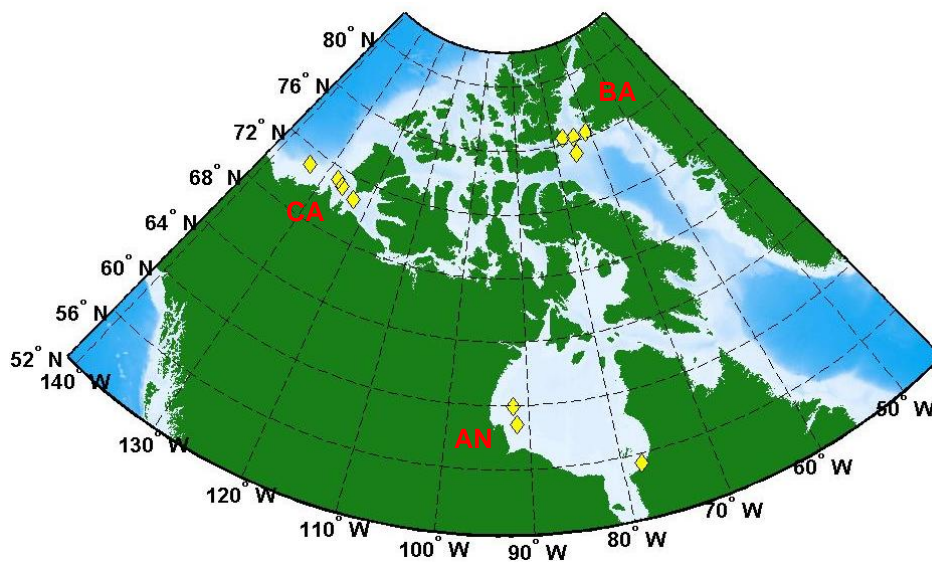
### ***Moorings***

Five moorings deployed in the Beaufort Sea in 2004 were successfully retrieved in August and September of the 2005 expedition (see Fig. 4 and Appendix 1C). A summary of the 18 instruments, the sensors, and the validated data is shown in Table 4. The instruments included four RDI 300 kHz Workhorse ADCPs, seven Aanderaa RCM-11 (Recording Current Meters), one Sea-Bird SBE-37 conductivity-temperature sensor, four Alec conductivity-temperature sensors and two Alec chlorophyll sensors. The data recovery was only partly successful due to instrument malfunctions and one mooring was never recovered (CA05-04). Michaud *et al.* (2005) and Rail *et al.* (2010) have summarized all the problems encountered in their technical report. The recovered moorings were processed and redeployed for another year of measurements. Additional moorings were added to cover the Beaufort Sea, Baffin Bay and Hudson Bay (see Fig. 5 and Appendix 1C). ArcticNet moorings are identified according to the following guidelines: the letters and the first two digits represented the location (CA: Beaufort Sea; BA: Baffin Bay and AN: Hudson Bay); the last two digits are the deployment year.





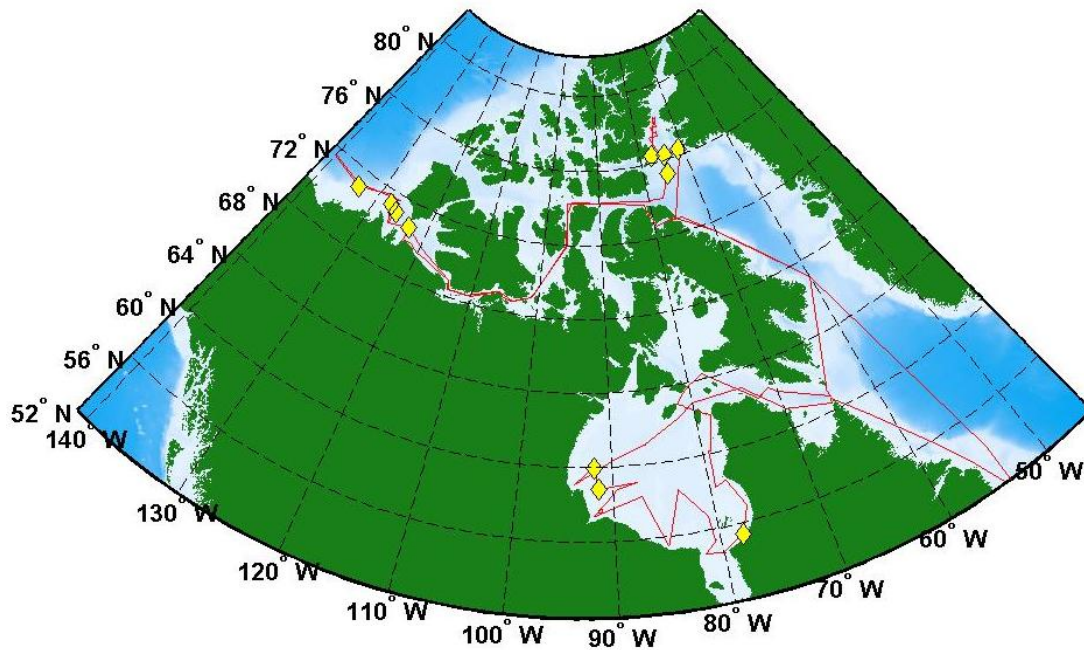
**FIGURE 4.** Moorings deployed in 2004 and recovered in 2005



**FIGURE 5.** Moorings deployed in 2005

### ***Ship mounted Acoustic Doppler Current Profiler (ADCP)***

In July 2003, the CCGS Amundsen was equipped with a RDI Ocean Surveyor (ship-mounted) 150 kHz ADCP. Unfortunately, the instrument had a defect and although the flaw was quickly detected, there was nothing we could do to correct the problem until the next dry dock scheduled for April 2006. Regardless, we continue to collect data with the ADCP throughout the 2005 expedition (see ship track on Fig 6). The data set was saved as it may be possible to correct them at a later time. Note that the raw data is available upon request.



**FIGURE 6.** Moored-ADCP deployed in 2005 and ship-mounted ADCP sampling sites. The moored-ADCP stations are illustrated by yellow diamond markers and the ship-mounted ADCP is illustrated by the ship track.

### 3. DATA PROCESSING AND QUALITY CONTROL

#### *Rosette-CTD data*

Rosette-CTD data processing and quality control are described in detail by Guillot (2003, 2005a and 2005b). The «READ ME » file attached to each yearly CTD data set also presents the most important processing steps and changes made to the data files. All users should read these files so they can be aware of data limitations.

Processing included the following steps: calibration of coefficients, conversion of data to physical units, alignment correction and extraction of useless data. Oxygen sensor calibration was done using Winkler titrations and salinity data were compared with water samples analysed with a Guildline 8400B autosal. The CTD data were passed through a quality control test based on UNESCO's algorithm standards (1990). The recorded data were averaged every 1 db. The computed oceanographic parameters (see Table 5) were calculated using the averaged recorded data. Missing data were linearly interpolated. Finally, there is one ASCII file for every CTD cast. The content of a typical ASCII file is shown in Table 5.

CTD profiles cover the water column down to 10 meters from the sea-bed. To reduce the amount of information presented in this report, temperature and salinity contours are only provided for each section shown on Fig. 2 and Appendix 1A. The contours are presented in Appendices 5 and 6. All the profiles along the same section were used in the interpolation process. The temperature and salinity data were interpolated on a 5 km by 5 m grid with a triangle-based cubic interpolation method and contoured in Matlab<sup>®</sup>. The origin of each section is the westernmost or southernmost cast. For the West-East sections, Canada is on the left and Greenland on the right; for the South-North sections, South is on the left and North on the right.

#### *Mooring data*

Processing steps for mooring data are described in Rail *et al.* (2010). It consisted of meta-data and calibration coefficients validation, control of the instrument depth and clock, and comparison of mooring data with Rosette-CTD data recorded at the same location. Instrument depths and salinity data were corrected by adding an offset when needed. Erroneous time tags were corrected. Missing data and questionable data are mentioned in the quality control report, and they were replaced by NaNs. Users should consult the Quality Control Report (Rail *et al.* 2010). ASCII files were created for every instrument (Table 4).

#### *Moored ADCP data*

The processing and quality control of ArcticNet ADCP data are still ongoing. The quality control procedures on ADCP data were adapted from the «ADCPtools» box of the U.S. Geological Survey's «Sediment Transport Instrumentation Group». The «ADCPtools» functions used by the USGS were adapted to the peculiarities of

ArcticNet's data. The tests include the validation of the calibration, data and meta-data. The modified tests used are based on comparisons between data and defined «thresholds». If a data point does not meet the thresholds it is rejected and all its associated data points are then considered as «questionable». A document presenting in detail the finalized procedures of processing and quality control of ADCP data is available (Guillot 2007). An example of a stick diagram produced with the 2003-2004 ADCP data is shown in Appendix 7.

#### **4. DISCUSSION**

The sampling area covered by the ArcticNet 2005 expedition was huge: Hudson Bay and Strait, northern Baffin Bay, Canadian Arctic Archipelago, Amundsen Gulf and southern Beaufort Sea. The associated data base is enormous and will take a few years to process. In a twelve-week (two six-week legs) yearly expedition we can barely obtain a snapshot of the four sub-regions. The CAA is especially under-sampled. Because of the North Water project, we know where to sample in northern Baffin Bay and we are building a long-term time series of temperature and salinity contours along 75°N. This will enable us to monitor freshwater fluxes through Smith Sound, for example. An indication of possible coastal upwelling may be found in the section L4 contours (Appendix 5).

Three on-going studies are also worth mentioning. Romain Lanos has completed his study of southern Beaufort Sea and Amundsen Gulf using the CASES (Canadian Shelf Exchange Study) and ArcticNet 2004-2006 CTD data. In his Ph.D. thesis (Lanos 2009), he describes the regional and seasonal variability in the Beaufort Sea – Amundsen Gulf region. An on-going study of the SCAMP turbulent profiles (C. Sévigny, Ph.D. thesis in progress) show, for example, that the turbulence is dominated by double-diffusive processes in Smith Sound. More SCAMP profiles are needed in CAA and Beaufort Sea. Current pulses were observed in the 2003-2004 and 2004-2005 mooring data at CA04. The pulses have been related to storms in Bering Strait by C. Bélanger (Bélanger et al., submitted). Once the 2007-2008 data has been processed we will have a six year time series of the general conditions in Beaufort Sea and Smith Sound.

## 5. ACKNOWLEDGMENTS

We thank Captains Julien and Gariépy and their crew aboard the CCGS Amundsen for their outstanding collaboration. We also thank the «Rosette team», Véronique Lago, Pascal Guillot, and all the «Rosette monkeys» for their outstanding sampling effort cast after cast after cast. Thanks to the mooring team, Luc Michaud, Pascal Massot, Sylvain Blondeau and Alexandre Forest. Thanks to Sophie Caplanne for her zodiac outings in order to obtain the SCAMP profiles. And last but not least, many thanks to Pascal Guillot and Maryam Kamali Nezhad for their data processing efforts.

## 6. REFERENCES

- Bélanger, C., Y. Gratton, D. Dumont, A. Forest and L. Fortier. Observations of remote-wind-induced pulses of current under ice cover in the Canadian Beaufort Shelf Region. Submitted to *Geophys. Res. Letters*.
- Fortier, L. D. Barber and J. Michaud [Eds], 2008. *On thin Ice*. Aboriginal Issues Press, Winnipeg, 215 p.
- Blondeau, S., P. Massot, L. Létourneau, and C.J. Mundy. 2005. ArcticNet 2005 Cruise Report Leg 2 Mooring Operations. Internal report, Laval University, Québec (Qc): 1 p.
- Gratton, Y., M. Ouellet, M.E. Rail, and R.G. Ingram. 2006. Distribution of temperature and salinity in Northern Baffin Bay during the International North Water program (August 1997, April to July 1998, and September 1999). Internal Report No R897, INRS-ETE, Québec (Qc): x + 124 p.
- Guillot, P. 2003. Sea-Bird CTD Processing and Quality Control Procedure. Technical report, draft version, Québec-Océan, Université du Québec à Rimouski: 42 p.
- Guillot, P. 2005a. Processing notes about the ArcticNet 0501 data. Technical report, Québec-Océan, Université du Québec à Rimouski: 33 p.
- Guillot, P. 2005b. Processing notes about the ArcticNet 0502 data. Technical report, Québec-Océan, Université du Québec à Rimouski: 58 p.
- Guillot, P. 2007. Rapport de traitement de données Workhorse ADCP (Acoustic Doppler Current Profiler). Technical report, draft version, Québec-Océan, Université du Québec à Rimouski, 99 p.
- Hardenberg, B.V. 2004. Cruise Report for the joint DFO/CASES/ArcticNet Science Program aboard the CCGS “Sir Wilfrid Laurier”, 3 - 22 September 2004. Internal report, Institute of Ocean Sciences, Sydney, B.C: 27 p.



- Ingram, R.G., E.C. Carmack, F.A. McLaughlin, and S. Nicol. 2005. Polar Ocean Coastal Boundaries, chapter 3 in: *The Sea—Ideas and Observations on Progress in the Study of the Seas, Volume 14 part A*, A.R. Robinson and K.H. Brink (eds), Harvard University Press, Cambridge: pp. 61-81.
- Lanos, R., 2009. Circulation générale, masses d’eau, cycles d’évolution et transports entre la mer de Beaufort et le Golfe d’Amundsen. Ph.D. Thesis, INRS-ETE, September 2009.
- McLaughlin, F.A., E.C. Carmack, R.G. Ingram, W.J. Williams, and C. Michel. 2005. Oceanography of the Northwest Passage, chapter 31 in: *The Sea—Ideas and Observations on Progress in the Study of Seas, Volume 14 part B*, A.R. Robinson and K.H. Brink (eds), Harvard University Press, Cambridge: pp. 1213-1244.
- Melling, H. (1999). Observations by moored instruments in Northern Baffin Bay 1997-1998. Unpub. Rep., Institute of Ocean Sciences, Sydney, B.C.: 37 p.
- Michaud, L., S. Blondeau, P. Massot, M. Sampei, and A. Forest. 2005. ArcticNet 2005 Cruise Report Leg 1 Mooring operations. Internal Report, Laval University, Québec (Qc): 3 p.
- Rail, M.E. 2005a. Physical Team Sampling Report – ArcticNet 0501, from August 5 to September 15 onboard the CCGS Amundsen. Internal report, INRS-ETE, Québec (Qc): 6 p.
- Rail, M.E. 2005b. Physical Team Sampling Report – ArcticNet 0502, from September 15 to October 27 onboard the CCGS Amundsen. Internal Report, INRS-ETE, Québec (Qc): 4 p.
- Rail, M.E., D. Boisvert, C. Bélanger and Y. Gratton. 2010. ArcticNet 2004-2005 mooring data - quality control report. Internal report (Unpublished), INRS-ETE, Québec (Qc): v + 19 p.
- Simard, A., M.E. Rail, and Y. Gratton. 2008. Distribution of temperature and salinity in the southern Beaufort Sea during the CASES program. Internal Report, draft version, INRS-ETE, Québec (Qc): ix + 132 p.
- Stewart, D.B., and Lockhart, W.L. 2005. An overview of the Hudson Bay marine ecosystem. Can. Tech. Rep. Fish. Aquat. Sci. 2586: vi + 487 p.

**TABLE 1.** Rosette and MVP sensors specifications, ArcticNet scientific expedition 2005

| Parameter   | Compagny       | Sensor Instrument Type     | Range   | Accuracy                     | Resolution                      |
|---|----------------|----------------------------|---|------------------------------|---------------------------------|
| <b>Attached to the Rosette</b>  |                |                            |   |                              |                                 |
| CTD   | SeaBird        | SBE-9plus <sup>1</sup>     |   |                              |                                 |
| Temperature   | SeaBird        | SBE-03 <sup>1</sup>        | -5°C à +35°C  | 0.001°C                      | 0.0002°C                        |
| Conductivity  | SeaBird        | SBE-4C <sup>1</sup>        | 0-7 S/m<br>(0-70mmho/cm)                              | 0.0003 S/m<br>(0.003mmho/cm) | 0.00004 S/m<br>(0.0004 mmho/cm) |
| Pressure  | Paroscientific | 410K-105                   | up to 10 500m<br>(15 000psia) <sup>2</sup>            | 0.015% of full scale         | 0.001% of full scale            |
| Dissolved oxygen  | SeaBird        | SBE-43 <sup>3</sup>        | 120% of surface saturation <sup>4</sup>               | 2% of saturation             | unknown                         |
| pH  | SeaBird        | SBE-18-I <sup>5</sup>      | 0-14 pH units   | 0,1 pH unit                  | unknown                         |
| Nitrates concentration  | Satlantic      | MBARI-ISUS 5T <sup>6</sup> | 0.5 to 2000 µM  | ±2 µM                        | ±0.5 µM                         |
| Light intensity (PAR)   | Biospherical   | QCP2300                    | 1.4×10 <sup>-5</sup> to 0.5 µE/(cm <sup>2</sup> ·sec) |                              |                                 |
| sPAR  | Biospherical   | QCP2200                    | 1.4×10 <sup>-5</sup> to 0.5 µE/(cm <sup>2</sup> ·sec) |                              |                                 |
| Fluorescence  | Seapoint       | Chlorophyll-fluorometer    | 0.02-150 µg/l   | unknown                      | 30                              |
| Transmissiometer  | Wetlabs        | C-Star                     | 0-5 V   | unknown                      | 1.25 mV                         |
| Altimeter   | Benthos        | PSA-916 <sup>7</sup>       | 0 - 100 m   | unknown                      | 0.01 m                          |
| <b>Attached to the MVP</b>  |                |                            |   |                              |                                 |
| CTD   | SeaBird        | SBE-9plus <sup>1</sup>     |   |                              |                                 |
| Temperature   | SeaBird        | SBE-03 <sup>1</sup>        | -5°C à +35°C  | 0.001°C                      | 0.0002°C                        |
| Conductivity  | SeaBird        | SBE-4C <sup>1</sup>        | 0-7 S/m<br>(0-70mmho/cm)                              | 0.0003 S/m<br>(0.003mmho/cm) | 0.00004 S/m<br>(0.0004 mmho/cm) |
| Pressure  | Paroscientific | 410K-105                   | up to 10 500m<br>(15 000psia) <sup>2</sup>            | 0.0015% of full scale        | 0.001% of full scale            |
| Dissolved Oxygen  | SeaBird        | SBE-43 <sup>3</sup>        | 120% of surface saturation <sup>4</sup>               | 2% of saturation             | unknown                         |
| Fluorescence  | Seapoint       | Chlorophyll-fluorometer    | 0.02-150 µg/l   | unknown                      | 30                              |
| Light transmission  | Wetlabs        | C-Star                     | 0-5 V   | unknown                      | 1.25 mV                         |
| Notes: <sup>1</sup> Maximum depth of 6800m<br><sup>2</sup> Depending on the configuration<br><sup>3</sup> Maximum depth of 7,000m<br><sup>4</sup> In all natural waters, fresh and marine<br><sup>5</sup> Maximum depth of 1,200m<br><sup>6</sup> Maximum depth of 1,000m<br><sup>7</sup> Maximum depth of 6,000m |                |                            |   |                              |                                 |

**TABLE 2.** Summary of the Rosette sampling, ArcticNet scientific expedition 2005

| Expedition number | Leg number | Date         |              | Number of CTD casts | Number of stations | Number of sections |
|-------------------|------------|--------------|--------------|---------------------|--------------------|--------------------|
|                   |            | Start        | End          |                     |                    |                    |
| 0501              | 1          | August 5     | September 15 | 137                 | 80                 | 8                  |
| 0502              | 2          | September 15 | October 27   | 126                 | 90                 | 10                 |

**TABLE 3.** List of Rosette sections and their corresponding stations and casts numbers

| Section             | Station | Cast |
|---------------------|---------|------|
| <b>Leg 0501</b>     |         |      |
| L1                  | L1      | 24   |
|                     | L2      | 26   |
|                     | L3      | 28   |
| L2                  | L4      | 23   |
|                     | L5      | 22   |
|                     | L6      | 29   |
| L3                  | L7      | 35   |
|                     | L8      | 34   |
|                     | L9      | 33   |
|                     | L10     | 32   |
|                     | L11     | 31   |
| L4                  | L14     | 37   |
|                     | L15     | 36   |
|                     | L16     | 38   |
|                     | L17     | 39   |
| L5                  | L18     | 46   |
|                     | L19     | 45   |
|                     | L20     | 44   |
|                     | L21     | 43   |
|                     | L22     | 42   |
|                     | L23     | 41   |
|                     | L24     | 40   |
| NOW S5              | 100     | 7    |
|                     | 102     | 8    |
|                     | 104     | 9    |
|                     | 106     | 10   |
|                     | 108     | 11   |
|                     | 110     | 14   |
|                     | 112     | 15   |
| Beaufort S400-South | 114     | 16   |
|                     | 116     | 17   |
|                     | 201     | 88   |
|                     | 202     | 87   |
|                     | 203     | 86   |
|                     | 204     | 84   |
|                     | 205     | 83   |
|                     | 206     | 82   |
|                     | 207     | 81   |
|                     | 208     | 80   |
| Beaufort S400-North | 209     | 79   |
|                     | 210     | 78   |
|                     | 211     | 77   |
|                     | 221     | 107  |
|                     | 222     | 106  |
|                     | 223     | 105  |
|                     | 224     | 104  |

| Section         | Station | Cast |
|-----------------|---------|------|
| <b>Leg 0502</b> |         |      |
| S13             | a       | 5    |
|                 | b       | 6    |
|                 | c       | 7    |
|                 | d       | 8    |
|                 | e       | 9    |
| S14             | a       | 10   |
|                 | b       | 11   |
|                 | c       | 12   |
|                 | d       | 13   |
|                 | e       | 14   |
|                 | f       | 17   |
|                 | g       | 18   |
| S15             | a       | 19   |
|                 | b       | 20   |
|                 | c       | 21   |
|                 | d       | 22   |
|                 | e       | 23   |
|                 | f       | 25   |
|                 | g       | 26   |
|                 | h       | 27   |
| S15-16          | ctd1    | 28   |
|                 | ctd2    | 29   |
|                 | ctd3    | 30   |
|                 | ctd4    | 31   |
| S16             | a       | 32   |
|                 | b       | 33   |
|                 | c       | 34   |
|                 | d       | 35   |
|                 | e       | 36   |
|                 | f       | 38   |
|                 | g       | 39   |
|                 | h       | 40   |
| S17             | a       | 41   |
|                 | b       | 42   |
|                 | c       | 43   |
|                 | d       | 46   |
|                 | e       | 47   |
| S19             | a       | 52   |
|                 | b       | 53   |
|                 | c       | 54   |
|                 | d       | 55   |
|                 | e       | 57   |
| S21 James Bay   | a       | 66   |
|                 | b       | 65   |
|                 | c       | 67   |
|                 | d       | 68   |
|                 | e       | 69   |
|                 | f       | 72   |
|                 | g       | 73   |
|                 | h       | 74   |
| S Winisk        | ctd12   | 84   |
|                 | ctd13   | 85   |
|                 | ctd14   | 86   |
|                 | ctd15   | 87   |
|                 | ctd16   | 88   |
|                 | ctd17   | 89   |
|                 | ctd18   | 90   |
| S Nelson        | ctd19   | 91   |
|                 | ctd25   | 99   |
|                 | ctd26   | 98   |
|                 | ctd27   | 97   |
|                 | ctd28   | 96   |
|                 | ctd29   | 95   |
|                 | ctd30   | 106  |

**TABLE 4.** Summary of moored instruments, ArcticNet 2004-2005

| Mooring | Water depth | Position                    | Instrument | Serial No | Instr. Depth (m) | Date of first reliable data | Date of last reliable data | dt (min)        | T (°C) | Cond (mS/cm) | Press (dbar) | Spd (cm/s) | Dir (true) | Turb NTU | Oxy uM | Chl | Quality Control Comments  |
|---------|-------------|-----------------------------|------------|-----------|------------------|-----------------------------|----------------------------|-----------------|--------|--------------|--------------|------------|------------|----------|--------|-----|---|
| CA04-04 | 306         | 71°05.146'N<br>133°43.271'W | ALEC C/T   | 682       | 28               | 07-09-2004 21:20            | 04-09-2005 15:00           | 10              | x      | x            |              |            |            |          |        |     | WARNING: this line as bended  |
|         |             |                             | WH-ADCP    | 3844      | 94.5             | 07-09-2004 21:30            | 04-09-2005 14:00           | 60              | x      |              | x            | x          | b.d.       |          |        |     | WARNING: NO GOOD COMPASS CALIBRATION; this line as bended   |
|         |             |                             | RCM-11     | 281       | 198              | 07-09-2004 22:00            | 29-08-2005 14:51           | 60              | x      | x            | x            | x          | x          | x        | x      |     | many salinity data points replaced by NaNs; clock problems; some data missing; this line as bended                                      |
| CA05-04 |             | MOORING LOST                |            |           |                  |                             |                            |                 |        |              |              |            |            |          |        |     |   |
| CA07-04 | 490         | 71°08.944'N<br>133°53.635'W | SBE37      | 3463      | 17 / 154         | 08-09-2004 01:29            | 04-09-2005 17:30           | 15              | x      | x            | x            |            |            |          |        |     | WARNING: this line as bended and slid along the slope   |
|         |             |                             | WH-ADCP    | 3895      | In progress      |                             |                            |                 |        |              |              |            |            |          |        |     |   |
|         |             |                             | RCM-11     | 282       | 184 / 321        | 08-09-2004 02:00            | 04-09-2005 17:05           | 60              | x      | x            | x            | x          | x          | x        | x      |     | WARNING: this line as bended and slid along the slope   |
|         |             |                             | RCM-11     | 291       | 387 / 524        | 08-09-2004 02:00            | 27-06-2005 23:58           | 60              | x      | x            | x            | x          | x          | x        | x      |     | WARNING: this line as bended and slid along the slope; offset correction applied to salinity data; clock problems; several data missing |
| CA15-04 | 400         | 71°32.269'N<br>127°01.458'W | ALEC C/T   | 686       | 17               | 24-07-2004 03:50            | 03-09-2005 09:40           | 10              | x      | x            |              |            |            |          |        |     | good data   |
|         |             |                             | WH-ADCP    | 296       | 86.4             | 24-07-2004 04:00            | 03-09-2005 09:00           | 60              | x      |              |              | x          | b.d.       |          |        |     | WARNING: NO GOOD COMPASS CALIBRATION  |
|         |             |                             | RCM-11     | 276       | 189              | 24-07-2004 04:00            | 03-09-2005 09:34           | 30              | x      | x            | x            | x          | x          | x        | x      |     | WARNING: huge clock problems; offset correction applied on salinity data.   |
| CA18-04 | 540         | 70°39.940'N<br>122°59.300'W | ALEC C/T   | 687       | 43               | 30-07-2004 22:30            | 01-09-2005 10:50           | 10              | x      | x            |              |            |            |          |        |     | good data   |
|         |             |                             | ACLW       | 286       | 43               | 30-07-2004 23:00            | 02-12-2004 02:00           | 1 sec<br>60s/1h | x      |              |              |            |            | x        |        | x   | WARNING: NO GOOD CALIBRATION  |
|         |             |                             | RCM-11     | 271       | 111              | 30-07-2004 22:59            | 08-06-2005 23:59           | 60              | x      | x            | x            | x          | x          | x        | x      |     | WARNING: clock problems; several data missing   |
|         |             |                             | RCM-11     | 272       | 216              | 30-07-2004 22:59            | 17-08-2005 19:01           | 60              | x      | x            | x            | x          | x          | x        | x      |     | WARNING: clock problems; several data missing   |
|         |             |                             | RCM-11     | 283       | 418              | 30-07-2004 22:59            | 01-09-2005 09:58           | 60              | x      | x            | x            | x          | x          | x        | x      |     | WARNING: clock problems; several data missing; offset correction applied to salinity data   |
| CA20-04 | 251         | 70°20.356'N<br>126°21.421'W | ACLW       | 285       | 26               | 17-07-2004 21:12            | 19-07-2004 21:46           | 1 sec           | x      |              |              |            |            | x        |        | x   | WARNING: NO GOOD CALIBRATION  |
|         |             |                             | ALEC C/T   | 591       |                  |                             |                            |                 |        |              |              |            |            |          |        |     | Data were impossible to download  |
|         |             |                             | WH-ADCP    | 335       | 95               | 17-07-2004 21:30            | 01-09-2005 17:01           | 60              | x      |              |              | x          | b.d.       |          |        |     | WARNING: NO GOOD COMPASS CALIBRATION  |

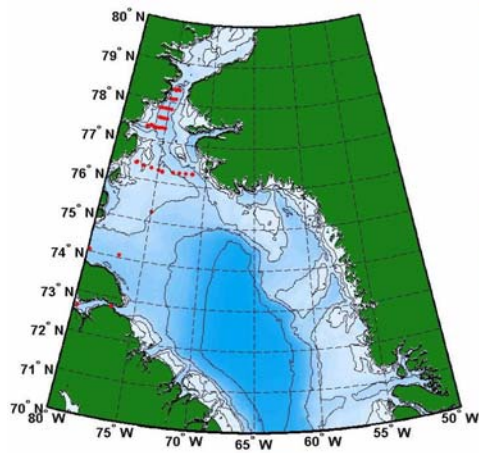
Please notice that **b.d.** stands for Bad Data

**TABLE 5.** Content of the ASCII Rosette-CTD data files.

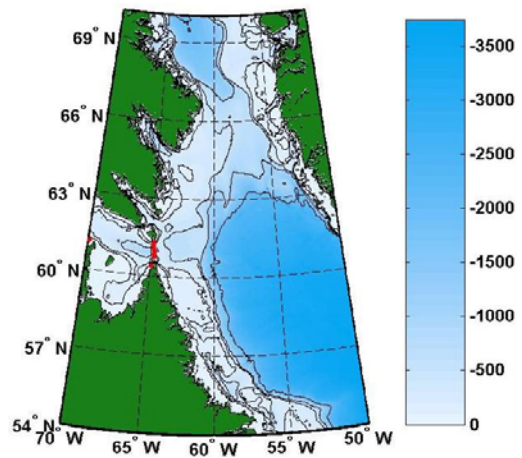
| Parameters                                  | Units                               | Number of significant digits |
|---|-------------------------------------|------------------------------|
| Pressure (or depth)                         | dbars                               | 2                            |
| Temperature                                 | °C (ITS-90)                         | 3                            |
| Transmissivity                              | %                                   | 2                            |
| Fluorescence                                | µg/l                                | 2                            |
| Salinity                                    | PSS (1978)                          | 3                            |
| Density, $\sigma$ (S,T,P)                   | kg/m <sup>3</sup>                   | 2                            |
| Specific volume anomaly                     | 10 <sup>-8</sup> m <sup>3</sup> /kg | 0                            |
| N <sup>2</sup> : Brunt-Väisälä frequency    | 1/sec <sup>2</sup>                  | 2                            |
| Density; $\sigma_t$ ; $\sigma$ (S,T,O)      | kg/m <sup>3</sup>                   | 3                            |
| Potential temperature ( $\theta$ )          | °C                                  | 3                            |
| $\sigma_\theta$ ; $\sigma$ (S, $\theta$ ,O) | kg/m <sup>3</sup>                   | 3                            |
| Freezing temperature                        | °C                                  | 2                            |
| Dissolved oxygen concentration              | ml/l                                | 4                            |
| pH  | no units                            | 3                            |
| Nitrates                                    | mmol/m <sup>3</sup>                 | 2                            |
| PAR pressure                                | dbars                               | 2                            |
| PAR   | µEinsteins/m <sup>2</sup> /sec      | 3                            |
| Surface PAR                                 | µEinsteins/m <sup>2</sup> /sec      | 3                            |

**APPENDIX 1.** Higher resolution maps of Arctic areas where Rosette-CTD, SCAMP and moorings data were collected.

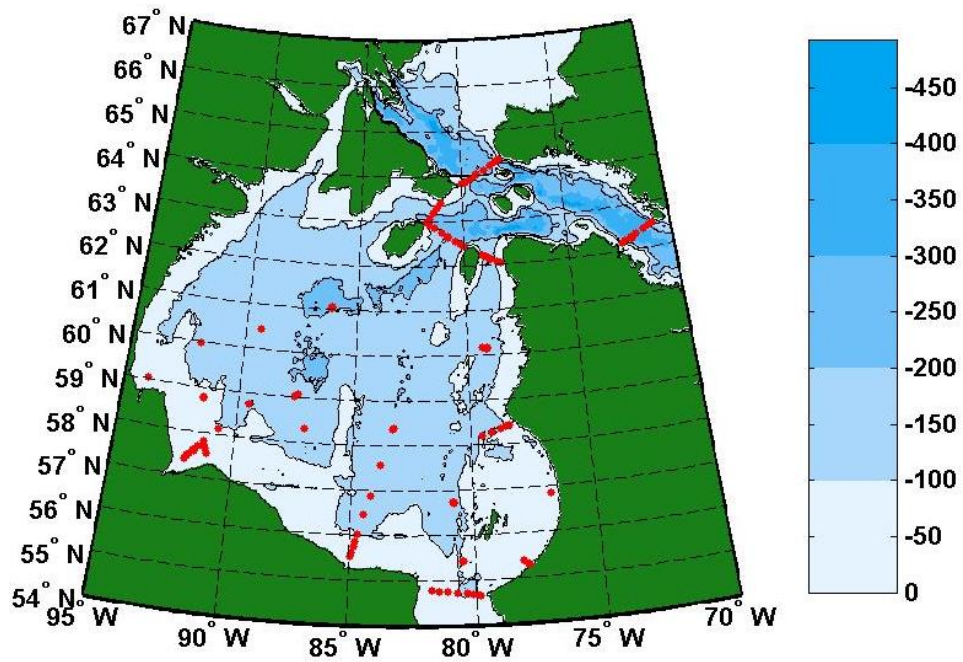
- 1A. Rosette-CTD sampling sites in Baffin Bay, Labrador, Hudson Bay and Hudson Strait, Northwest Passage and Beaufort Sea (Legs 1 and 2).
- 1B. SCAMP sampling sites in Baffin Bay, Labrador Sea, Hudson Bay and Hudson Strait, Northwest Passage and Beaufort Sea (Legs 1 and 2).
- 1C. Moorings recovered and deployed in Beaufort Sea; and deployed in Baffin Bay and Hudson Bay (Legs 1 and 2).



**Baffin Bay**

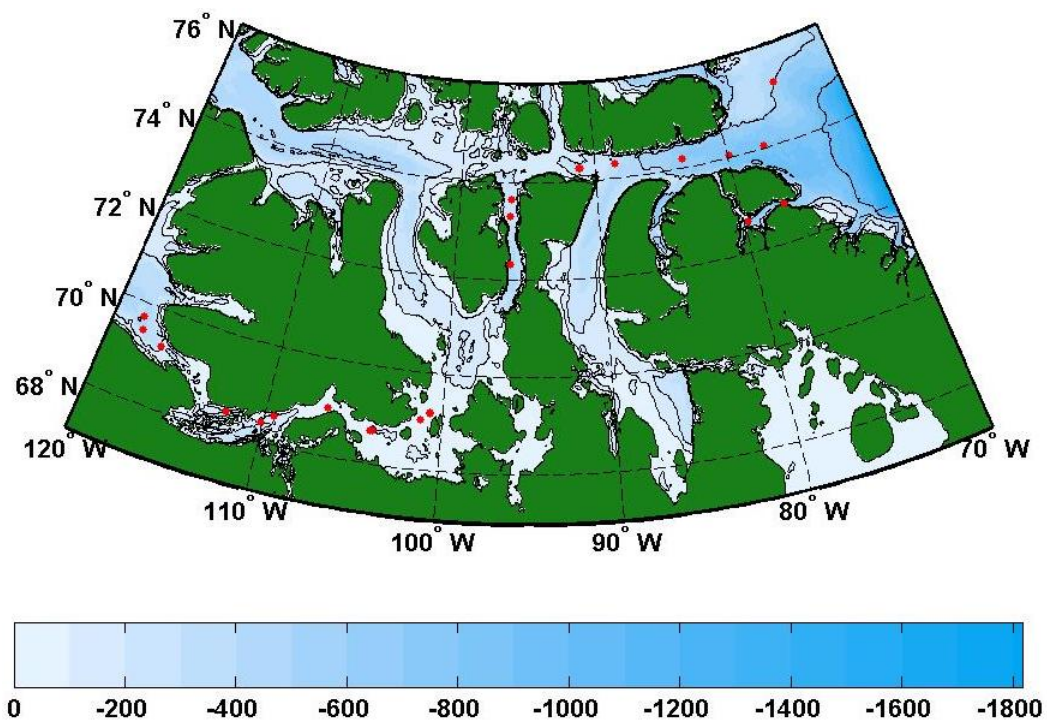


**Labrador Sea**

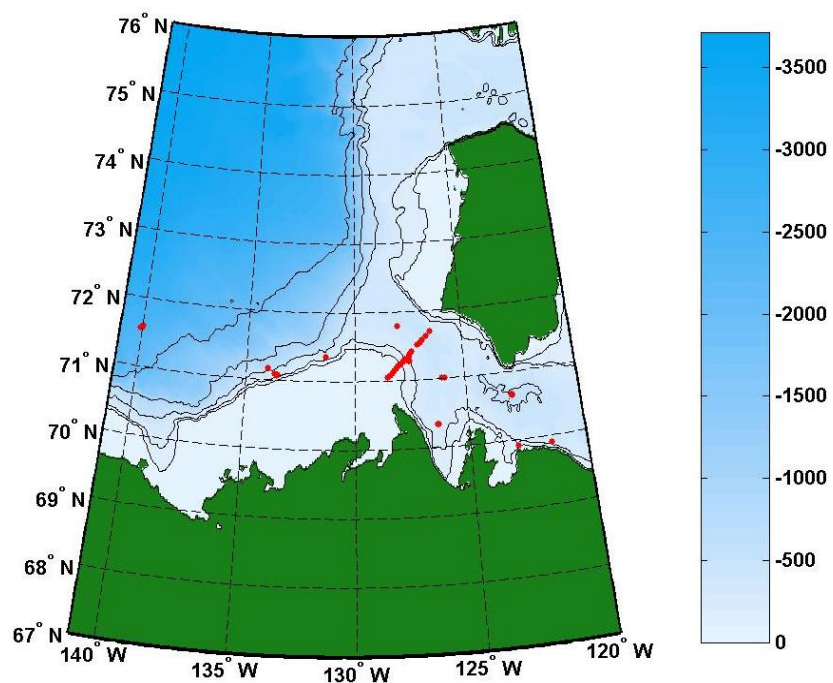


**Hudson Bay and Hudson Strait**

**APPENDIX 1A.** Rosette-CTD sampling sites in Baffin Bay, Labrador and Hudson Bay.  
(Legs 1 and 2)



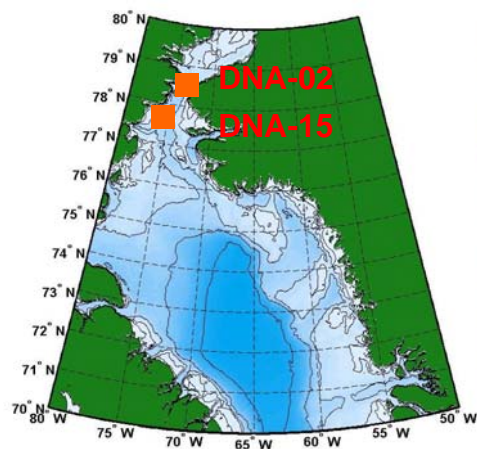
**Northwest Passage**



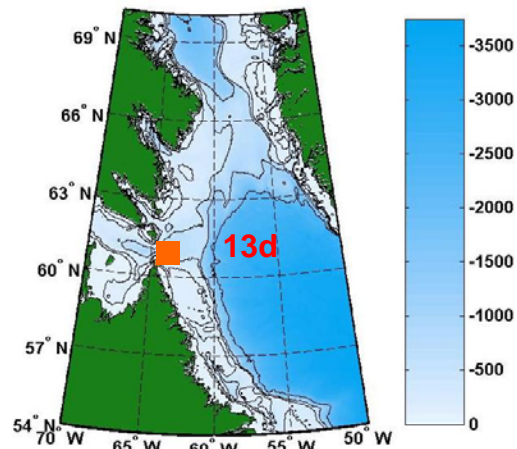
**Beaufort Sea**

**APPENDIX 1A.** Rosette-CTD sampling sites in Northwest Passage and Beaufort Sea.  
(Legs 1 and 2)

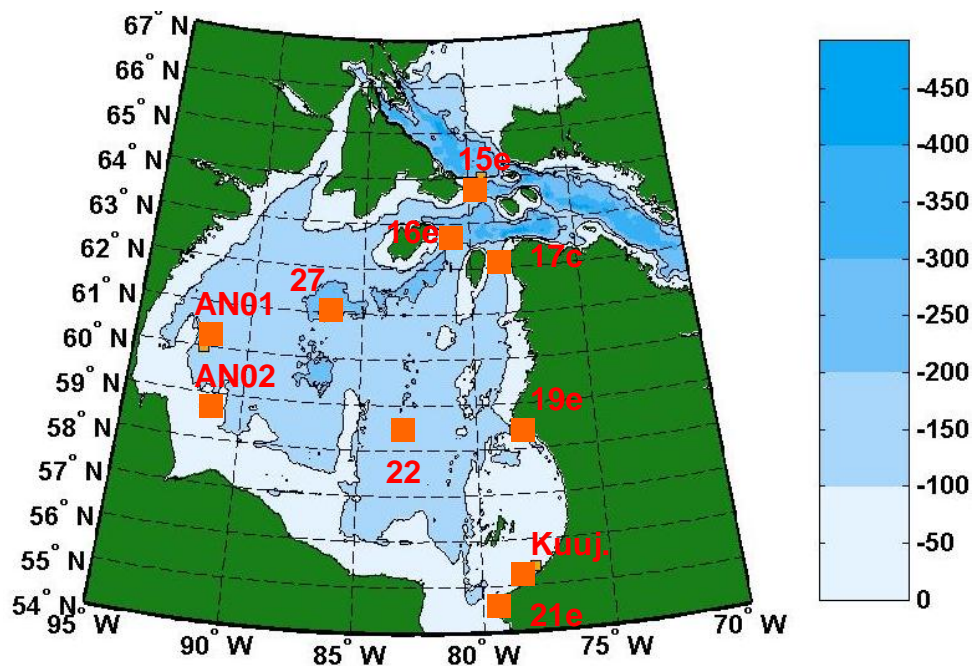




**Baffin Bay**

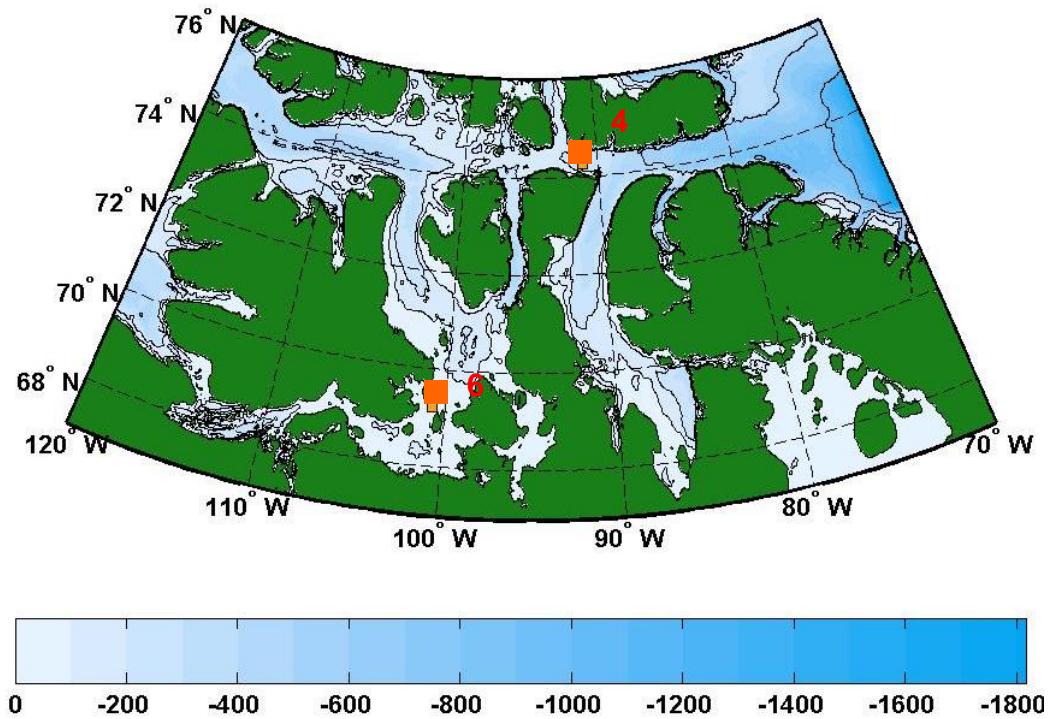


**Labrador Sea**

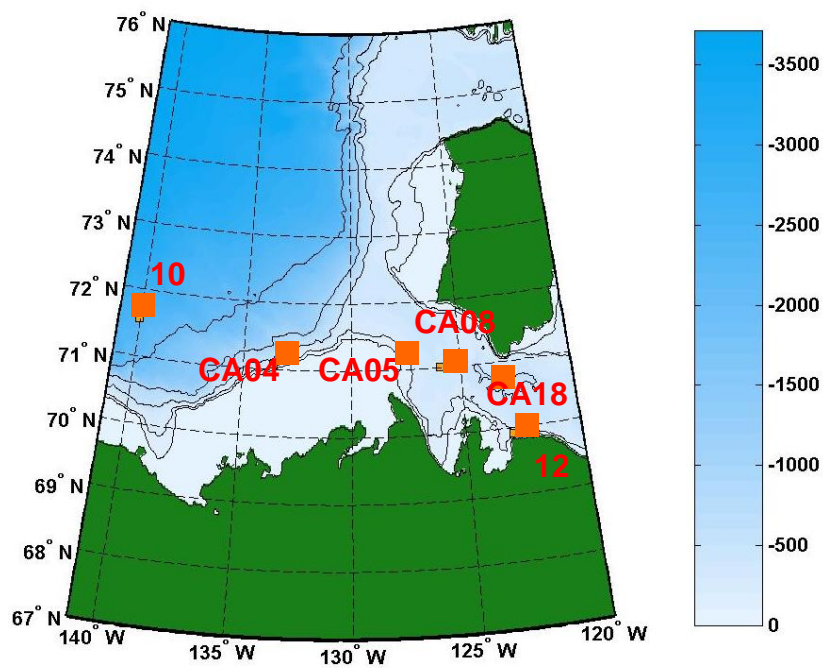


**Hudson Bay and Hudson Strait**

**APPENDIX 1B.** SCAMP sampling sites in Baffin Bay, Labrador Sea and Hudson Bay.  
(Legs 1 and 2)

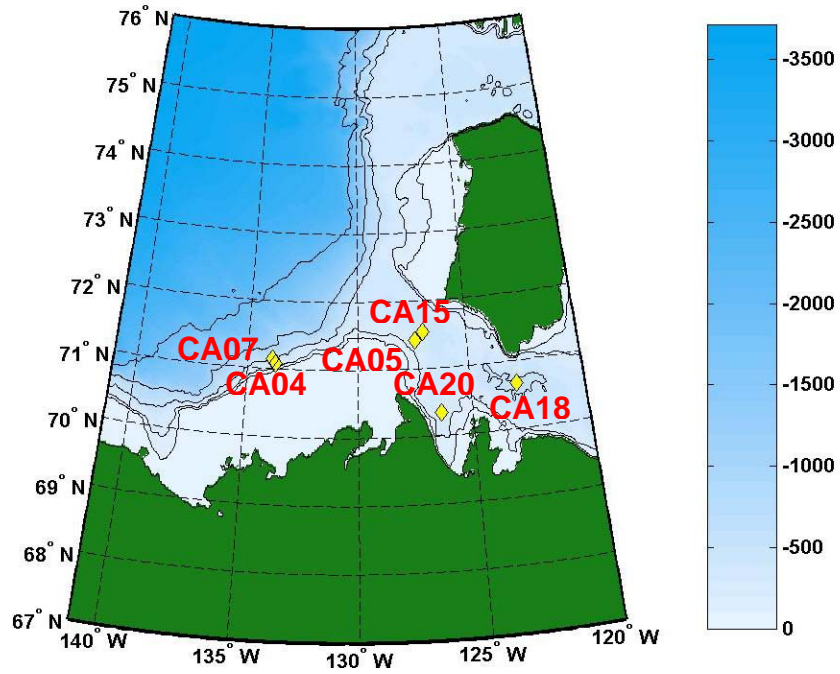


**Northwest Passage**

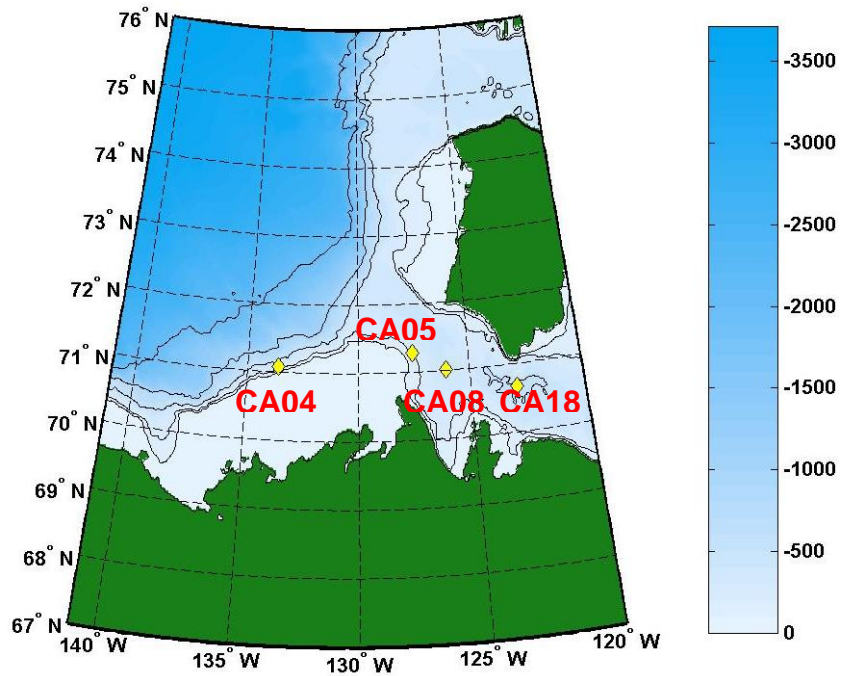


**Beaufort Sea**

**APPENDIX 1B. SCAMP sampling sites in Northwest Passage and Beaufort Sea. (Legs 1 and 2)**

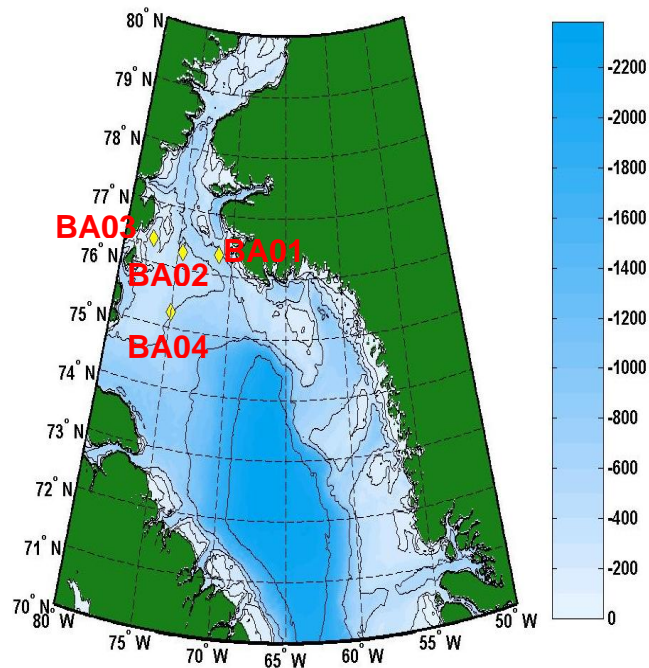


**APPENDIX 1C. Moorings recovered in Beaufort Sea (Legs 1 and 2).**

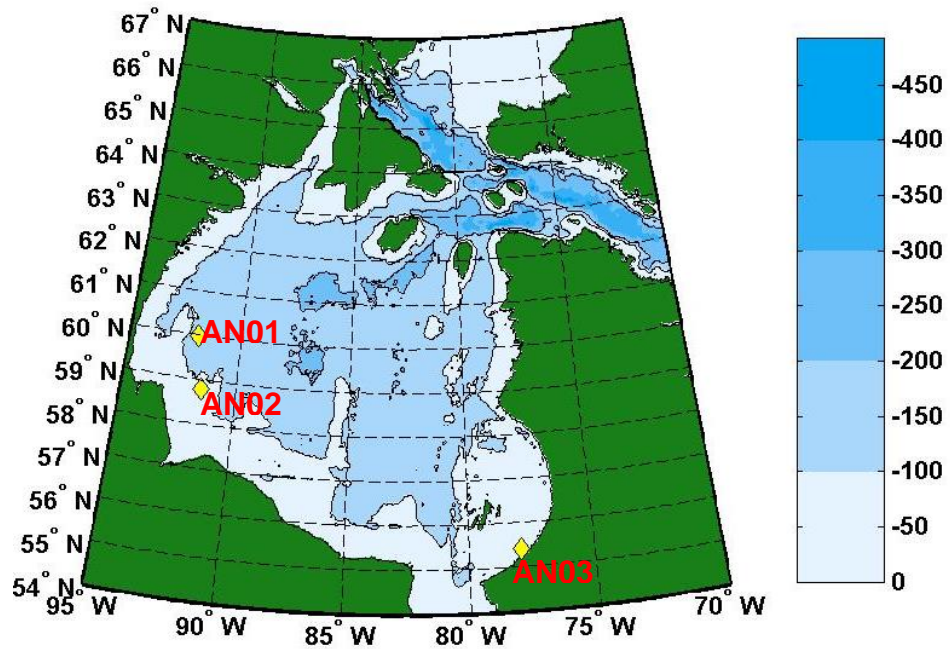


**APPENDIX 1C. Moorings deployed in Beaufort Sea (Legs 1 and 2).**





**Baffin Bay**



**Hudson Bay**

**APPENDIX 1C.** Moorings deployed in Baffin Bay and Hudson Bay (Legs 1 and 2).

**APPENDIX 2.** Rosette-CTD cast locations, sampling times, water depths and corresponding stations or mooring numbers during the 2004 and 2005 ArcticNet scientific expeditions.

- 2A. Rosette logbook for the mooring deployment expedition of 2004 (0408)
- 2B. Rosette logbook for Leg 1 (expedition 0501)
- 2C. Rosette logbook for Leg 2 (expedition 0502)

**APPENDIX 2A.** Rosette casts locations, sampling times, water depths and corresponding stations or mooring numbers during ArcticNet expedition 0408.

| Cast number | Station or mooring | Start date UTC | Start time UTC | Latitude (North) | Longitude (West) | Cast depth (m) | Sea bottom depth (m) |
|-------------|--------------------|----------------|----------------|------------------|------------------|----------------|----------------------|
| 1           | CA-6               | 2004-09-05     | 20:15          | 70° 35.29        | 127° 44.07       | 249            | 256                  |
| 2           | CA-19              | 2004-09-06     | 02:36          | 70° 50.08        | 128° 59.03       | 63             | 73                   |
| 3           | CA-4               | 2004-09-07     | 12:32          | 71° 05.28        | 133° 16.97       | 304            | 315                  |
| 4           | Ca-07              | 2004-09-07     | 14:14          | 71° 09.04        | 133° 06.47       | 478            | 502                  |
| 5           | HM-S1              | 2004-09-07     | 16:29          | 71° 02.52        | 133° 34.86       | 128            | 139                  |
| 6           | CA-07              | 2004-09-08     | 01:28          | 71° 08.80        | 133° 06.29       | 470            | X                    |
| 7           | CA-10              | 2004-09-08     | 14:38          | 69° 57.26        | 138° 20.95       | 246            | 256                  |
| 8           | CA-11              | 2004-09-09     | 13:14          | 70° 34.68        | 138° 21.54       | 1068           | 1114                 |
| 9           | CA-11B             | 2004-09-09     | 17:30          | 70° 34.61        | 138° 20.88       | 594            | 1114                 |
| 11          | CA09               | 2004-09-09     | 20:52          | 70° 12.62        | 137° 29.29       | 58             | 66                   |
| 12          | 12                 | 2004-09-09     | 20:52          | 70° 12.62        | 137° 29.29       | 58             | 66                   |
| 13          | HM-S1B             | 2004-09-10     | 07:46          | 70° 19.68        | 133° 15.64       | 50             | 51                   |
| 14          | MH-S10             | 2004-09-10     | 21:26          | 70° 53.52        | 129° 14.41       | 27             | 34                   |
| 15          | 15                 | 2004-09-10     | 21:22          | 70° 53.52        | 129° 14.41       | 27             | 34                   |
| 16          | C-203              | 2004-09-11     | 20:44          | 70° 08.32        | 125° 57.00       | 107            | 113                  |
| 17          | C-205              | 2004-09-11     | 23:08          | 70° 15.12        | 124° 01.56       | 56             | 60                   |
| 18          | C-205              | 2004-09-12     | 00:38          | 70° 19.35        | 124° 09.67       | 91             | 85                   |
| 19          | C-208              | 2004-09-12     | 02:37          | 70° 19.35        | 124° 31.43       | 239            | 250                  |
| 20          | C-209              | 2004-09-12     | 05:27          | 70° 31.50        | 124° 36.60       | 224            | X                    |
| 21          | C-210              | 2004-09-12     | 14:16          | 70° 36.72        | 124° 48.01       | 422            | 425                  |
| 22          | C-212              | 2004-09-12     | 16:12          | 70° 45.26        | 123° 06.26       | 422            | 428                  |
| 23          | C-109              | 2004-09-12     | 19:29          | 70° 39.72        | 123° 32.70       | 564            | 592                  |
| 24          | CA18-04            | 2004-09-12     | 21:12          | 70° 40.04        | 122° 01.88       | 563            | 576                  |
| 25          | C107               | 2004-09-12     | 22:10          | 70° 36.26        | 122° 07.53       | 568            | 593                  |
| 26          | C107               | 2004-09-13     | 00:35          | 70° 36.13        | 122° 23.33       | 536            | 558                  |
| 27          | C104               | 2004-09-13     | 02:42          | 70° 35.99        | 122° 54.71       | 483            | 505                  |
| 28          | C103               | 2004-09-13     | 13:03          | 70° 35.96        | 121° 10.94       | 520            | 537                  |
| 29          | C100               | 2004-09-13     | 16:27          | 70° 35.95        | 121° 59.12       | 366            | 320                  |

**APPENDIX 2B.** Rosette casts locations, sampling times, water depths and corresponding stations or mooring numbers during Leg 1 of 2005 ArcticNet scientific expedition (page 1:3).

| Cast number | Station or mooring | Start date UTC | Start time UTC | Latitude (North) | Longitude (West) | Cast depth (m) | Sea bottom depth (m) |
|-------------|--------------------|----------------|----------------|------------------|------------------|----------------|----------------------|
| 1           | Pond Inlet         | 2005-08-14     | 14:07          | 72° 47.10        | 076° 59.05       | 975            | 989                  |
| 3           | 100                | 2005-08-16     | 07:07          | 76° 17.98        | 071° 24.64       | 656            | 666                  |
| 4           | 100                | 2005-08-16     | 11:00          | 76° 18.14        | 071° 24.58       | 663            | 685                  |
| 5           | 100                | 2005-08-16     | 16:36          | 76° 17.93        | 071° 25.81       | 652            | 678                  |
| 6           | 100                | 2005-08-16     | 18:55          | 76° 17.66        | 071° 26.30       | 656            | 672                  |
| 7           | 100                | 2005-08-17     | 06:39          | 76° 17.98        | 071° 24.41       | 660            | 678                  |
| 8           | 102                | 2005-08-17     | 08:31          | 76° 17.98        | 072° 06.21       | 540            | 557                  |
| 9           | 104                | 2005-08-17     | 09:58          | 76° 16.97        | 072° 47.42       | 569            | 577                  |
| 10          | 106                | 2005-08-17     | 11:52          | 76° 16.96        | 073° 28.67       | 538            | 547                  |
| 11          | 108                | 2005-08-17     | 13:56          | 76° 15.98        | 074° 35.25       | 443            | 460                  |
| 12          | 108                | 2005-08-17     | 17:06          | 76° 16.01        | 074° 34.72       | 442            | 450                  |
| 13          | 108                | 2005-08-17     | 20:30          | 76° 15.32        | 074° 35.61       | 439            | 448                  |
| 14          | 110                | 2005-08-18     | 02:57          | 76° 17.35        | 075° 00.58       | 433            | 443                  |
| 15          | 112                | 2005-08-18     | 04:36          | 76° 19.42        | 075° 47.02       | 332            | 342                  |
| 16          | 114                | 2005-08-18     | 08:03          | 76° 21.24        | 076° 35.38       | 137            | 151                  |
| 17          | 116                | 2005-08-18     | 09:05          | 76° 22.92        | 077° 23.30       | 344            | 352                  |
| 18          | 116                | 2005-08-18     | 11:58          | 76° 22.94        | 077° 23.85       | 345            | 360                  |
| 19          | 116                | 2005-08-18     | 15:05          | 76° 23.00        | 077° 22.94       | 347            | 355                  |
| 20          | 116                | 2005-08-18     | 23:38          | 76° 24.84        | 077° 20.94       | 268            | 280                  |
| 21          | L 9                | 2005-08-19     | 09:03          | 77° 49.96        | 075° 20.77       | 604            | 607                  |
| 22          | L 5                | 2005-08-19     | 13:49          | 78° 04.70        | 074° 39.70       | 661            | 671                  |
| 23          | L 4                | 2005-08-19     | 15:25          | 78° 04.96        | 075° 00.22       | 607            | 614                  |
| 24          | L 1                | 2005-08-19     | 18:05          | 78° 20.32        | 074° 39.48       | 636            | 645                  |
| 25          | L 2                | 2005-08-19     | 19:13          | 78° 19.68        | 074° 21.33       | 487            | 493                  |
| 26          | L 2                | 2005-08-19     | 21:39          | 78° 18.13        | 074° 28.79       | 517            | 530                  |
| 28          | L 3                | 2005-08-20     | 01:24          | 78° 19.15        | 074° 00.58       | 626            | 643                  |
| 29          | L 6                | 2005-08-20     | 03:56          | 78° 05.10        | 074° 19.55       | 700            | 709                  |
| 30          | L 11               | 2005-08-20     | 06:22          | 77° 49.98        | 074° 39.70       | 695            | 705                  |
| 31          | L 11               | 2005-08-20     | 07:54          | 77° 49.98        | 074° 39.25       | 695            | 704                  |
| 32          | L 10               | 2005-08-20     | 10:05          | 77° 49.78        | 075° 01.03       | 661            | 671                  |
| 33          | L 9                | 2005-08-20     | 11:08          | 77° 50.08        | 075° 20.72       | 597            | 608                  |
| 34          | L 8                | 2005-08-20     | 12:19          | 77° 49.83        | 075° 40.13       | 536            | 550                  |
| 35          | L 7                | 2005-08-20     | 14:24          | 77° 49.50        | 075° 59.24       | 562            | 572                  |
| 36          | L 15               | 2005-08-20     | 17:10          | 77° 34.57        | 075° 39.60       | 653            | 663                  |
| 37          | L 14               | 2005-08-20     | 18:12          | 77° 34.94        | 075° 54.01       | 600            | 609                  |
| 38          | L 16               | 2005-08-20     | 19:41          | 77° 35.03        | 075° 19.83       | 632            | 636                  |
| 39          | L 17               | 2005-08-20     | 20:54          | 77° 34.57        | 074° 58.96       | 655            | 663                  |
| 40          | L 24               | 2005-08-20     | 22:43          | 77° 20.11        | 075° 01.78       | 644            | 648                  |
| 41          | L 23               | 2005-08-21     | 01:10          | 77° 19.99        | 075° 22.69       | 540            | 561                  |
| 42          | L 22               | 2005-08-21     | 02:38          | 77° 19.97        | 075° 43.01       | 548            | 564                  |
| 43          | L 21               | 2005-08-21     | 03:39          | 77° 20.08        | 076° 01.24       | 522            | 540                  |
| 44          | L 20               | 2005-08-21     | 06:52          | 77° 19.97        | 076° 20.28       | 448            | 456                  |
| 45          | L 19               | 2005-08-21     | 07:48          | 77° 22.00        | 076° 39.33       | 422            | 430                  |
| 46          | L 18               | 2005-08-21     | 08:50          | 77° 19.21        | 077° 00.23       | 436            | 445                  |
| 47          | K                  | 2005-08-21     | 16:07          | 77° 19.82        | 077° 00.63       | 384            | 384                  |
| 48          | BA04-05            | 2005-08-21     | 23:45          | 75° 14.40        | 074° 58.92       | 470            | 477                  |
| 49          | BA04-05            | 2005-08-22     | 04:17          | 75° 14.42        | 074° 59.53       | 470            | 479                  |
| 50          | BA04-05            | 2005-08-22     | 06:05          | 75° 14.45        | 075° 00.27       | 467            | 478                  |

**APPENDIX 2B.** Rosette casts locations, sampling times, water depths and corresponding stations or mooring numbers during Leg 1 of 2005 ArcticNet scientific expedition (page 2:3).

| Cast number | Station or mooring | Start date UTC | Start time UTC | Latitude (North) | Longitude (West) | Cast depth (m) | Sea bottom depth (m) |
|-------------|--------------------|----------------|----------------|------------------|------------------|----------------|----------------------|
| 51          | L                  | 2005-08-22     | 15:21          | 74° 03.65        | 077° 13.22       | 819            | 838                  |
| 52          | 3                  | 2005-08-22     | 23:53          | 74° 03.05        | 079° 55.24       | 808            | 912                  |
| 53          | 3                  | 2005-08-23     | 04:12          | 74° 03.38        | 079° 54.09       | 788            | 804                  |
| 54          | 3                  | 2005-08-23     | 12:40          | 74° 02.81        | 079° 53.66       | 780            | 814                  |
| 55          | 3a                 | 2005-08-23     | 18:44          | 74° 11.79        | 083° 20.76       | 680            | 700                  |
| 56          | 4a                 | 2005-08-24     | 02:25          | 74° 18.15        | 088° 29.43       | 333            | 346                  |
| 57          | 4                  | 2005-08-24     | 07:43          | 74° 15.99        | 091° 11.80       | 322            | 334                  |
| 58          | 4                  | 2005-08-24     | 12:39          | 74° 15.75        | 091° 11.53       | 324            | 335                  |
| 59          | 4                  | 2005-08-24     | 15:00          | 74° 16.38        | 091° 09.72       | 325            | 333                  |
| 60          | 4                  | 2005-08-24     | 16:26          | 74° 16.63        | 091° 07.59       | 329            | 339                  |
| 61          | O                  | 2005-08-25     | 22:45          | 73° 19.05        | 096° 20.57       | 211            | 222                  |
| 62          | P                  | 2005-08-26     | 04:47          | 72° 19.85        | 096° 17.96       | 442            | 458                  |
| 63          | 6                  | 2005-08-27     | 10:19          | 69° 10.03        | 100° 41.97       | 54             | 65                   |
| 64          | 6                  | 2005-08-27     | 12:36          | 69° 10.46        | 100° 41.88       | 57             | 68                   |
| 65          | 6                  | 2005-08-27     | 15:41          | 69° 11.05        | 100° 42.62       | 63             | 72                   |
| 66          | R                  | 2005-08-28     | 04:31          | 69° 02.06        | 101° 13.90       | 58             | 68                   |
| 67          | S                  | 2005-08-28     | 10:49          | 68° 41.18        | 103° 59.57       | 93             | 105                  |
| 68          | 7                  | 2005-08-30     | 04:43          | 68° 59.86        | 106° 33.99       | 108            | 118                  |
| 69          | 7                  | 2005-08-30     | 08:31          | 69° 00.05        | 106° 34.33       | 100            | 111                  |
| 70          | 7                  | 2005-08-30     | 10:40          | 68° 59.88        | 106° 34.81       | 104            | 117                  |
| 71          | T                  | 2005-08-31     | 05:44          | 68° 35.55        | 109° 28.10       | 137            | 151                  |
| 72          | U                  | 2005-08-31     | 10:42          | 68° 25.18        | 112° 08.26       | 190            | 206                  |
| 73          | V                  | 2005-09-01     | 00:12          | 69° 42.20        | 118° 23.63       | 479            | 489                  |
| 74          | CA18-05            | 2005-09-01     | 10:15          | 70° 39.97        | 122° 58.43       | 537            | 548                  |
| 75          | CA20-04            | 2005-09-01     | 17:40          | 70° 20.41        | 126° 20.55       | 242            | 254                  |
| 76          | CA05-04            | 2005-09-02     | 01:43          | 71° 24.84        | 127° 23.48       | 292            | 301                  |
| 77          | 211                | 2005-09-02     | 02:45          | 71° 22.64        | 127° 29.70       | 253            | 263                  |
| 78          | 210                | 2005-09-02     | 03:48          | 71° 20.57        | 127° 32.48       | 226            | 233                  |
| 79          | 209                | 2005-09-02     | 05:00          | 71° 18.42        | 127° 41.95       | 165            | 175                  |
| 80          | 208                | 2005-09-02     | 06:07          | 71° 16.45        | 127° 48.48       | 134            | 140                  |
| 81          | 207                | 2005-09-02     | 07:07          | 71° 14.94        | 127° 54.56       | 98             | 103                  |
| 82          | 206                | 2005-09-02     | 09:10          | 71° 12.85        | 128° 00.46       | 70             | 82                   |
| 83          | 205                | 2005-09-02     | 09:51          | 71° 10.81        | 128° 06.24       | 62             | 70                   |
| 84          | 204                | 2005-09-02     | 10:52          | 71° 08.85        | 128° 12.22       | 53             | 64                   |
| 85          | 204                | 2005-09-02     | 12:51          | 71° 08.86        | 128° 12.04       | 54             | 64                   |
| 86          | 203                | 2005-09-02     | 14:25          | 71° 06.79        | 128° 18.37       | 47             | 58                   |
| 87          | 202                | 2005-09-02     | 15:03          | 71° 04.90        | 128° 24.63       | 44             | 54                   |
| 88          | 201                | 2005-09-02     | 15:41          | 71° 02.95        | 128° 30.51       | 32             | 43                   |
| 89          | CA05-05            | 2005-09-02     | 22:37          | 71° 16.66        | 127° 31.41       | 195            | 201                  |
| 90          | CA05-05            | 2005-09-03     | 01:57          | 71° 16.80        | 127° 30.29       | 202            | 209                  |
| 91          | CA05-05            | 2005-09-03     | 04:54          | 71° 17.19        | 127° 30.13       | 201            | 210                  |
| 92          | CA15-04            | 2005-09-03     | 08:53          | 71° 32.02        | 126° 58.36       | 396            | 407                  |
| 93          | CA14-03            | 2005-09-03     | 15:19          | 71° 47.75        | 127° 59.87       | 389            | 409                  |
| 94          | CA13-03            | 2005-09-04     | 02:40          | 71° 21.78        | 131° 20.91       | 341            | 348                  |
| 95          | CA04-04            | 2005-09-04     | 12:21          | 71° 05.62        | 133° 42.53       | 324            | 331                  |
| 96          | CA07-04            | 2005-09-04     | 19:07          | 71° 10.44        | 133° 59.76       | 617            | 625                  |
| 97          | 10                 | 2005-09-05     | 14:20          | 71° 35.02        | 139° 59.00       | 976            | 2481                 |
| 98          | 10                 | 2005-09-05     | 16:59          | 71° 33.85        | 139° 59.50       | 975            | 2478                 |
| 99          | 10                 | 2005-09-05     | 20:49          | 71° 33.65        | 140° 06.71       | 975            | 2503                 |
| 100         | CA04-05            | 2005-09-06     | 21:46          | 71° 05.22        | 133° 37.01       | 326            | 334                  |



**APPENDIX 2B.** Rosette casts locations, sampling times, water depths and corresponding stations or mooring numbers during Leg 1 of 2005 ArcticNet scientific expedition (page 3:3).

| Cast number | Station or mooring | Start date UTC | Start time UTC | Latitude (North) | Longitude (West) | Cast depth (m) | Sea bottom depth (m) |
|-------------|--------------------|----------------|----------------|------------------|------------------|----------------|----------------------|
| 101         | CA04-05            | 2005-09-07     | 01:40          | 71° 03.75        | 133° 36.07       | 257            | 265                  |
| 102         | CA04-05            | 2005-09-07     | 04:35          | 71° 04.94        | 133° 34.48       | 196            | 331                  |
| 103         | CA07-04            | 2005-09-07     | 08:10          | 71° 10.75        | 134° 01.83       | 628            | 634                  |
| 104         | 224                | 2005-09-08     | 07:57          | 71° 42.26        | 126° 28.96       | 385            | 397                  |
| 105         | 223                | 2005-09-08     | 10:02          | 71° 38.31        | 126° 40.97       | 430            | 442                  |
| 106         | 222                | 2005-09-08     | 11:02          | 71° 34.42        | 126° 52.99       | 412            | 428                  |
| 107         | 221                | 2005-09-08     | 12:03          | 71° 30.47        | 127° 05.14       | 370            | 384                  |
| 108         | CA05-05            | 2005-09-09     | 05:31          | 71° 17.13        | 127° 32.74       | 190            | 198                  |
| 109         | CA08-05            | 2005-09-09     | 12:17          | 71° 00.90        | 125° 56.13       | 393            | 404                  |
| 110         | CA08-05            | 2005-09-09     | 14:05          | 71° 00.28        | 125° 55.93       | 394            | 402                  |
| 111         | CA08-05            | 2005-09-09     | 15:56          | 71° 00.24        | 125° 55.49       | 394            | 415                  |
| 112         | CA08-05            | 2005-09-10     | 02:46          | 71° 00.51        | 126° 03.23       | 386            | 395                  |
| 113         | 11                 | 2005-09-10     | 23:43          | 70° 20.37        | 126° 21.47       | 246            | 255                  |
| 114         | 11                 | 2005-09-11     | 02:59          | 70° 20.49        | 126° 21.74       | 246            | 263                  |
| 115         | 11                 | 2005-09-11     | 04:00          | 70° 20.76        | 126° 21.86       | 247            | 254                  |
| 116         | 11                 | 2005-09-11     | 05:00          | 70° 20.49        | 126° 21.74       | 246            | 252                  |
| 117         | 11                 | 2005-09-11     | 05:58          | 70° 20.53        | 126° 21.53       | 246            | 253                  |
| 118         | 11                 | 2005-09-11     | 06:56          | 70° 20.36        | 126° 21.43       | 247            | 256                  |
| 119         | 11                 | 2005-09-11     | 07:56          | 70° 20.36        | 126° 21.46       | 245            | 255                  |
| 120         | 11                 | 2005-09-11     | 08:56          | 70° 20.37        | 126° 21.45       | 245            | 255                  |
| 121         | 11                 | 2005-09-11     | 10:02          | 70° 20.36        | 126° 21.46       | 244            | 256                  |
| 122         | 11                 | 2005-09-11     | 10:59          | 70° 20.36        | 126° 21.46       | 244            | 256                  |
| 123         | 11                 | 2005-09-11     | 11:58          | 70° 20.36        | 126° 21.42       | 247            | 256                  |
| 125         | 11                 | 2005-09-11     | 13:02          | 70° 20.36        | 126° 21.44       | 245            | 256                  |
| 126         | 11                 | 2005-09-11     | 14:18          | 70° 20.37        | 126° 21.34       | 248            | 255                  |
| 127         | 11                 | 2005-09-11     | 16:49          | 70° 20.34        | 126° 21.69       | 246            | 254                  |
| 128         | 11                 | 2005-09-11     | 22:22          | 70° 20.36        | 126° 21.49       | 244            | 252                  |
| 129         | CA18-05            | 2005-09-12     | 15:49          | 70° 39.99        | 122° 59.37       | 537            | 544                  |
| 130         | CA18-05            | 2005-09-12     | 19:14          | 70° 39.98        | 122° 59.58       | 535            | 542                  |
| 131         | CA18-05            | 2005-09-13     | 03:39          | 70° 39.07        | 122° 59.69       | 598            | 608                  |
| 132         | 12                 | 2005-09-13     | 18:04          | 69° 54.80        | 122° 57.39       | 196            | 205                  |
| 133         | 12                 | 2005-09-13     | 21:18          | 69° 54.87        | 122° 56.98       | 186            | 193                  |
| 134         | 12                 | 2005-09-14     | 01:52          | 69° 54.86        | 122° 57.28       | 197            | 199                  |
| 135         | X                  | 2005-09-14     | 04:48          | 69° 54.27        | 121° 30.21       | 261            | 266                  |
| 136         | Y                  | 2005-09-14     | 10:35          | 69° 27.40        | 118° 11.33       | 454            | 465                  |
| 137         | Z                  | 2005-09-14     | 14:12          | 69° 16.24        | 116° 50.76       | 186            | 192                  |

**APPENDIX 2C.** Rosette cast locations, sampling times, water depths and corresponding stations or mooring numbers during Leg 2 of 2005 ArcticNet scientific expedition (page 1:3).

| Cast number | Station or mooring | Start date UTC | Start time UTC | Latitude (North) | Longitude (West) | Cast depth (m) | Sea bottom depth (m) |
|-------------|--------------------|----------------|----------------|------------------|------------------|----------------|----------------------|
| 1           | T2                 | 2005-09-16     | 12:43          | 68° 23.62        | 110° 05.87       | 236            | 246                  |
| 2           | S2                 | 2005-09-17     | 02:06          | 68° 40.65        | 103° 52.15       | 102            | 108                  |
| 3           | O2                 | 2005-09-18     | 16:39          | 73° 39.21        | 096° 17.01       | 240            | 252                  |
| 4           | Pond Inlet 2       | 2005-09-19     | 22:28          | 72° 38.15        | 079° 45.18       | 535            | 545                  |
| 5           | 13a                | 2005-09-22     | 13:05          | 61° 16.38        | 064° 49.03       | 245            | 262                  |
| 6           | 13 b               | 2005-09-22     | 15:25          | 61° 09.20        | 064° 49.49       | 435            | 450                  |
| 7           | 13c                | 2005-09-22     | 18:23          | 61° 00.23        | 064° 44.63       | 502            | 518                  |
| 8           | 13d                | 2005-09-22     | 22:04          | 60° 50.91        | 064° 42.47       | 377            | 387                  |
| 9           | 13e                | 2005-09-23     | 00:44          | 60° 44.87        | 064° 41.71       | 291            | 303                  |
| 10          | 14a                | 2005-09-23     | 16:22          | 62° 31.47        | 070° 52.08       | 330            | 344                  |
| 11          | 14b                | 2005-09-23     | 17:53          | 62° 29.30        | 071° 02.42       | 330            | 342                  |
| 12          | 14c                | 2005-09-23     | 19:21          | 62° 25.74        | 071° 17.84       | 324            | 331                  |
| 13          | 14d                | 2005-09-23     | 20:48          | 62° 21.40        | 071° 39.38       | 334            | 343                  |
| 14          | 14e                | 2005-09-23     | 23:17          | 62° 16.47        | 071° 58.70       | 330            | 338                  |
| 15          | 14e                | 2005-09-24     | 01:46          | 62° 16.11        | 071° 56.92       | 330            | 343                  |
| 16          | 14e                | 2005-09-24     | 04:15          | 62° 15.08        | 071° 52.53       | 340            | 342                  |
| 17          | 14f                | 2005-09-24     | 10:07          | 62° 13.23        | 072° 14.98       | 225            | 233                  |
| 18          | 14g                | 2005-09-24     | 11:13          | 62° 10.90        | 072° 24.94       | 179            | 200                  |
| 19          | 15a                | 2005-09-25     | 07:54          | 64° 19.69        | 078° 05.02       | 108            | 115                  |
| 20          | 15b                | 2005-09-25     | 08:46          | 64° 16.98        | 078° 15.09       | 202            | 209                  |
| 21          | 15c                | 2005-09-25     | 09:53          | 64° 12.91        | 078° 31.01       | 261            | 271                  |
| 22          | 15d                | 2005-09-25     | 11:24          | 64° 07.23        | 078° 52.26       | 237            | 245                  |
| 23          | 15e                | 2005-09-25     | 14:44          | 64° 01.75        | 079° 12.88       | 304            | 311                  |
| 24          | 15e                | 2005-09-25     | 16:39          | 64° 01.42        | 079° 16.30       | 303            | 312                  |
| 25          | 15f                | 2005-09-25     | 21:54          | 63° 56.30        | 079° 33.70       | 310            | 325                  |
| 26          | 15g                | 2005-09-25     | 23:09          | 63° 51.90        | 079° 49.16       | 290            | 292                  |
| 27          | 15h                | 2005-09-26     | 00:08          | 63° 49.25        | 079° 59.27       | 211            | 216                  |
| 28          | CTD1               | 2005-09-26     | 04:15          | 63° 24.18        | 081° 06.25       | 61             | 69                   |
| 29          | CTD2               | 2005-09-26     | 05:15          | 63° 18.73        | 081° 15.11       | 112            | 120                  |
| 30          | CTD3               | 2005-09-26     | 06:22          | 63° 11.27        | 081° 27.08       | 173            | 182                  |
| 31          | CTD4               | 2005-09-26     | 07:33          | 63° 03.64        | 081° 39.02       | 216            | 230                  |
| 32          | 16a                | 2005-09-26     | 08:27          | 62° 58.30        | 081° 47.59       | 206            | 220                  |
| 33          | 16b                | 2005-09-26     | 09:22          | 62° 55.24        | 081° 37.94       | 209            | 218                  |
| 34          | 16c                | 2005-09-26     | 10:28          | 62° 51.15        | 081° 23.29       | 198            | 205                  |
| 35          | 16d                | 2005-09-26     | 11:59          | 62° 45.46        | 081° 03.44       | 189            | 198                  |
| 36          | 16e                | 2005-09-26     | 14:26          | 62° 38.56        | 080° 44.78       | 197            | 205                  |
| 37          | 16e                | 2005-09-26     | 17:10          | 62° 39.41        | 080° 47.26       | 209            | 220                  |
| 38          | 16f                | 2005-09-26     | 23:48          | 62° 33.36        | 080° 24.86       | 195            | 205                  |
| 39          | 16g                | 2005-09-27     | 00:58          | 62° 28.98        | 080° 10.42       | 179            | 187                  |
| 40          | 16h                | 2005-09-27     | 01:58          | 62° 25.86        | 080° 01.34       | 160            | 174                  |
| 41          | 17a                | 2005-09-27     | 10:49          | 62° 13.85        | 079° 08.55       | 129            | 140                  |
| 42          | 17b                | 2005-09-27     | 11:44          | 62° 11.63        | 078° 58.11       | 175            | 186                  |
| 43          | 17c                | 2005-09-27     | 13:00          | 62° 08.07        | 078° 42.87       | 147            | 156                  |
| 44          | 17c                | 2005-09-27     | 16:38          | 62° 07.32        | 078° 47.09       | 164            | 176                  |
| 45          | 17c                | 2005-09-27     | 18:23          | 62° 08.27        | 078° 42.86       | 141            | 153                  |
| 46          | 17d                | 2005-09-27     | 19:45          | 62° 04.86        | 078° 27.25       | 60             | 71                   |
| 47          | 17e                | 2005-09-27     | 20:53          | 62° 02.62        | 078° 17.24       | 37             | 47                   |
| 48          | 18                 | 2005-09-28     | 07:12          | 60° 07.51        | 079° 09.95       | 128            | 140                  |
| 49          | 18                 | 2005-09-28     | 10:27          | 60° 07.76        | 079° 07.70       | 123            | 136                  |
| 50          | 18                 | 2005-09-28     | 12:25          | 60° 09.44        | 079° 07.46       | 126            | 140                  |

**APPENDIX 2C.** Rosette cast locations, sampling times, water depths and corresponding stations or mooring numbers during Leg 2 of 2005 ArcticNet scientific expedition (page 2:3).

| Cast number | Station or mooring | Start date UTC | Start time UTC | Latitude (North) | Longitude (West) | Cast depth (m) | Sea bottom depth (m) |
|-------------|--------------------|----------------|----------------|------------------|------------------|----------------|----------------------|
| 51          | 18                 | 2005-09-28     | 15:49          | 60° 10.96        | 079° 20.78       | 145            | 155                  |
| 52          | 19a                | 2005-09-29     | 05:38          | 58° 11.08        | 079° 30.23       | 95             | 107                  |
| 53          | 19b                | 2005-09-29     | 06:58          | 58° 15.85        | 079° 06.82       | 66             | 75                   |
| 54          | 19c                | 2005-09-29     | 08:15          | 58° 20.53        | 078° 43.39       | 91             | 106                  |
| 55          | 19d                | 2005-09-29     | 09:12          | 58° 22.78        | 078° 31.56       | 93             | 103                  |
| 56          | 19e                | 2005-09-29     | 10:16          | 58° 25.20        | 078° 19.89       | 96             | 106                  |
| 57          | 19e                | 2005-09-29     | 11:55          | 58° 25.16        | 078° 19.94       | 104            | 116                  |
| 58          | 19e                | 2005-09-29     | 18:42          | 58° 25.14        | 078° 20.35       | 102            | 114                  |
| 59          | 20                 | 2005-09-30     | 06:11          | 56° 50.40        | 076° 50.06       | 112            | 118                  |
| 60          | AN-03-05           | 2005-09-30     | 20:20          | 55° 17.08        | 077° 53.93       | 82             | 92                   |
| 61          | AN-03-05           | 2005-10-01     | 02:04          | 55° 17.70        | 077° 54.72       | 76             | 86                   |
| 62          | AN-03-05           | 2005-10-01     | 03:21          | 55° 17.72        | 077° 53.45       | 75             | 89                   |
| 63          | AN-03-05           | 2005-10-01     | 11:49          | 55° 17.07        | 077° 53.75       | 77             | 87                   |
| 64          | AN-03-05           | 2005-10-01     | 13:57          | 55° 22.48        | 078° 06.37       | 87             | 98                   |
| 65          | 21b                | 2005-10-02     | 11:19          | 54° 41.11        | 079° 58.84       | 57             | 67                   |
| 66          | 21a                | 2005-10-02     | 12:07          | 54° 37.93        | 079° 51.61       | 39             | 49                   |
| 67          | 21c                | 2005-10-02     | 13:34          | 54° 41.32        | 080° 07.79       | 52             | 60                   |
| 68          | 21d                | 2005-10-02     | 14:58          | 54° 42.20        | 080° 21.10       | 102            | 112                  |
| 69          | 21e                | 2005-10-02     | 22:02          | 54° 42.94        | 080° 43.77       | 91             | 99                   |
| 70          | 21e                | 2005-10-02     | 23:52          | 54° 43.02        | 080° 43.78       | 89             | 100                  |
| 71          | 21e                | 2005-10-03     | 01:49          | 54° 43.20        | 080° 45.12       | 87             | 98                   |
| 72          | 21f                | 2005-10-03     | 04:04          | 54° 44.80        | 081° 06.45       | 58             | 68                   |
| 73          | 21g                | 2005-10-03     | 05:28          | 54° 45.77        | 081° 28.43       | 33             | 43                   |
| 74          | 21h                | 2005-10-03     | 06:25          | 54° 46.37        | 081° 42.85       | 22             | 32                   |
| 75          | BI-1               | 2005-10-04     | 23:04          | 55° 25.79        | 080° 30.43       | 82             | 99                   |
| 76          | BI-1               | 2005-10-05     | 00:14          | 55° 25.75        | 080° 29.24       | 84             | 97                   |
| 77          | BI-1               | 2005-10-05     | 01:29          | 55° 25.81        | 080° 32.18       | 87             | 103                  |
| 78          | BI-2               | 2005-10-06     | 01:18          | 56° 45.07        | 080° 49.75       | 163            | 178                  |
| 79          | BI-2               | 2005-10-06     | 03:01          | 56° 43.68        | 080° 48.56       | 128            | 141                  |
| 80          | BI-2               | 2005-10-06     | 04:28          | 56° 43.05        | 080° 48.44       | 170            | 185                  |
| 81          | 22                 | 2005-10-06     | 20:51          | 58° 23.89        | 083° 17.49       | 168            | 181                  |
| 82          | 22                 | 2005-10-06     | 22:43          | 58° 23.25        | 083° 17.35       | 169            | 181                  |
| 83          | 22                 | 2005-10-07     | 00:34          | 58° 22.81        | 083° 18.53       | 165            | 178                  |
| 84          | CTD12              | 2005-10-07     | 06:35          | 57° 33.58        | 083° 49.16       | 170            | 181                  |
| 85          | CTD13              | 2005-10-07     | 10:21          | 56° 51.89        | 084° 13.23       | 165            | 178                  |
| 86          | CTD14              | 2005-10-07     | 12:44          | 56° 27.07        | 084° 27.12       | 128            | 146                  |
| 87          | CTD15              | 2005-10-07     | 15:19          | 56° 01.93        | 084° 40.99       | 90             | 100                  |
| 88          | CTD16              | 2005-10-07     | 16:39          | 55° 52.02        | 084° 46.29       | 80             | 91                   |
| 89          | CTD17              | 2005-10-07     | 17:43          | 55° 44.49        | 084° 50.40       | 53             | 64                   |
| 90          | CTD18              | 2005-10-07     | 18:43          | 55° 37.06        | 084° 54.34       | 31             | 41                   |
| 91          | CTD19              | 2005-10-07     | 19:37          | 55° 31.73        | 084° 57.04       | 22             | 30                   |
| 92          | CTD21              | 2005-10-08     | 14:06          | 58° 18.13        | 087° 04.22       | 170            | 180                  |
| 93          | 24                 | 2005-10-09     | 22:03          | 57° 21.86        | 091° 57.29       | 23             | 33                   |
| 94          | CTD29              | 2005-10-10     | 00:31          | 57° 26.83        | 091° 53.43       | 25             | 35                   |
| 95          | CTD29              | 2005-10-10     | 00:49          | 57° 26.92        | 091° 53.34       | 25             | 35                   |
| 96          | CTD28              | 2005-10-10     | 01:34          | 57° 30.66        | 091° 46.93       | 31             | 41                   |
| 97          | CTD27              | 2005-10-10     | 02:24          | 57° 34.68        | 091° 40.35       | 42             | 52                   |
| 98          | CTD26              | 2005-10-10     | 03:24          | 57° 40.45        | 091° 30.40       | 50             | 56                   |
| 99          | CTD25              | 2005-10-10     | 04:37          | 57° 48.12        | 091° 16.73       | 55             | 64                   |
| 100         | CTD24              | 2005-10-10     | 05:19          | 57° 43.29        | 091° 13.51       | 38             | 48                   |

**APPENDIX 2C.** Rosette cast locations, sampling times, water depths and corresponding stations or mooring numbers during Leg 2 of 2005 ArcticNet scientific expedition (page 3:3).

| Cast number | Station or mooring | Start date UTC | Start time UTC | Latitude (North) | Longitude (West) | Cast depth (m) | Sea bottom depth (m) |
|-------------|--------------------|----------------|----------------|------------------|------------------|----------------|----------------------|
| 101         | CTD23              | 2005-10-10     | 05:58          | 57° 38.39        | 091° 09.93       | 30             | 40                   |
| 102         | CTD22              | 2005-10-10     | 06:45          | 57° 33.44        | 091° 05.97       | 20             | 29                   |
| 103         | MH01-05            | 2005-10-10     | 12:00          | 57° 34.41        | 091° 37.18       | 50             | 60                   |
| 104         | MH01-05            | 2005-10-10     | 13:09          | 57° 34.43        | 091° 36.72       | 60             | 74                   |
| 105         | MH01-05            | 2005-10-10     | 16:18          | 57° 33.65        | 091° 37.97       | 52             | 59                   |
| 106         | CTD30              | 2005-10-11     | 02:06          | 57° 22.86        | 092° 00.02       | 11             | 21                   |
| 107         | CTD31              | 2005-10-11     | 06:55          | 58° 07.50        | 090° 43.20       | 70             | 81                   |
| 108         | CTD32              | 2005-10-11     | 11:09          | 58° 45.23        | 089° 32.93       | 85             | 95                   |
| 109         | 23                 | 2005-10-11     | 16:48          | 59° 00.68        | 087° 36.68       | 40             | 192                  |
| 110         | 23                 | 2005-10-11     | 17:04          | 59° 01.20        | 087° 36.71       | 179            | 194                  |
| 111         | 23                 | 2005-10-11     | 19:33          | 59° 01.70        | 087° 34.45       | 185            | 199                  |
| 112         | 23                 | 2005-10-11     | 21:36          | 59° 03.00        | 087° 30.96       | 188            | 200                  |
| 113         | 23                 | 2005-10-11     | 23:10          | 59° 03.57        | 087° 28.94       | 188            | 200                  |
| 114         | AN02-05            | 2005-10-12     | 13:37          | 58° 46.90        | 091° 31.25       | 70             | 80                   |
| 115         | AN02-05            | 2005-10-12     | 15:45          | 58° 46.58        | 091° 30.77       | 73             | 83                   |
| 116         | AN02-05            | 2005-10-12     | 17:56          | 58° 45.64        | 091° 30.06       | 73             | 85                   |
| 117         | AN01-05            | 2005-10-13     | 03:52          | 59° 58.64        | 091° 57.36       | 91             | 104                  |
| 118         | AN01-05            | 2005-10-13     | 06:31          | 59° 59.38        | 091° 58.13       | 103            | 115                  |
| 119         | 25                 | 2005-10-13     | 18:58          | 59° 02.46        | 094° 02.46       | 45             | 55                   |
| 120         | 26                 | 2005-10-16     | 02:24          | 60° 26.79        | 089° 22.29       | 133            | 141                  |
| 121         | 26                 | 2005-10-16     | 04:00          | 60° 26.67        | 089° 22.00       | 129            | 141                  |
| 122         | 27                 | 2005-10-16     | 14:08          | 61° 03.96        | 086° 10.89       | 229            | 242                  |
| 123         | 27                 | 2005-10-16     | 16:43          | 61° 02.58        | 086° 11.24       | 229            | 242                  |
| 124         | 27                 | 2005-10-16     | 18:50          | 61° 02.82        | 086° 12.39       | 229            | 244                  |
| 125         | HS-17              | 2005-10-18     | 19:20          | 61° 06.58        | 069° 54.33       | 150            | 165                  |
| 126         | HS-18              | 2005-10-21     | 21:06          | 60° 23.59        | 064° 54.55       | 55             | 65                   |

**APPENDIX 3. SCAMP cast locations, sampling times, water depths and corresponding station numbers during the 2005 ArcticNet scientific expedition**

3A. SCAMP logbook for Leg 1 (expedition 0501)

3B. SCAMP logbook for Leg 2 (expedition 0502)

### APPENDIX 3.A. Logbook of SCAMP profiles during ArcticNet Leg 1 (page 1:2)

| STATION                | DNA-02           | DNA-15           | 4   | 6                    | CA05-05                 |
|------------------------|------------------|------------------|---|----------------------|-------------------------|
| LOCALISATION           |                  |                  |   |                      |                         |
| Lat.                   | Baffin Bay       | Baffin Bay       | Baffin Bay  | Victoria Strait      | Beaufort Sea            |
| Long.                  | 78.2944751       | 77.5631172       | 74.2654163  | 69.2080629           | 71.1406                 |
|                        | -74.4666410      | -75.6357623      | -91.1614663   | -100.7248504         | -127.31812              |
| DEPARTURE              |                  |                  |   |                      |                         |
| date (TU)              | 2005-08-19       | 2005-08-20       | 2005-08-24  | 2005-08-27           | 2005-09-02              |
| time (TU)              | 21:00            | 17:00            | 13:30   | 13:00                | 21:30                   |
| RETURN                 |                  |                  |   |                      |                         |
| date (TU)              |                  |                  |   |                      |                         |
| time (TU)              | 23:15            | 19:15            | 16:00   | 15:30                | 23:55                   |
| CONDITIONS             |                  |                  |   |                      |                         |
| Wind Dir               | 350°             | 0°               | 290°  | 120°                 | 205°                    |
| Wind speed             | 6 m/s            | 8 m/s            | 6 m/s   | 7 m/s and increasing | 5 m/s                   |
| Pa                     | 1005.45          | 100.86           | 1001.5  | 1007.89              | 1005.07                 |
| Rel. Hum.              | 80%              | 74%              | 97%   | 99%                  | 94%                     |
| air temp. (°C)         | 0.8              | 1.6              | 1.2°  | 1.4°                 | 3.3°                    |
| water temp. (°C) (SST) | -0.2°            | 0.15°            | 0.89°   | 1.02°                | 0.5°                    |
| Sea state              | Beaufort 2       | 3 ou 4           | 3   | 4                    | 3                       |
| Ice (1/10)             |                  | 3                | 0   | 1 small piece        | 2                       |
| clouds (1/8)           | 8                |                  | Heavy fog   | fog                  | 1                       |
| CTD casts #            | 28               | 39               | 58, 59, 60  | 63, 64, 65           | 89, 90, 91              |
| Water depth (m)        | 643              | 663              | 335   | 62                   | 201                     |
| SCAMP 1                | 19AUG2005_213617 | 20AUG2005_172446 | 24AUG2005_142739  | 27AUG2005_132040     | 02SEP2005_214048        |
| SCAMP 2                | 19AUG2005_220438 | 20AUG2005_175600 | 24AUG2005_145000  | 27AUG2005_133407     | 02SEP2005_220021        |
| SCAMP 3                | 19AUG2005_223337 |                  | 24AUG2005_151244  | 27AUG2005_135735     | 02SEP2005_222022        |
| SCAMP 4                |                  |                  |   | 27AUG2005_140825     | 02SEP2005_223752        |
| SCAMP 5                |                  |                  |   | 27AUG2005_142042     | 02SEP2005_225851        |
| SCAMP 6                |                  |                  |   | 27AUG2005_143135     | 02SEP2005_231924        |
| SCAMP 7                |                  |                  |   | 27AUG2005_144216     |                         |
| MISCELLANEOUS          |                  |                  |   |                      |                         |
| Target depth (m)       | 100              | 100              | 100   | 30                   | 70                      |
| Max # scans            | 110000           | 110000           | 110000  | 36000                | 76000                   |
| Chrono (min)           | 15               | 12 or 15         | 15  | 5                    | 12                      |
| Start of GPS (UTC)     | 21:18:25         | 17:03:07         | 13:37:02  | 13:12:25             | missing                 |
| COMMENTS               |                  |                  | Optimum configuration: 3 plexiglass + 2 rings; all of this monted above the drag plate. | All ~ 10 cm/s        | Forgot to start the GPS |
| Person in charge:      | Y. Gratton       |                  |   |                      | Calm sea                |

### APPENDIX 3.A. Logbook of SCAMP profiles during ArcticNet Leg 1 (page 2:2)

| STATION                | 10                                   | CA04-05              | CA08-05  | CA18-05                | 12                             |
|------------------------|--------------------------------------|----------------------|--|------------------------|--------------------------------|
| LOCALISATION           | Beaufort Sea                         | Beaufort Sea         | Amundsen Gulf                                      | Amundsen Gulf          | Amundsen Gulf                  |
| Lat.                   | 71.5567499                           | 71.0749930           | 71.0052931   | 70.6923223             | 69.9172068                     |
| Long.                  | -140.0389374                         | -133.5912503         | -125.9148700                                       | -123.1471200           | -122.9631043                   |
| DEPARTURE              |                                      |                      |  |                        |                                |
| date (TU)              | 2005-09-05                           | 2005-09-06           | 2005-09-09   | 2005-09-12             | 2005-09-13                     |
| time (TU)              | 18:45                                | 22:45                | 14:45  | 18:30                  | 18:45                          |
| RETURN                 |                                      |                      |  |                        |                                |
| date (TU)              |                                      | 2005-09-07           |  |                        |                                |
| time (TU)              | 22:15                                | 1:45                 | 17h00  | 20:15                  | 21:00                          |
| CONDITIONS             |                                      |                      |  |                        |                                |
| Wind Dir               | 230°                                 | 070°                 | 310°   | 290°                   | 080°                           |
| Wind speed             | 3 m/s                                | 7 m/s and increasing | 8 m/s  | 2 m/s                  | 1 m/s                          |
| Pa                     | 1009.62                              | 30.05 in             | 1030   | 1029                   | 1024.8                         |
| Rel. Hum.              | 92%                                  | 89%                  | 99%  | 69%                    | 77%                            |
| air temp. (°C)         | 0.5                                  | -0.9°                | -0.2°  | 1.7°                   | 2.9°                           |
| water temp. (°C) (SST) | -0.2°                                | -0.33°               | 0.60   | 3.3°                   | 4.33°                          |
| Sea state              | 2                                    |                      | 3-4  | 2                      | 4                              |
| Ice (1/10)             | 6 with a pond                        | 4                    | 2  | 0                      | 0                              |
| clouds (1/8)           | 3                                    | 6                    | 8  | 2                      | 8                              |
| CTD casts #            | 97, 98, 99                           | 100, 101, 102        | 109, 110, 111                                      | 129, 130, 131          | 132, 133, 134                  |
| Water depth (m)        | 2500                                 | 250                  | 400  | 540                    | 204                            |
| SCAMP 1                | 05SEP2005_191656                     | 06SEP2005_225640     | 09SEP2005_153142                                   | 12SEP2005_185837       | 13SEP2005_190230               |
| SCAMP 2                | 05SEP2005_193659                     | 06SEP2005_232605     | 09SEP2005_160453                                   | 12SEP2005_191613       | 13SEP2005_191826               |
| SCAMP 3                | 05SEP2005_195529                     | 06SEP2005_234721     |  | 12SEP2005_193146       | 13SEP2005_193701               |
| SCAMP 4                | 05SEP2005_201358                     | 07SEP2005_005045     |  | 13SEP2005_194529       | 13SEP2005_195413               |
| SCAMP 5                | 05SEP2005_203249                     |                      |  |                        | 13SEP2005_201022               |
| SCAMP 6                | 05SEP2005_205004                     |                      |  |                        | 13SEP2005_202631               |
| SCAMP 7                | 05SEP2005_212657                     |                      |  |                        |                                |
| MISCELLANEOUS          |                                      |                      |  |                        |                                |
| Target depth (m)       | 70                                   | 70                   | 80   | 60                     | 60                             |
| Max # scans            | 7600                                 | 7600                 | 102000   | 63000                  | 63000                          |
| Chrono (min)           | 12                                   | 12                   | 15   | 10                     | 10                             |
| Start of GPS (UTC)     | 19:56:20                             | 22:08:31             | 14:46:07   | 18:55:36               | 18:24:31                       |
| COMMENTS               | The speed was faster than 12-15 cm/s |                      | The winch broke. Had to manually wind up the SCAMP | Speed stable at 15cm/s | Still a stable speed at 15cm/s |
| Person in charge:      | Y. Gratton                           |                      |  |                        |                                |

### APPENDIX 3.B. Logbook of SCAMP profiles during ArcticNet Leg 2 (page 1:2)

| STATION                | 13 d             | 15e                 | 16e              | 17c              | 19 e                     |
|------------------------|------------------|---------------------|------------------|------------------|--------------------------|
| LOCALISATION           | Hudson Strait    | Southern Foxe Basin | idem             |                  | North-eastern Hudson Bay |
| Lat.                   | 60.8485          | 64.0251017          | 62.6395959       | 62.1334094       | 58.4187162               |
| Long.                  | -64.7079         | -79.3192614         | -80.7531382      | -78.8024051      | -78.3807565              |
| DEPARTURE              |                  |                     |                  |                  |                          |
| date (TU)              | 2005-09-22       | 2005-09-25          | 2005-09-26       | 2005-09-27       | 2005-09-29               |
| time (TU)              | 20:00            | 18:00               | 15:00            | 18:00            | 16:00                    |
| RETURN                 |                  |                     |                  |                  |                          |
| date (TU)              |                  |                     |                  |                  |                          |
| time (TU)              | 22:00            | 20:00               | 16:30            | 20:15            | 18:00                    |
| CONDITIONS             |                  |                     |                  |                  |                          |
| Wind Dir               | 80               | 70                  | 65               | 105              | North                    |
| Wind speed             | 20 nds           | 20-25nds            | 10nds            | 10nds            | 20nds                    |
| Pa                     | 1009             | 1002                | 1005             | 1011             | 993                      |
| Rel. Hum.              | 88%              | 99%                 | 76%              | 86%              | 89%                      |
| air temp. (°C)         | 3.2              | 1.3                 | 3.2              | 7                | 3.9                      |
| water temp. (°C) (SST) | 2.1              | 1.8                 | 5                | 6.8              | 8.5                      |
| Sea state              | Beaufort 4       | Beaufort 6          | Beaufort 2-3     | 1                | 4                        |
| Ice (1/10)             | 0                | 0                   | 0                | 0                | 0                        |
| clouds (1/8)           | 8                | 8 brouillard        | 7                | 4                | 5                        |
| CTD casts #            | 8                | 24                  | 37               | 45-46            | 57-58                    |
| Water depth (m)        | 377              | 350                 | 185              | 135              | 90                       |
| SCAMP 1                | 22SEP2005_203212 | 25sep2005_180308    | 26sep2005_151339 | 27sep2005_180758 | 29sep2005_160543         |
| SCAMP 2                | 22SEP2005_220438 | 25sep2005_182037    | 26sep2005_153410 | 27sep2005_183425 | 29sep2005_162503         |
| SCAMP 3                | 22SEP2005_211600 | 25sep2005_183759    | 26sep2005_155420 | 27sep2005_190327 | 29sep2005_164243         |
| SCAMP 4                |                  | 25sep2005_185530    |                  |                  | 29sep2005_165938         |
| SCAMP 5                |                  |                     |                  |                  |                          |
| MISCELLANEOUS          |                  |                     |                  |                  |                          |
| Target depth (m)       | 100              | 80                  | 70               | 70               | 70                       |
| Max # scans            | 100000           | 80000               | 70000            | 70000            | 70000                    |
| Chrono (min)           | 8.5              | 6.3                 | 10               | 14               | 8 to 9                   |
| Start of GPS (UTC)     | 20:19:00         |                     |                  |                  |                          |
| Person in charge:      | S. Caplanne      |                     |                  |                  |                          |

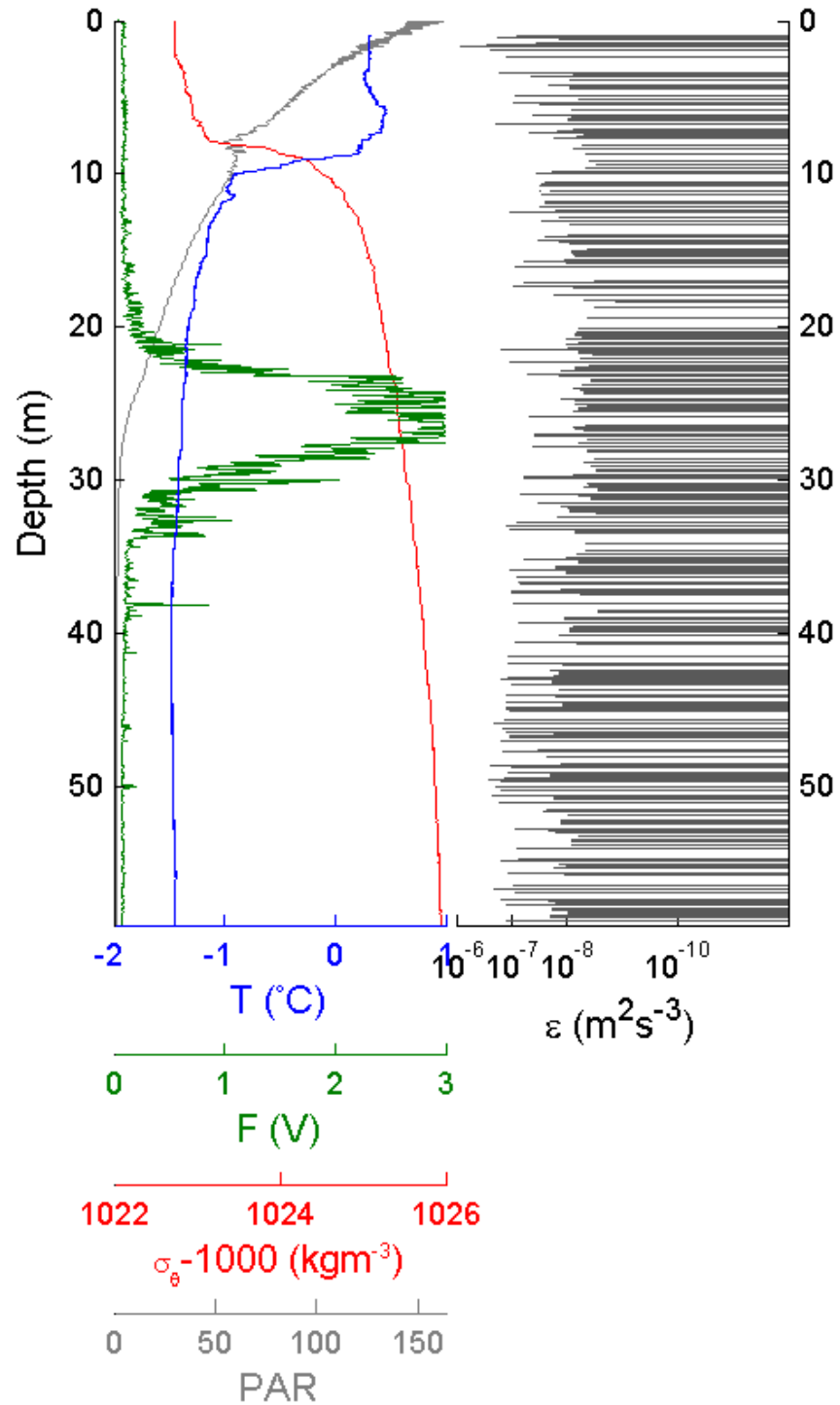


### APPENDIX 3.B. Logbook of SCAMP profiles during ArcticNet Leg 2 (page 2:2)

| STATION                | Kuujuarapik<br>A0305 | 21 e             | 22                 | AN02-05                     | AN01-05          | 27                 |
|------------------------|----------------------|------------------|--------------------|-----------------------------|------------------|--------------------|
| LOCALISATION           | Kuujuarapik          | James Bay        | Central Hudson Bay | South-western<br>Hudson Bay | Mooring station  | Central Hudson Bay |
| Lat.                   | 55.4090577           | 55.4121047       | 58.4048277         | 58.7763512                  | 59.9726164       | 61.0420507         |
| Long.                  | -77.8983451          | -77.8973580      | -83.2867689        | -91.5395988                 | -91.9354821      | -86.1987306        |
| DEPARTURE              |                      |                  |                    |                             |                  |                    |
| date (TU)              | 2005-10-01           | 2005-10-02       | 2005-10-06         | 2005-10-12                  | 2005-10-13       | 2005-10-16         |
| time (TU)              | 12:15                | 17:45            | 17:50              | 13:30                       | 3:30             | 18:00              |
| RETURN                 |                      |                  |                    |                             |                  |                    |
| date (TU)              |                      |                  |                    |                             |                  |                    |
| time (TU)              | 14:30                | 19:30            | 20:20              | 15:30                       | 5:00             | 20:00              |
| CONDITIONS             |                      |                  |                    |                             |                  |                    |
| Wind Dir               | 150                  | 100              | 45                 | 320                         | 170              | 340                |
| Wind speed             | 10nds                | 15nds            | 10nds              | 15nds                       | 7nds             | 15nds              |
| Pa                     | 998                  | 1012             | 1024               | 1010                        | 1016             | 1010               |
| Rel. Hum.              | 85%                  | 87%              | 60%                | 91%                         | 84               | 71                 |
| air temp. (°C)         | 9                    | 7.2              | 0.8                | 5.3                         | 2.5              | -1.3               |
| water temp. (°C) (SST) | 9                    | 8                | 4.6                | 4.3                         | 4.6              | 4.2                |
| Sea state              | 1                    | 3                | 3 swell            | 2                           | 1                | 0                  |
| Ice (1/10)             | 0                    | 0                | 0                  | 0                           | 0                | 0                  |
| clouds (1/8)           | 4                    | 100              | 8                  | 3                           | 0                | 5                  |
| CTD casts #            | 64                   | 68-69            | 81                 | 114                         |                  | 124                |
| Water depth (m)        | 70-80                | 90               | 190                | 80                          | 100              | 240                |
| SCAMP 1                | 01oct2005_124839     | 02oct2005_175956 | 06oct2005_181606   | 12oct2005_134206            | 13oct2005_034204 | 16oct2005_181127   |
| SCAMP 2                | 01oct2005_191643     | 02oct2005_181757 | 06oct2005_184804   | 12oct2005_140302            | 13oct2005_035944 | 16oct2005_183357   |
| SCAMP 3                | 01oct2005_193121     | 02oct2005_183634 | 06oct2005_191704   | 12oct2005_141943            | 13oct2005_041546 | 16oct2005_185353   |
| SCAMP 4                | 01oct2005_194541     | 02oct2005_185736 |                    | 12oct2005_143759            |                  | 16oct2005_191549   |
| SCAMP 5                |                      |                  |                    | 12oct2005_145546            |                  |                    |
| MISCELLANEOUS          |                      |                  |                    |                             |                  |                    |
| Target depth (m)       | 40                   | 60               | 100                | 60                          | 80               | 90                 |
| Max # scans            | 80000                | 60000            | 100000             | 60000                       | 80000            | 90 000             |
| Chrono (min)           | 6 to 7               | 10               | 16                 | 10                          | 12               | 15                 |
| Start of GPS (UTC)     |                      |                  |                    |                             |                  |                    |
| Person in charge:      | S. Caplanne          |                  |                    |                             |                  |                    |

#### **APPENDIX 4.** Example of SCAMP data

**APPENDIX 4.** SCAMP data profile. The data set is from profile #142739 recorded on station 4 during leg 0501. The blue line represented the temperature ( $^{\circ}\text{C}$ ), the green one is fluorescence (volts), the red one is density ( $\text{kg m}^{-3}$ ), and finally the black one is the turbulent kinetic energy dissipation ( $\text{m}^2 \text{s}^{-3}$ ).

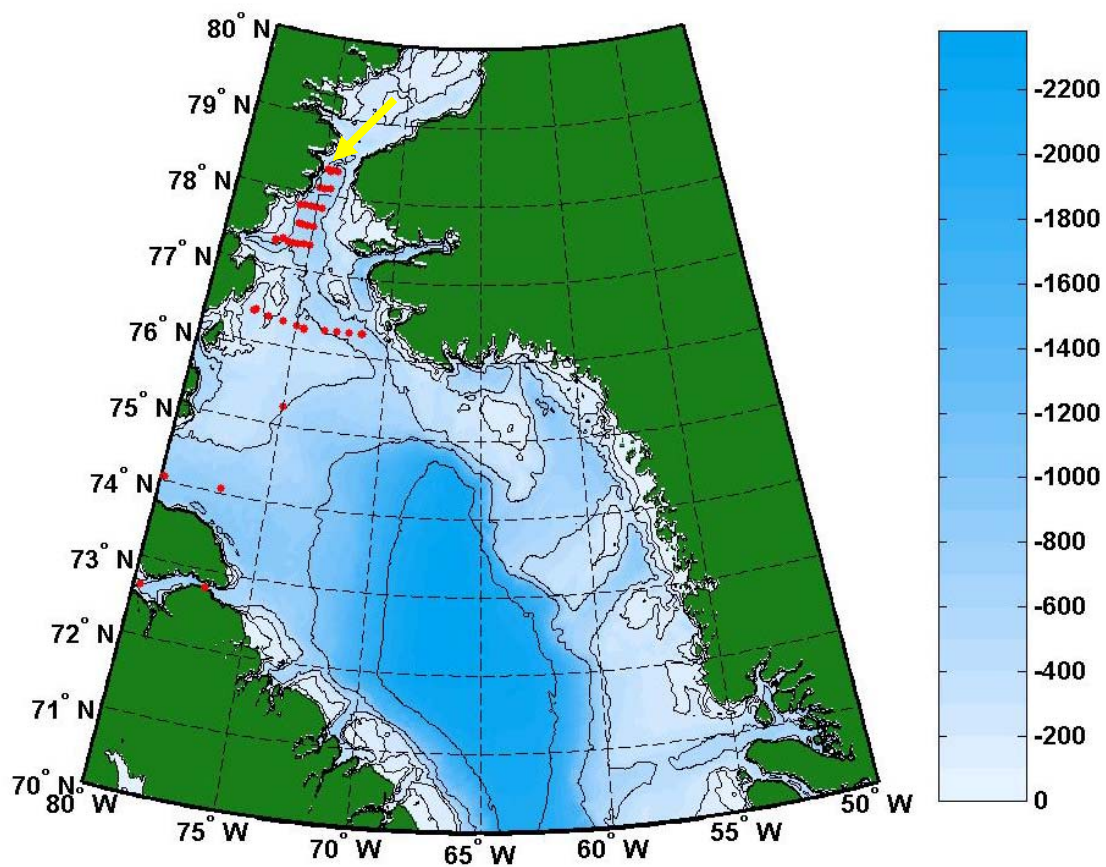




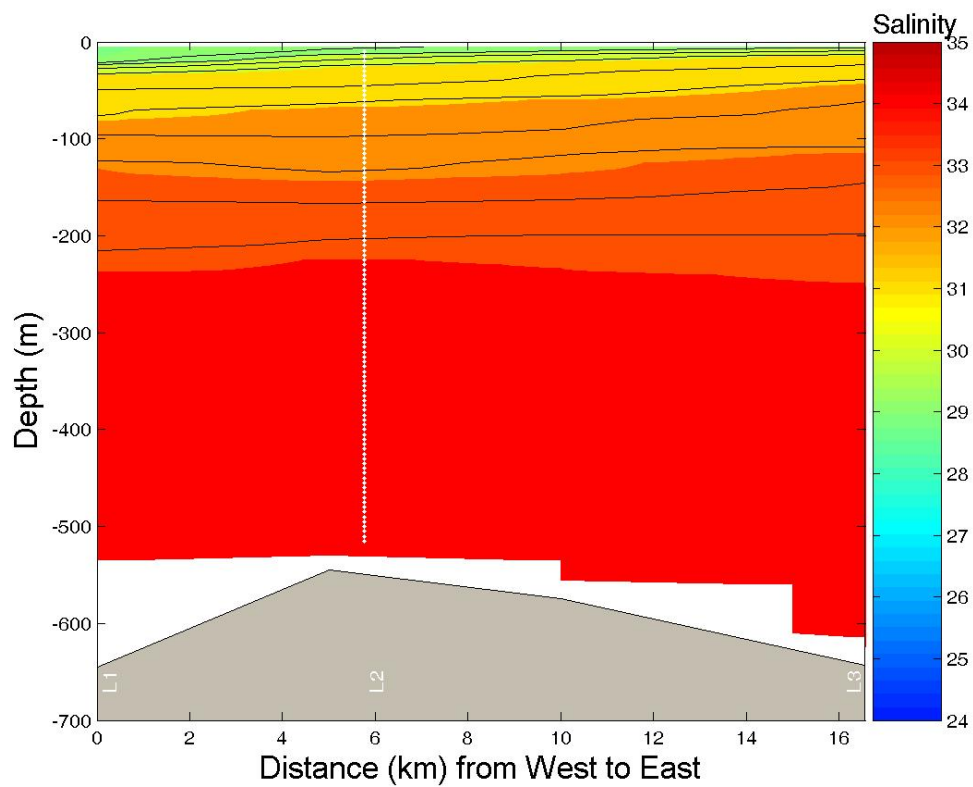
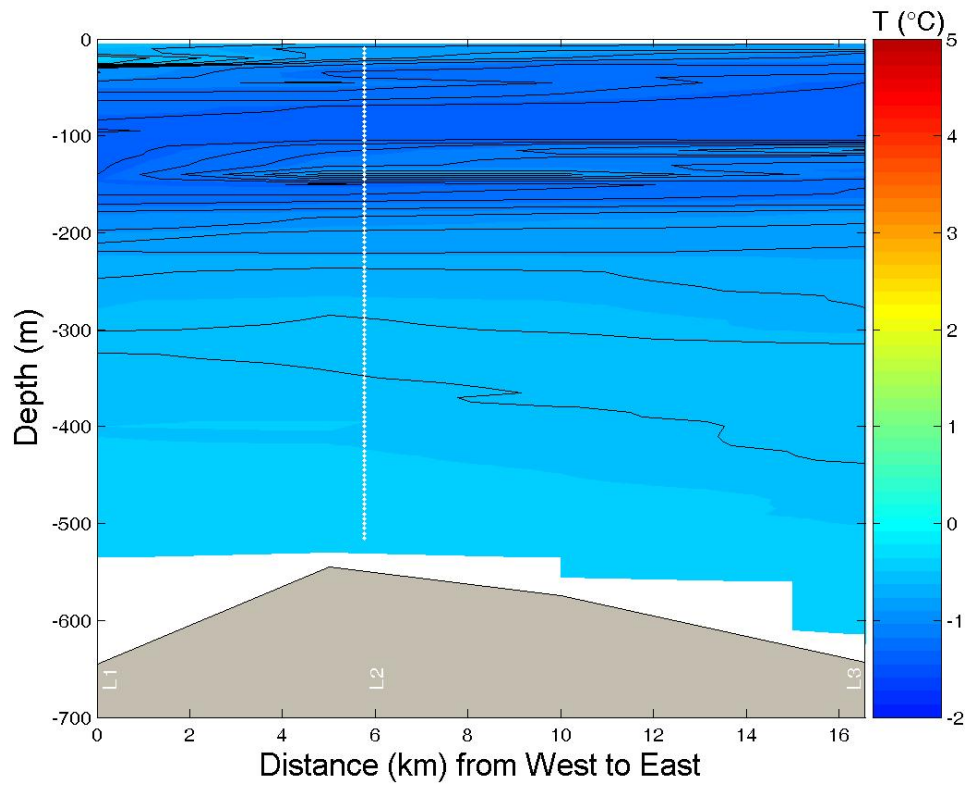
**APPENDIX 5.** Sections of salinity and potential temperature for ArcticNet expedition 0501 (Leg 1).

The same color scale is used for all sections. For the West to East sections, Canada is on the left and Greenland is on the right.

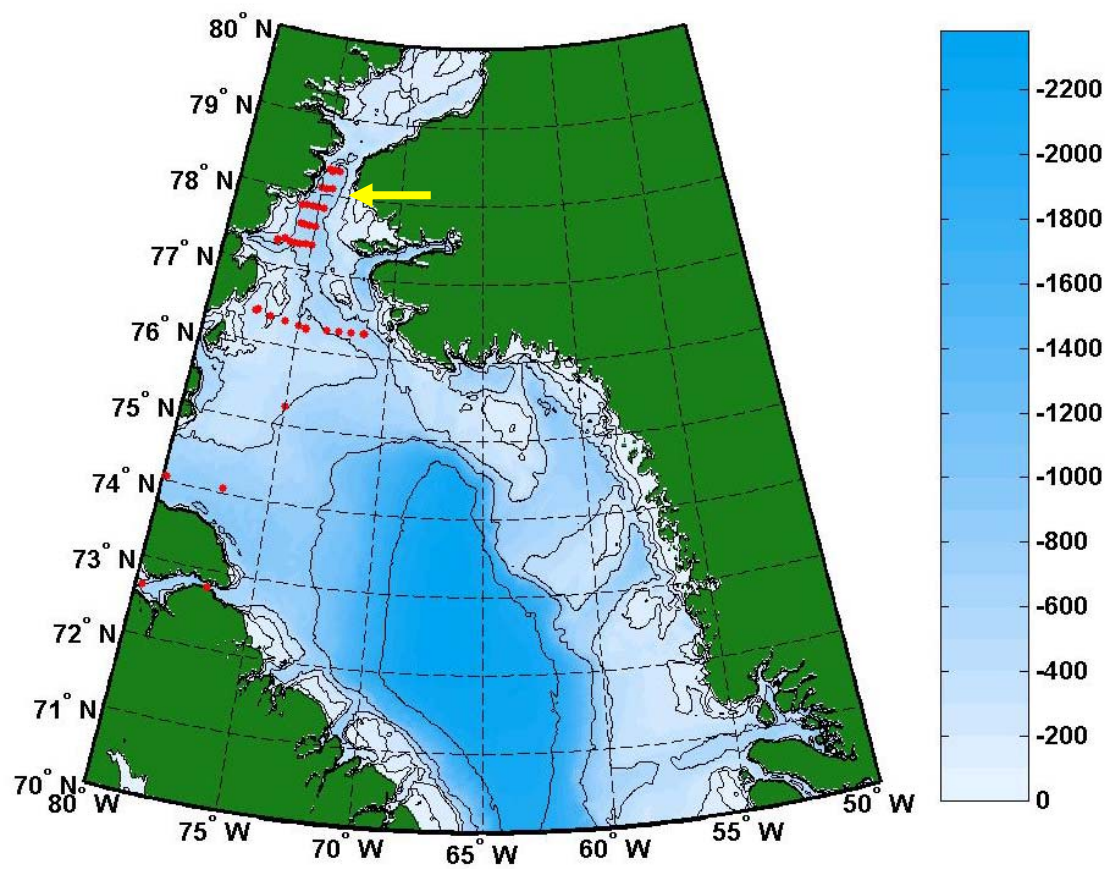
- 5.1. Section L1 in northern Baffin Bay
- 5.2. Section L2 in northern Baffin Bay
- 5.3. Section L3 in northern Baffin Bay
- 5.4. Section L4 in northern Baffin Bay
- 5.5. Section L5 in northern Baffin Bay
- 5.6. Section NOW S5 in northern Baffin Bay
- 5.7. Section Beaufort S400 south in Beaufort Sea
- 5.8. Section Beaufort S400 north in Beaufort Sea



**APPENDIX 5.1.A.** The yellow arrow identifies the location of section L1 in northern Baffin Bay. This section is contoured on the next page.

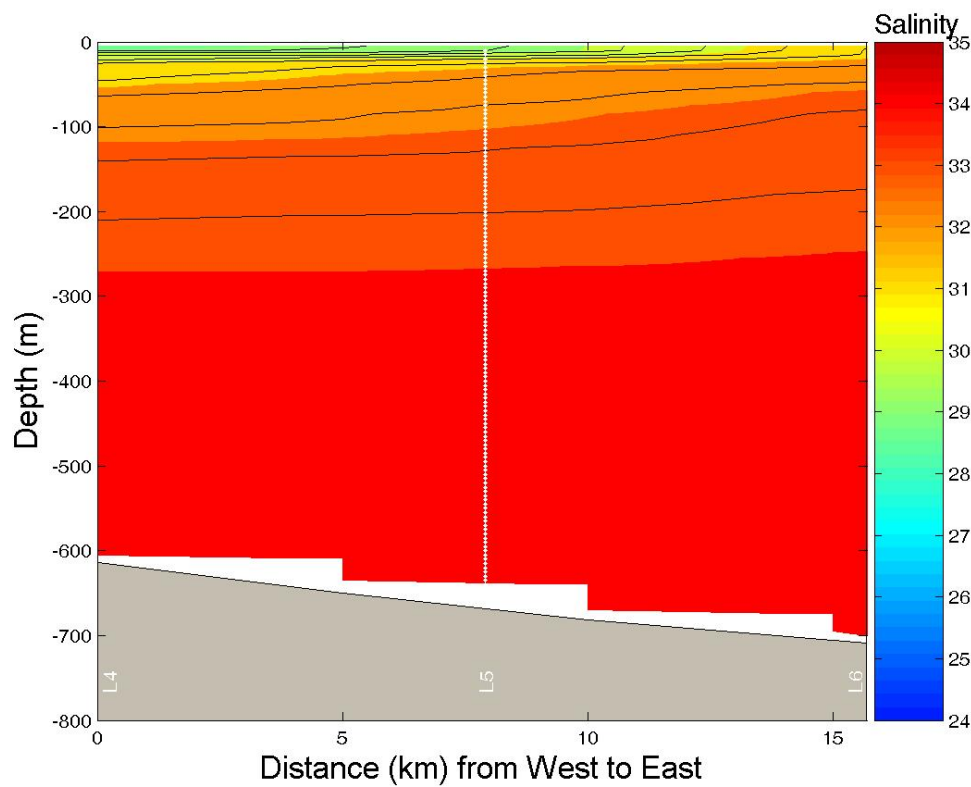
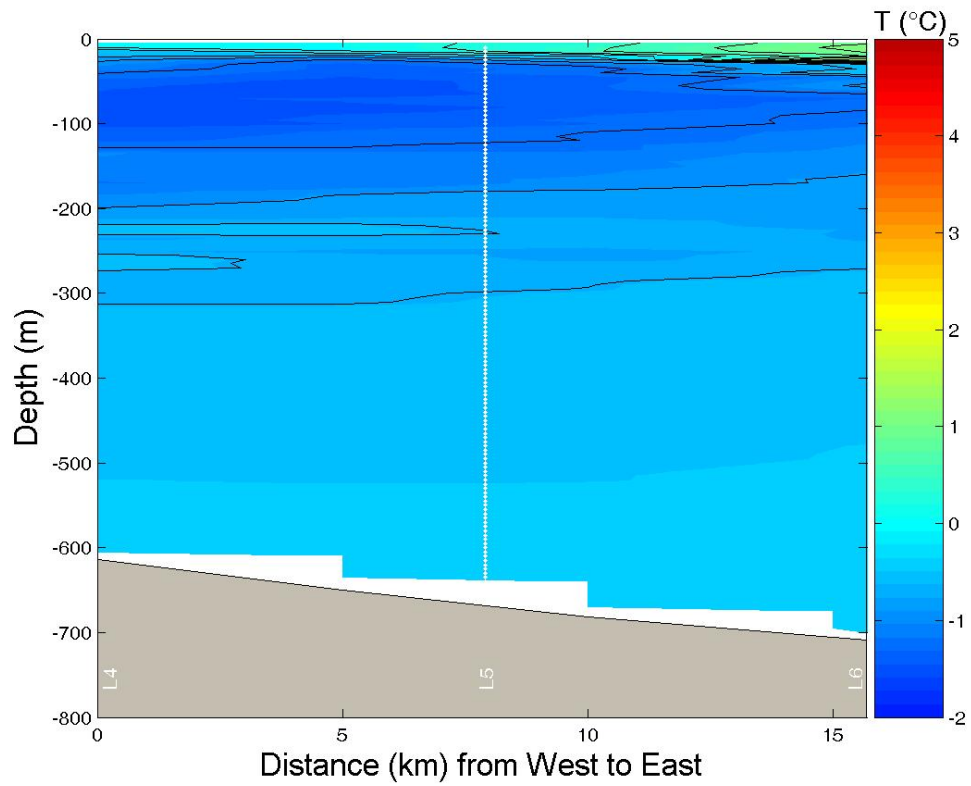


**APPENDIX 5.1.B.** Salinity and potential temperature along section L1. The western sites are on the left and the eastern sites are on the right.

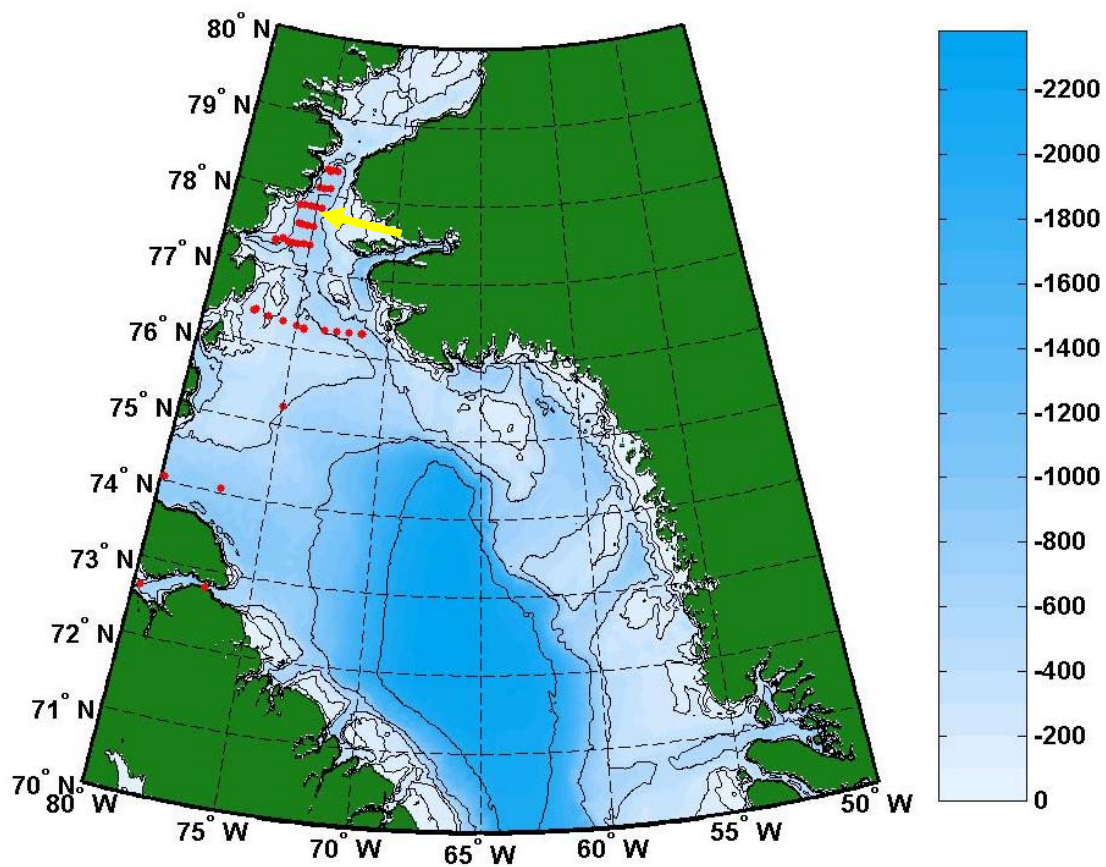


**APPENDIX 5.2.A.** The yellow arrow identifies the location of section L2 in northern Baffin Bay. This section is contoured on the next page.

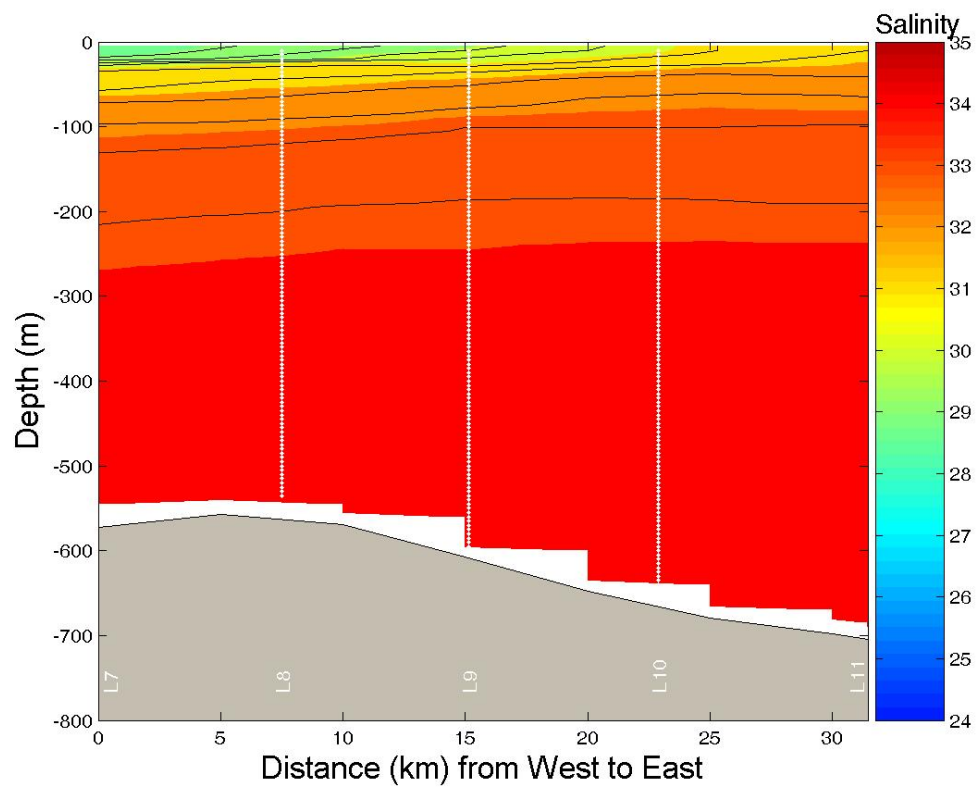
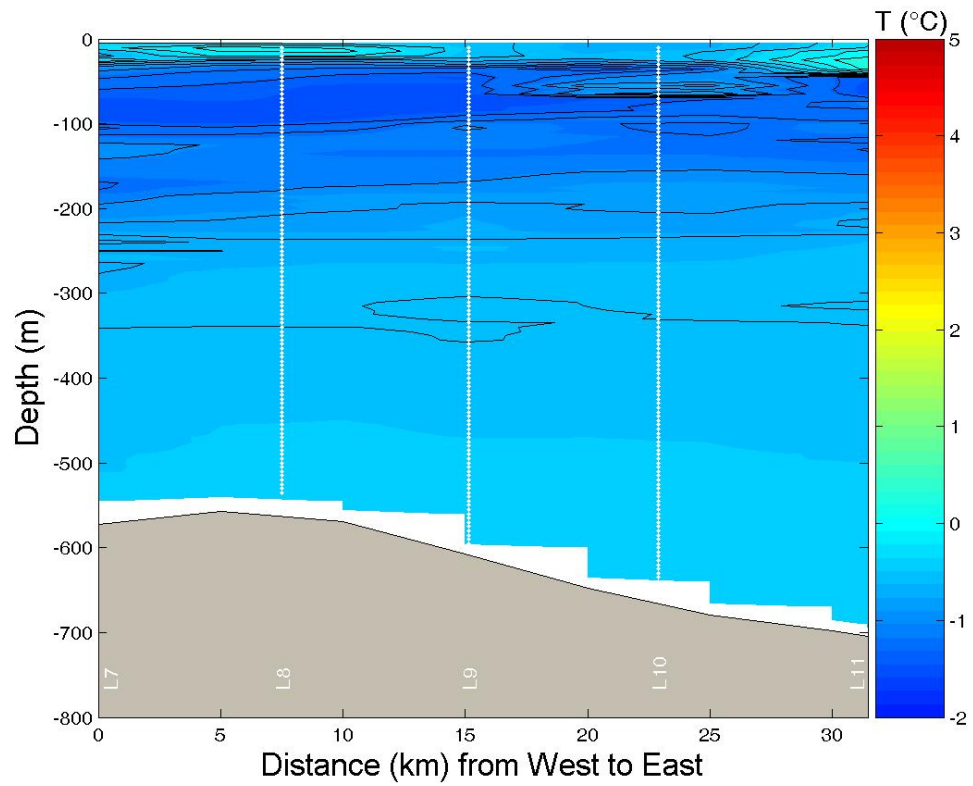




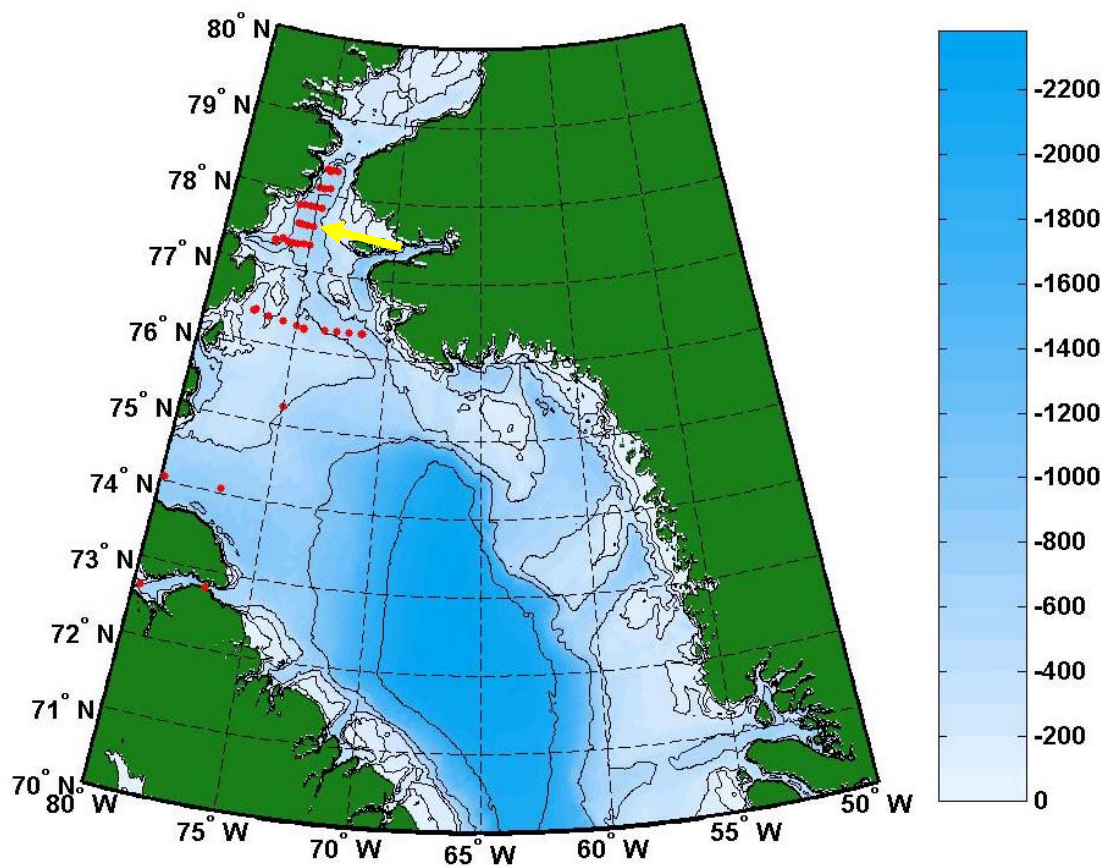
**APPENDIX 5.2.B.** Salinity and potential temperature along section L2. The western sites are on the left and the eastern sites are on the right.



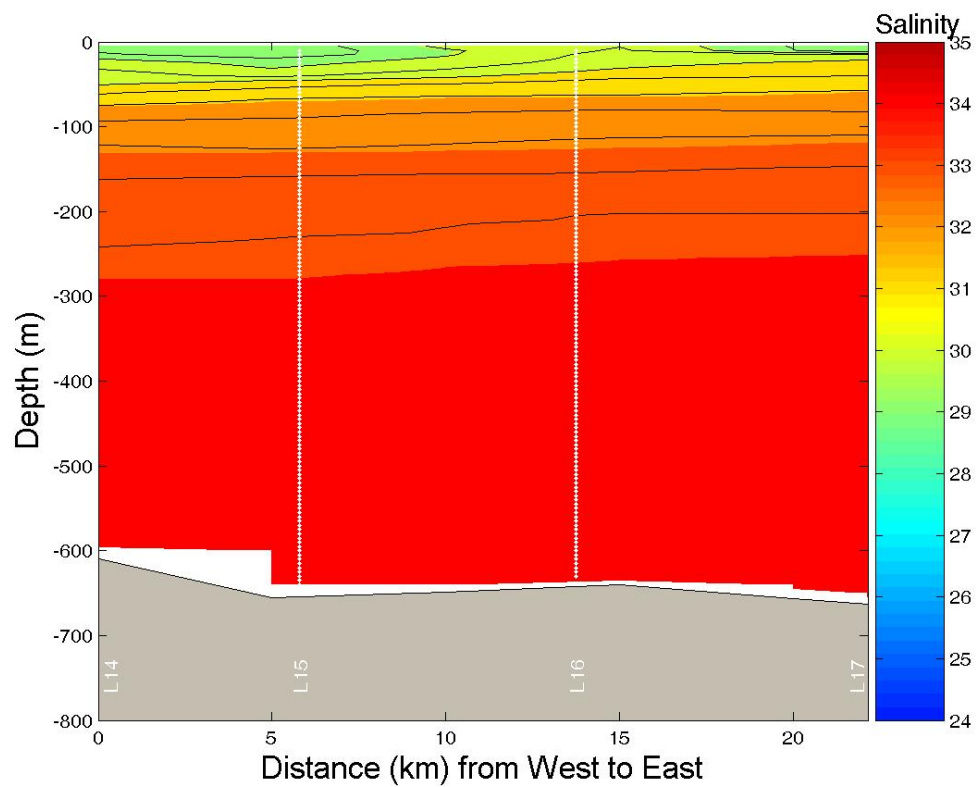
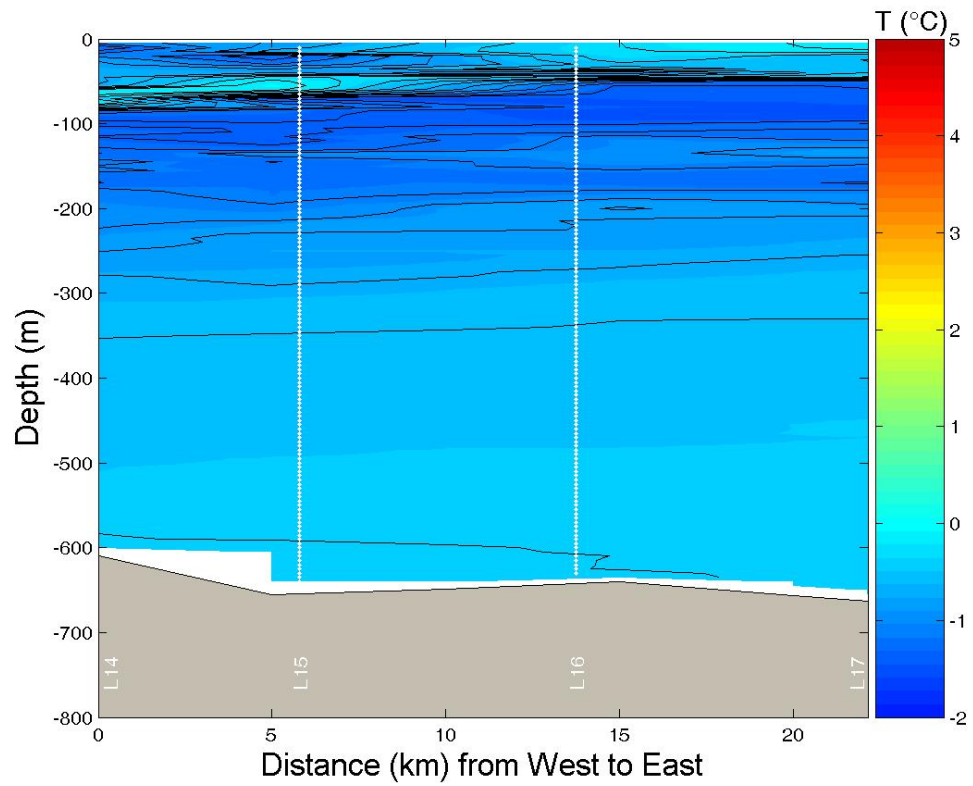
**APPENDIX 5.3.A.** The yellow arrow identifies the location of section L3 in northern Baffin Bay. This section is contoured on the next page.



**APPENDIX 5.3.B.** Salinity and potential temperature along section L3. The western sites are on the left and the eastern sites are on the right.

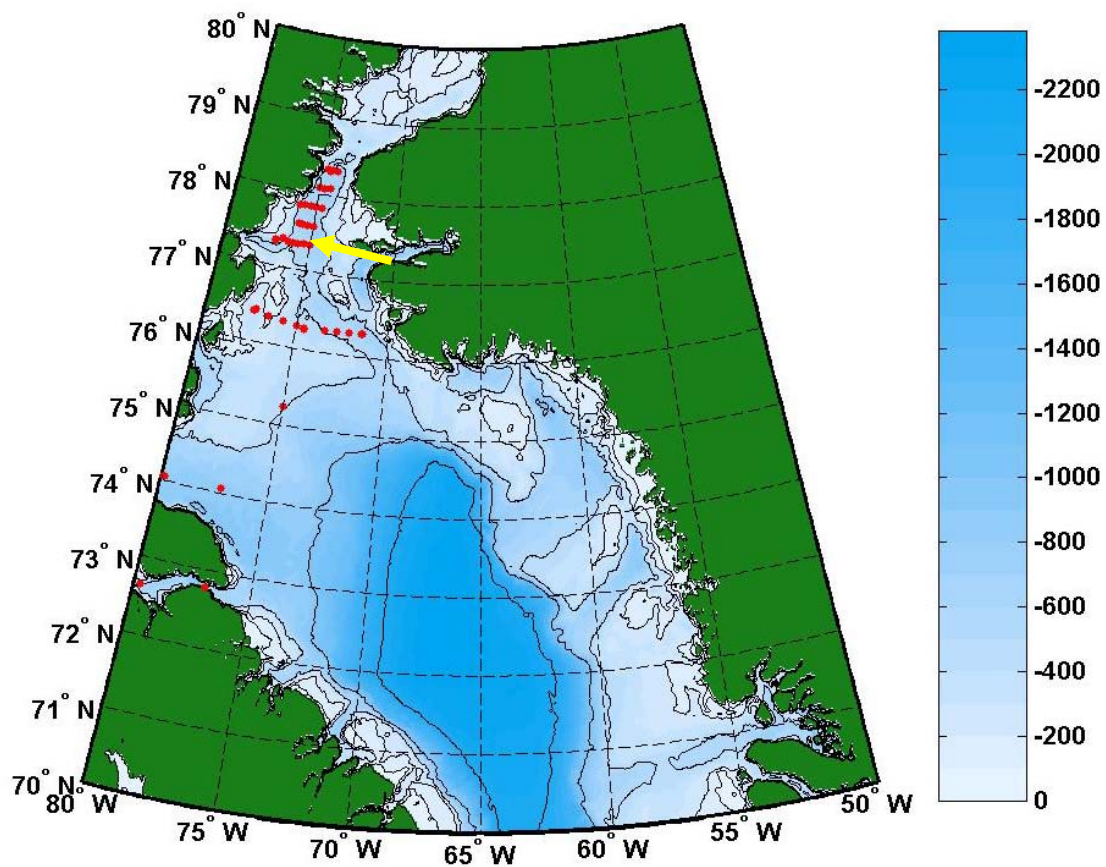


**APPENDIX 5.4.A.** Location of section L4 in northern Baffin Bay. The yellow arrow identifies the section contoured on the next page.

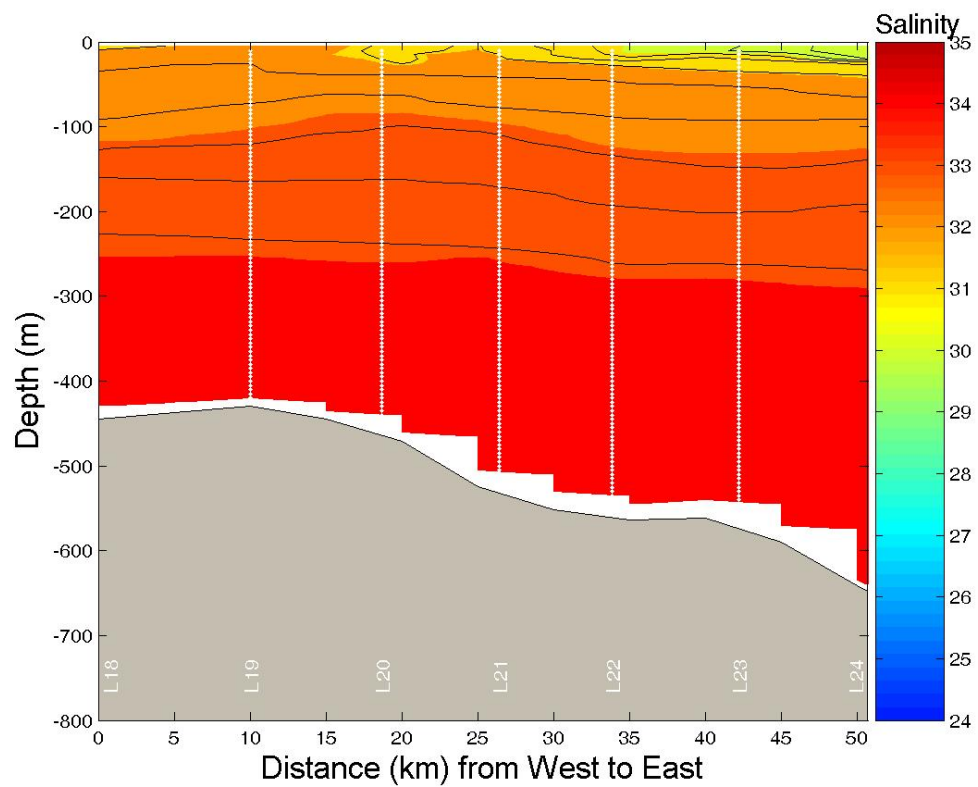
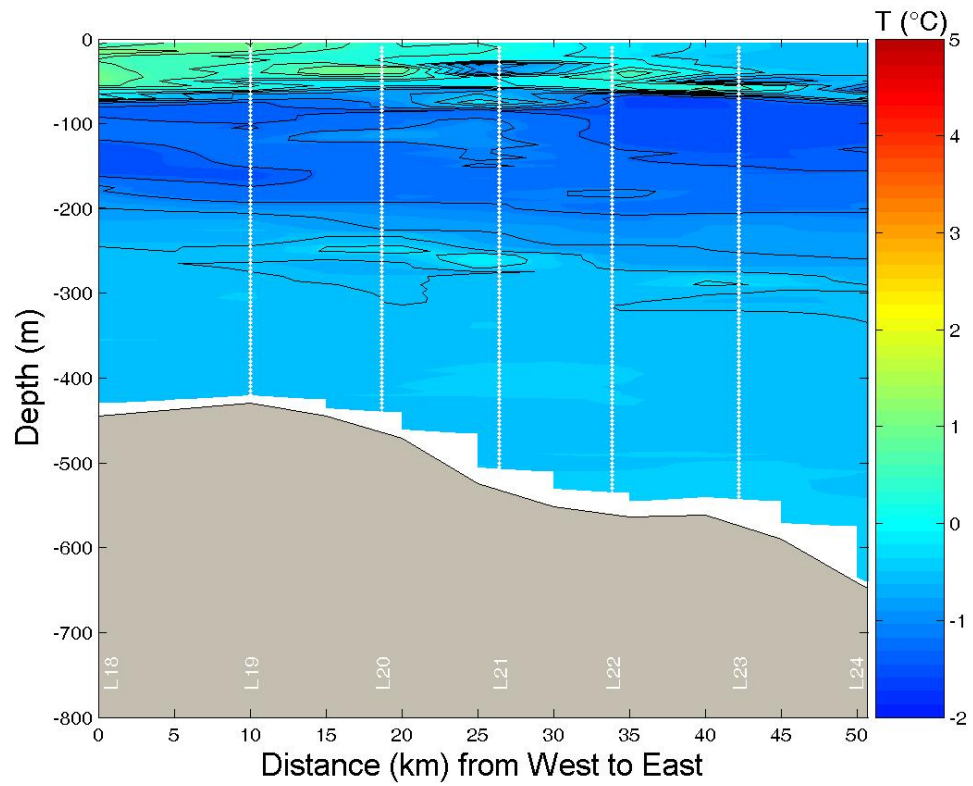


**APPENDIX 5.4.B.** Salinity and potential temperature along section L4. The western sites are on the left and the eastern sites are on the right.

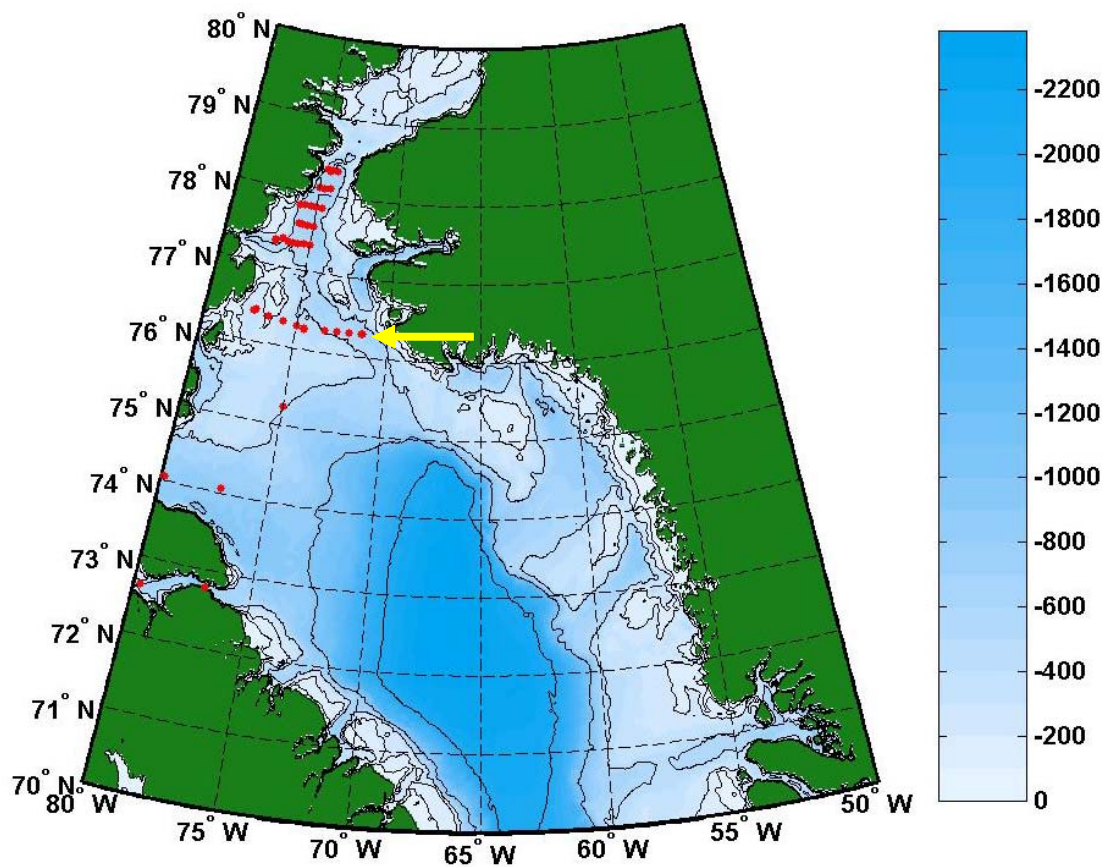




**APPENDIX 5.5.A.** The yellow arrow identifies the location of section L5 in northern Baffin Bay. This section is contoured on the next page.

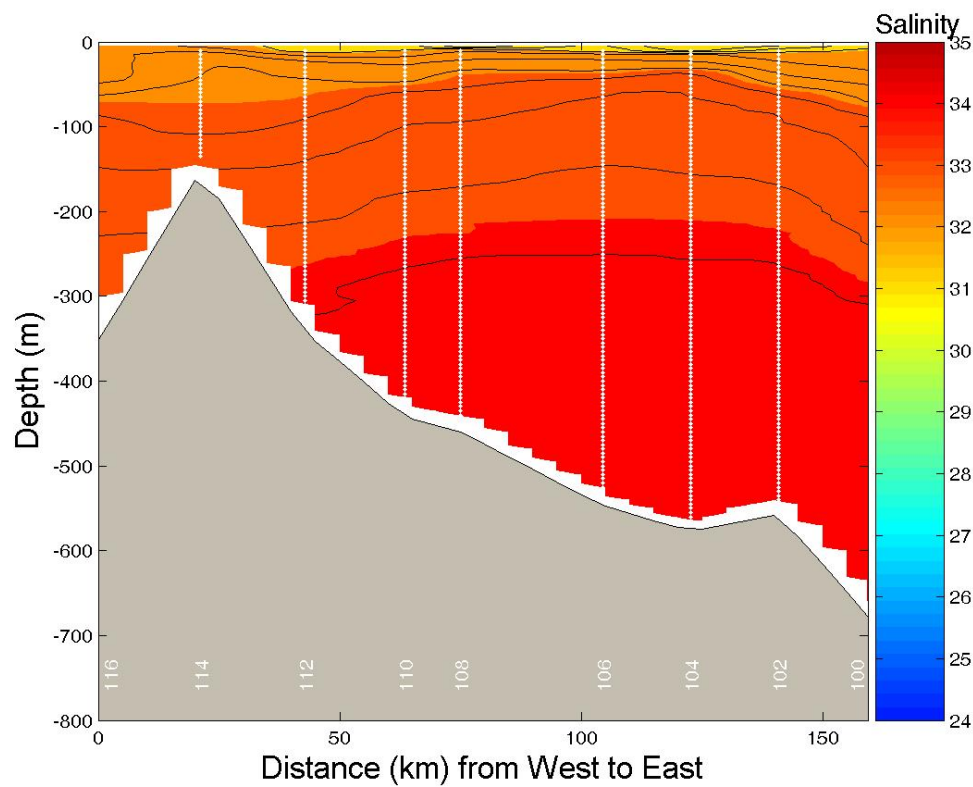
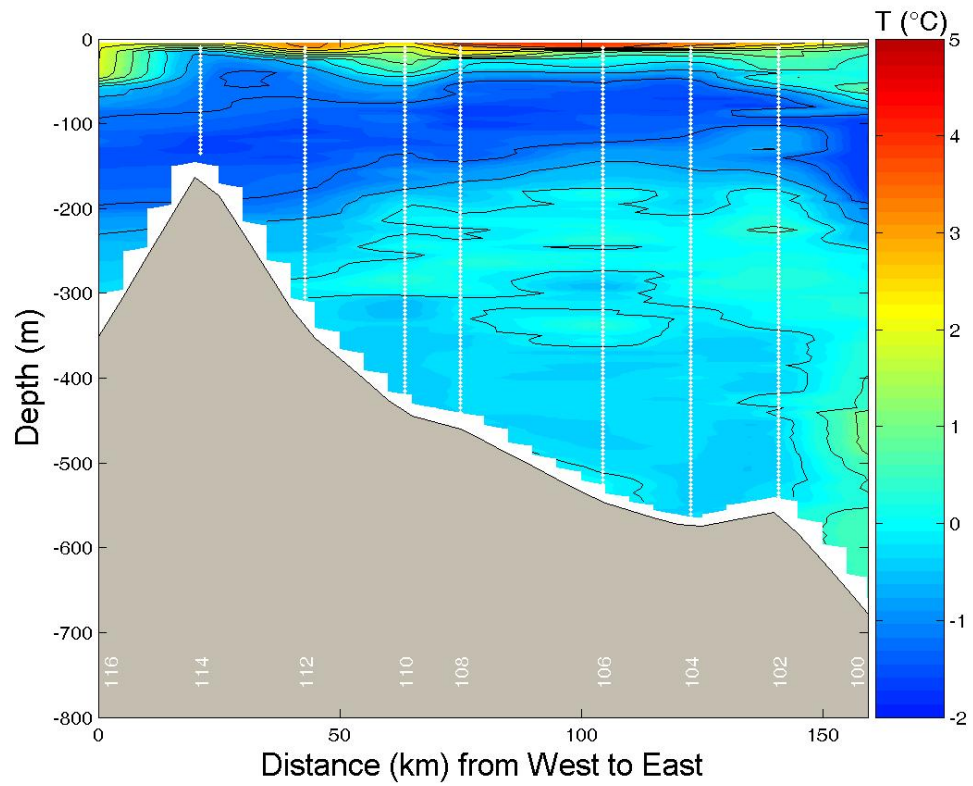


**APPENDIX 5.5.B.** Salinity and potential temperature along section L5. The western sites are on the left and the eastern sites are on the right.

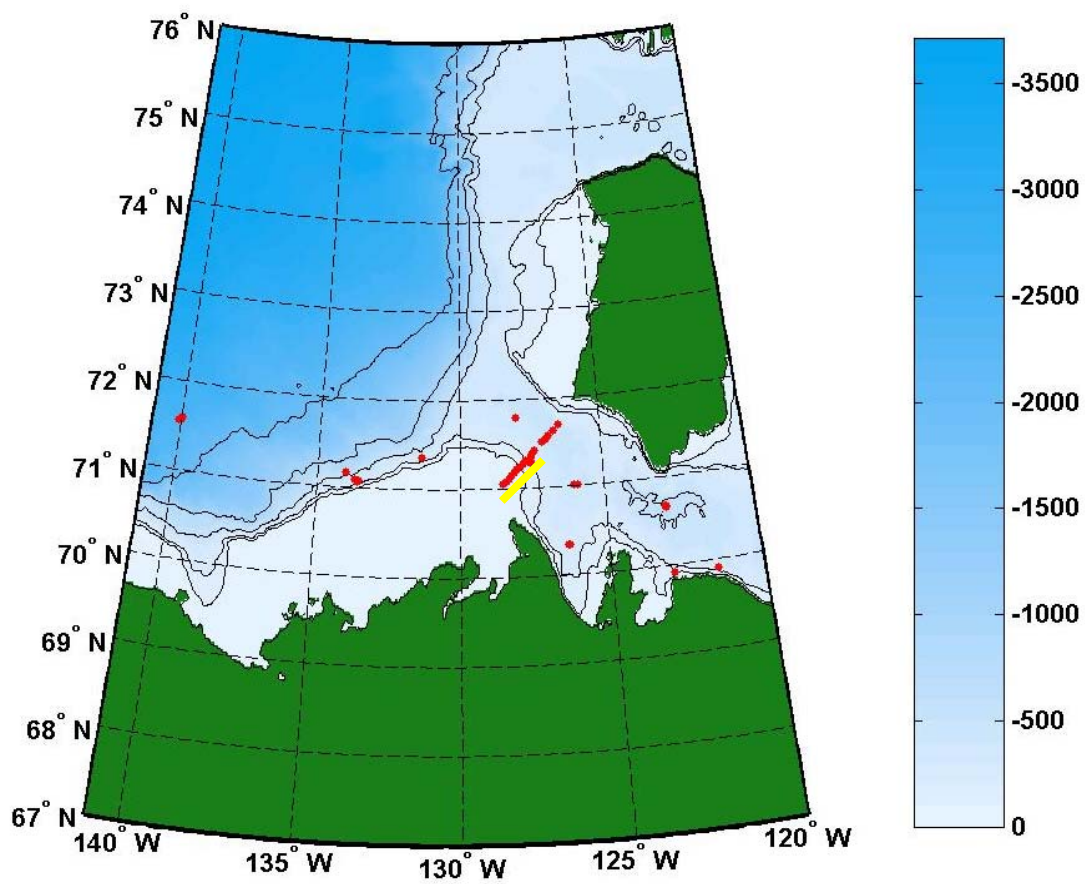


**APPENDIX 5.6.A.** The yellow arrow identifies the location of section NOW S5 in northern Baffin Bay. This section is contoured on the next page.

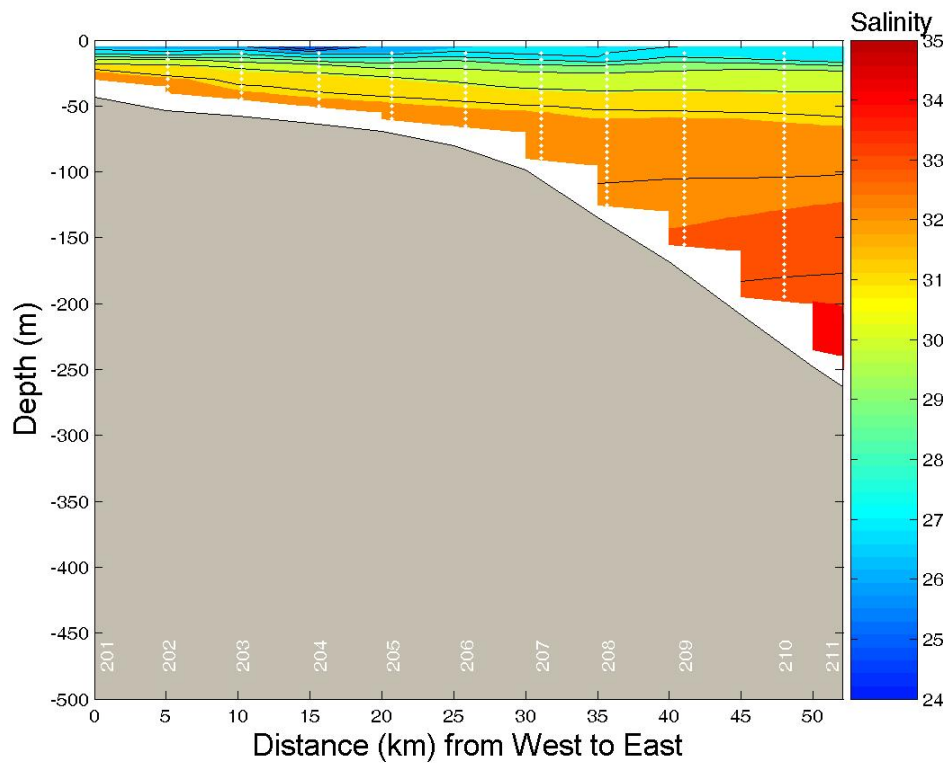
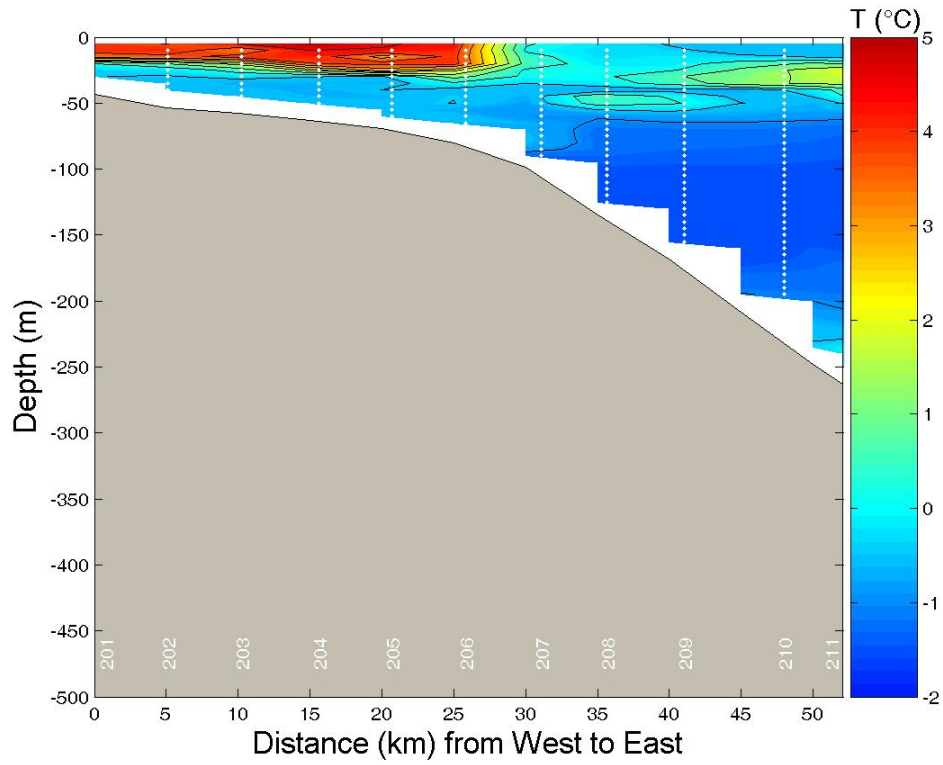




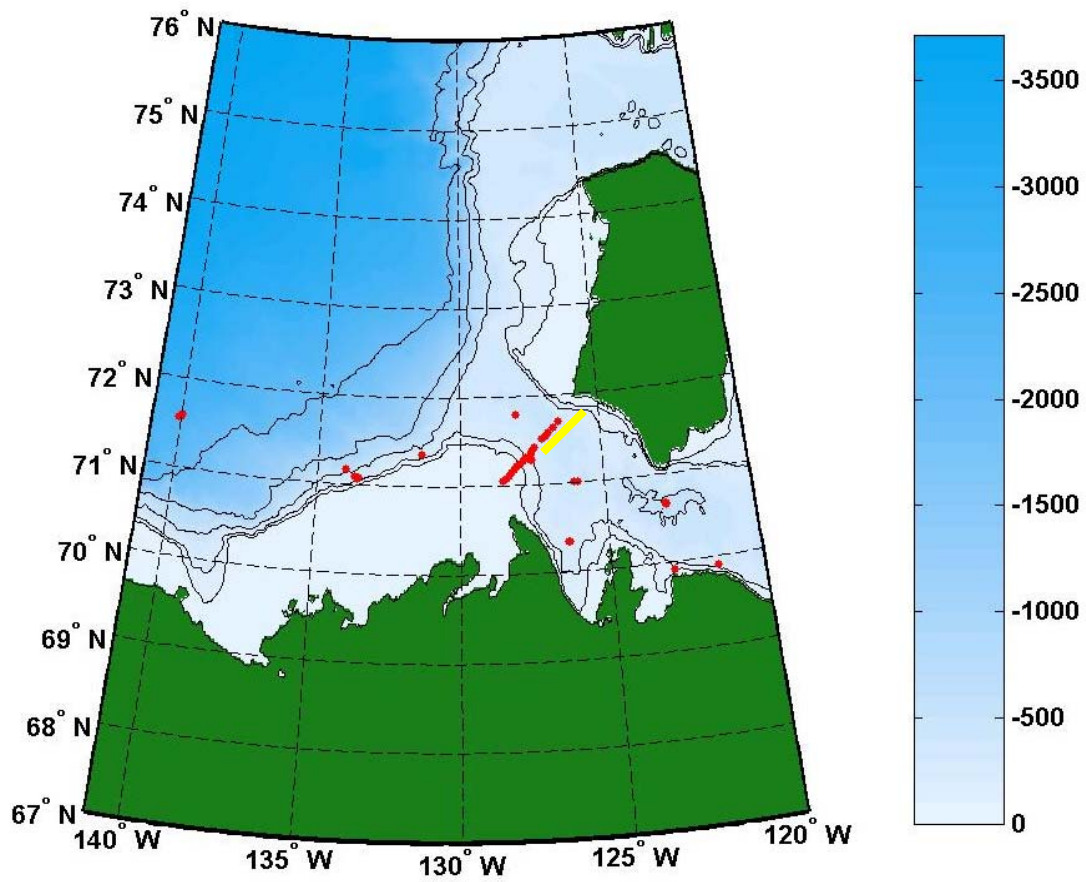
**APPENDIX 5.6.B.** Salinity and potential temperature along section NOW S5. The western sites are on the left and the eastern sites are on the right.



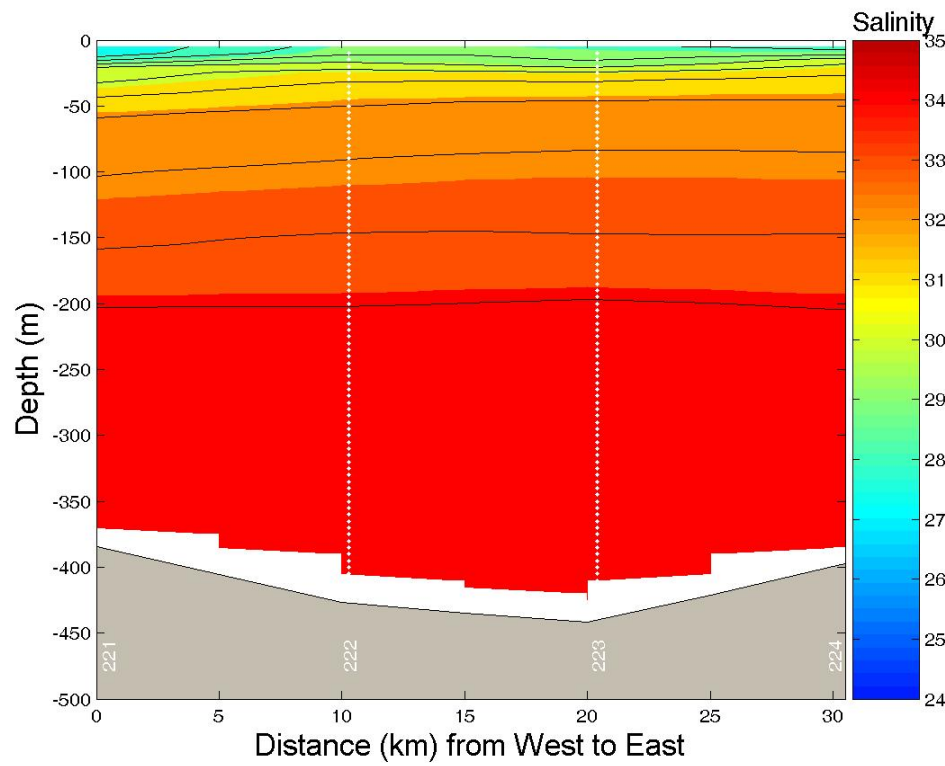
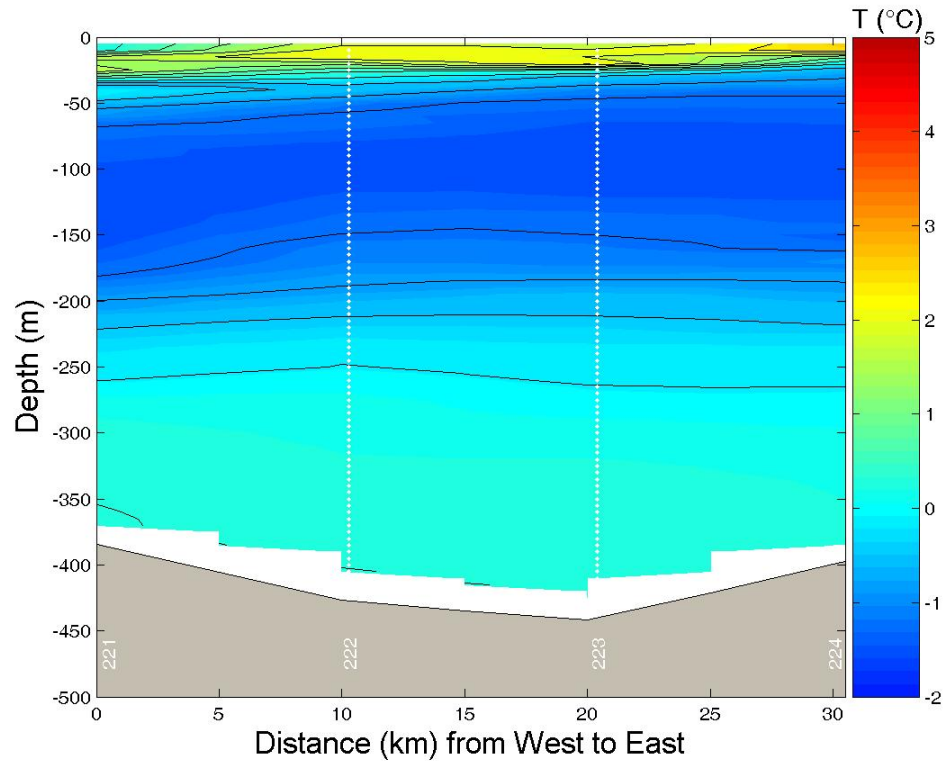
**APPENDIX 5.7.A.** The yellow line identifies the location of section Beaufort S400 south in Beaufort Sea. This section is contoured on the next page.



**APPENDIX 5.7.B.** Salinity and potential temperature along section Beaufort S400 south. The south-western sites are on the left and the north-eastern sites are on the right.



**APPENDIX 5.8.A.** The yellow line identifies the location of section Beaufort S400 north in Beaufort Sea. This section is contoured on the next page.



**APPENDIX 5.8.B.** Salinity and potential temperature along section Beaufort S400 north. The south-western sites are on the left and the north-eastern sites are on the right.

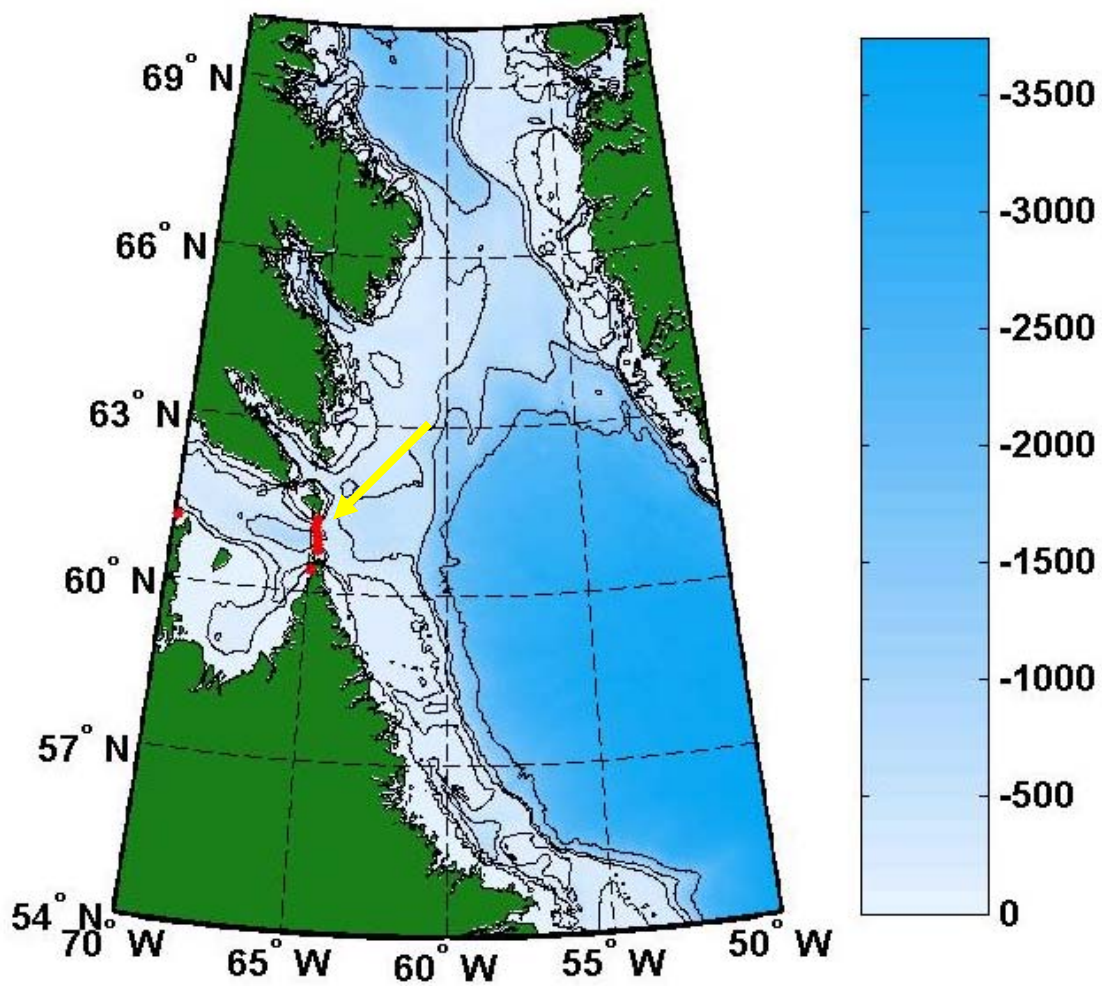


**APPENDIX 6.** Contours of salinity and potential temperature for the different sections of ArcticNet expedition 0502 (Leg 2).

The same color scale is used for all sections. For West to East sections, West is on the left and East is on the right. For South to North sections, South is on the left and North is on the right.

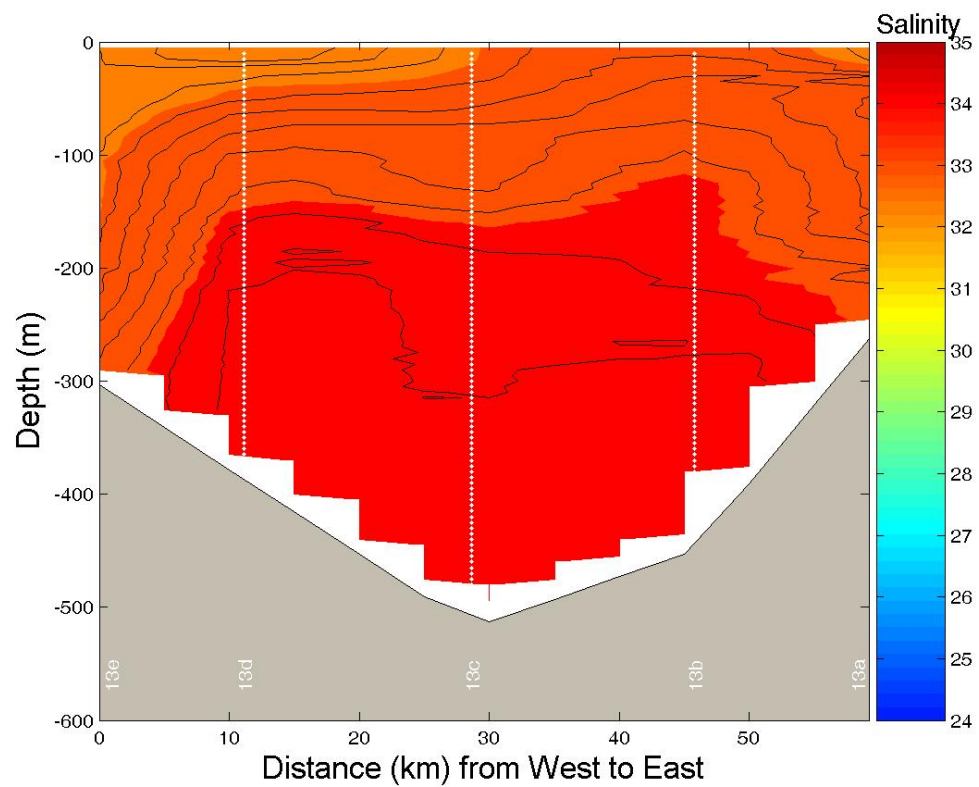
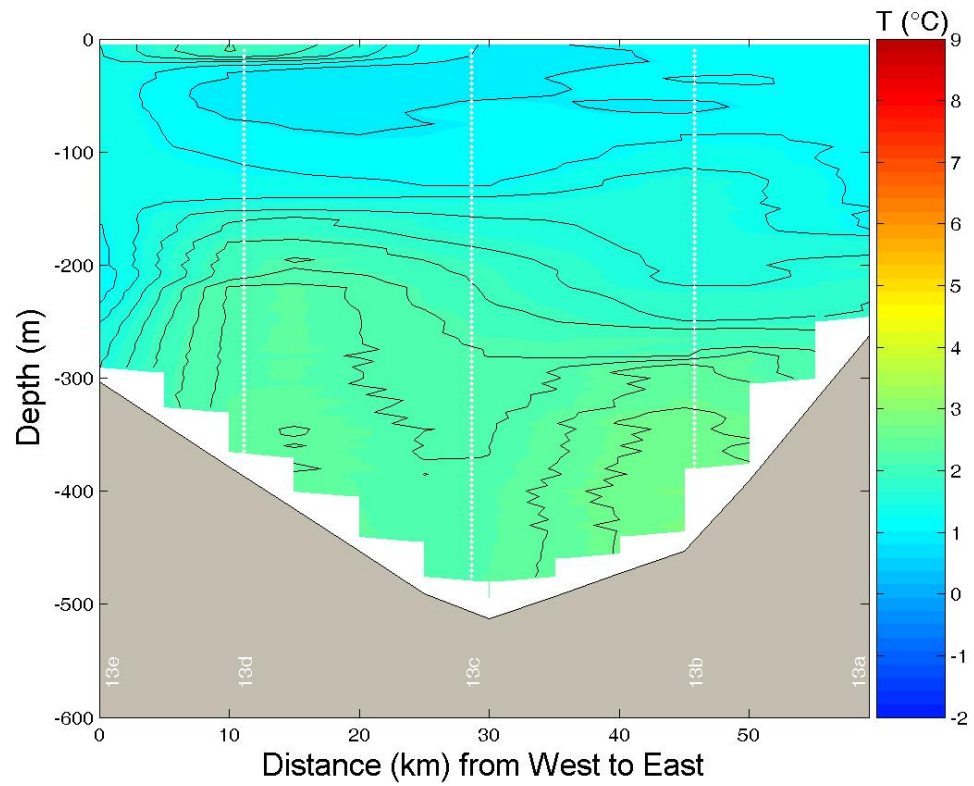
- 6.1. Section 13 in Hudson Strait
- 6.2. Section 14 in Hudson Strait
- 6.3. Section 15 across Foxe Channel
- 6.4. Section 15-16 across Evans Strait
- 6.5. Section 16 in Hudson Bay
- 6.6. Section 17 in Hudson Bay
- 6.7. Section 19 in Hudson Bay
- 6.8. Section 21 at the mouth of James Bay
- 6.9. Section Winisk River in Hudson Bay
- 6.10. Section Nelson River in Hudson Bay



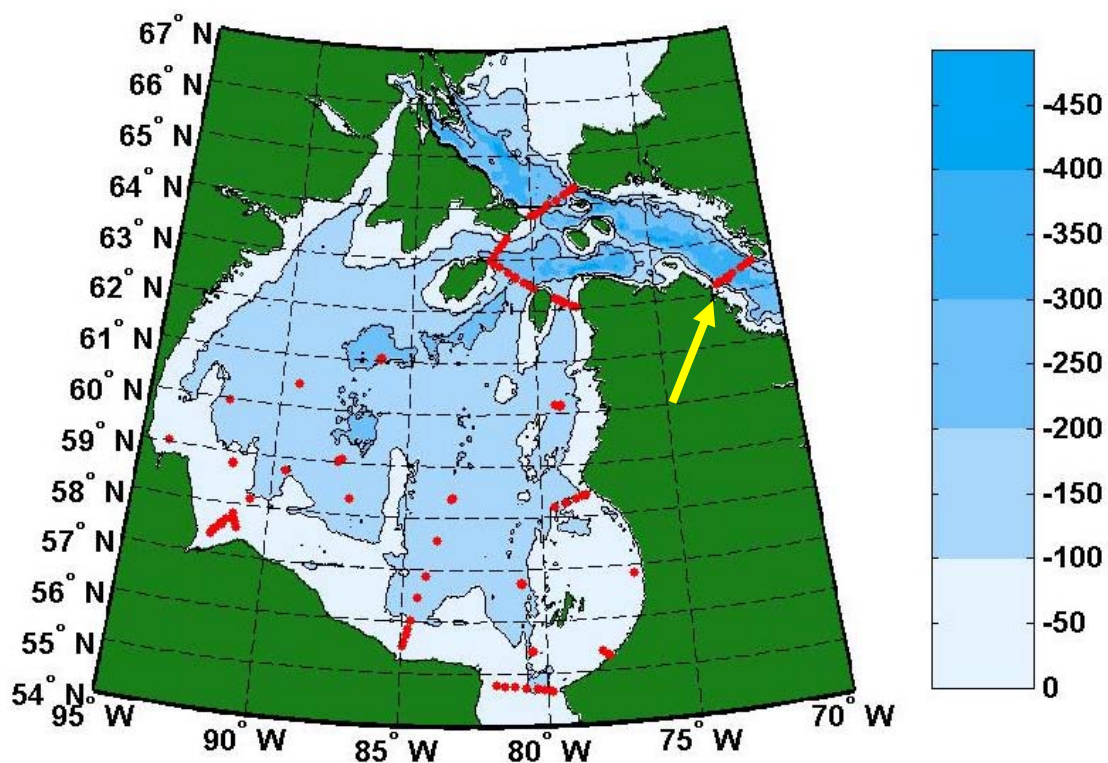


**APPENDIX 6.1.A.** The yellow arrow identifies the location of section 13 in Hudson Strait. This section is contoured on the next page.

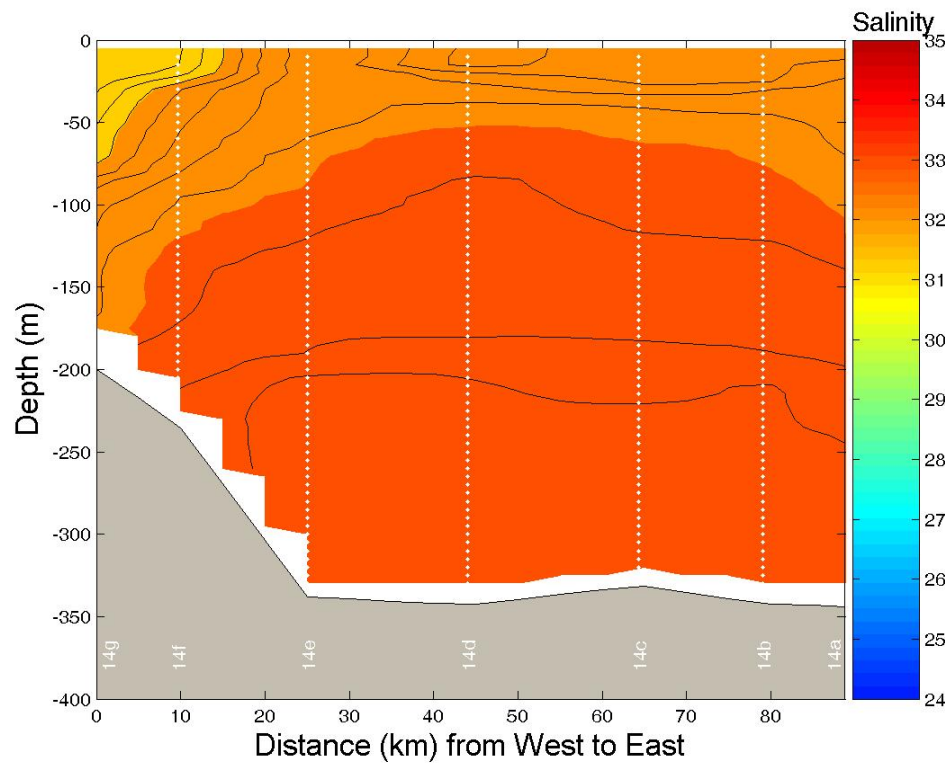
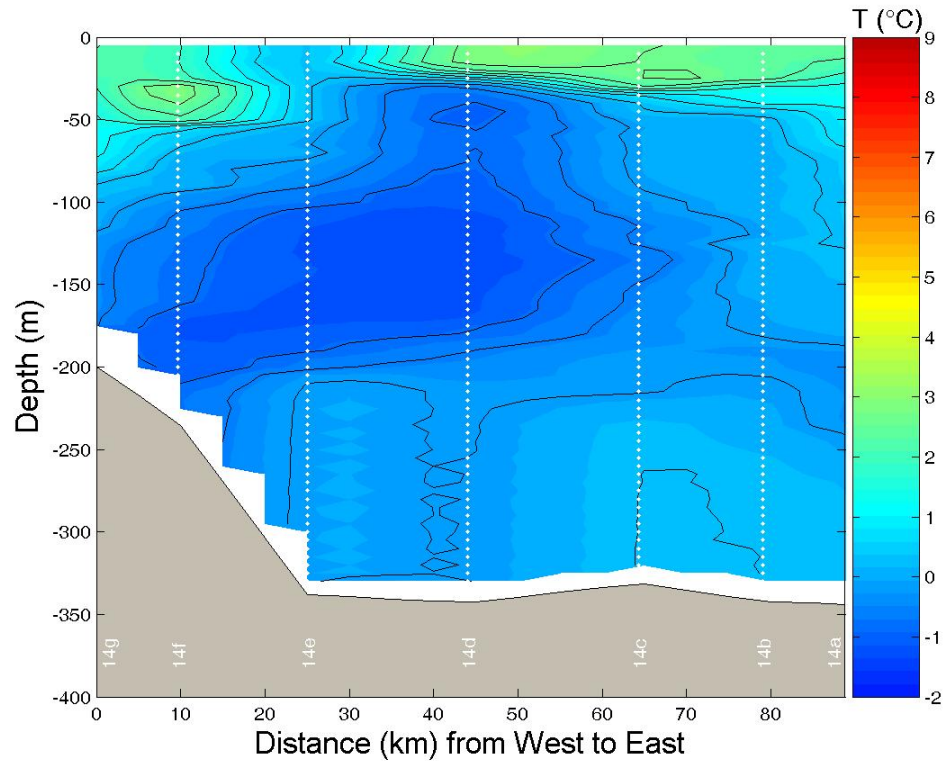




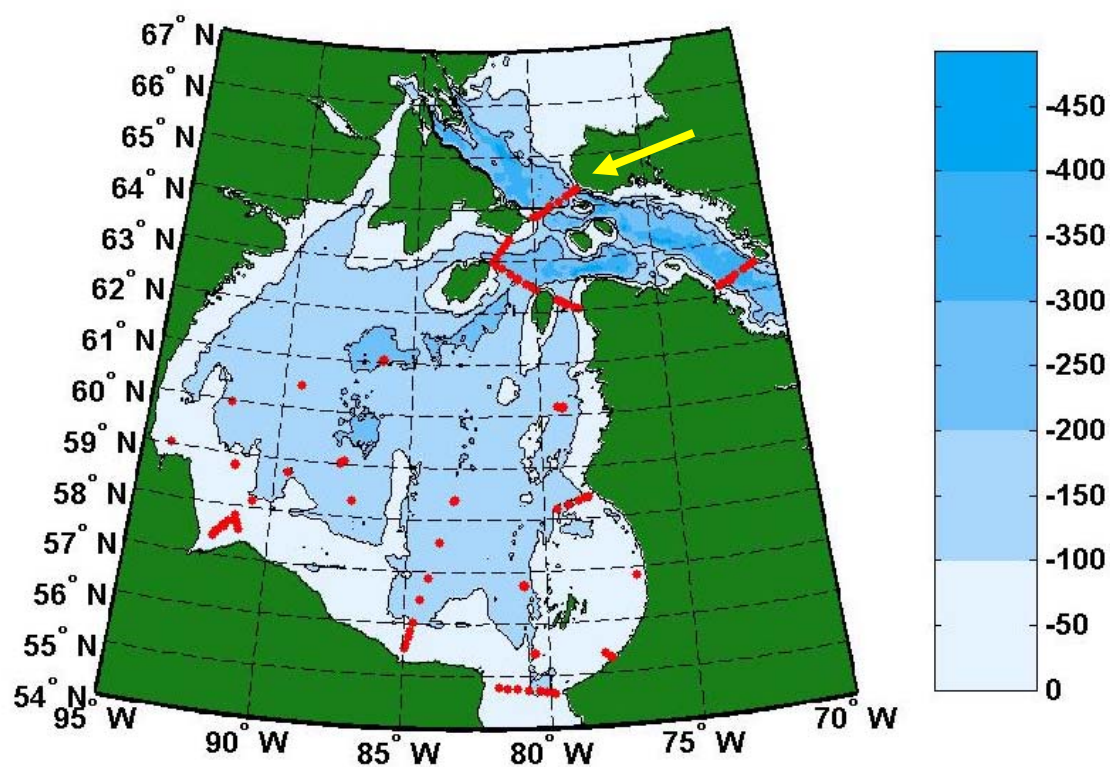
**APPENDIX 6.1.B.** Salinity and potential temperature along section 13. The southern sites are on the left and the northern sites are on the right.



**APPENDIX 6.2.A.** The yellow arrow identifies the location of section 14 in Hudson Strait. This section is contoured on the next page.

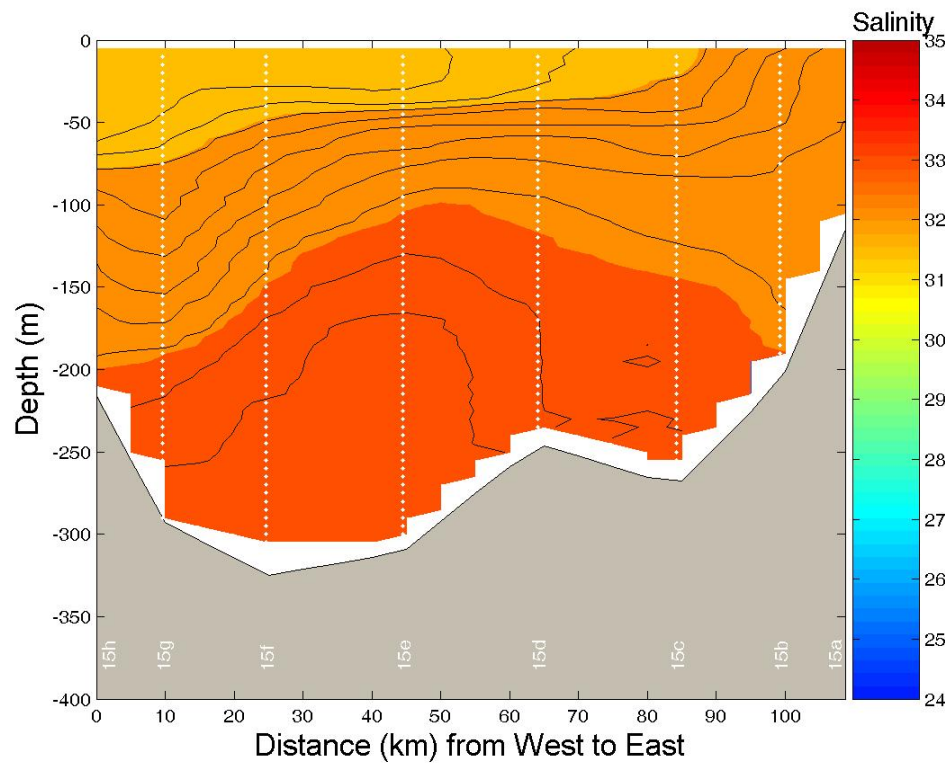
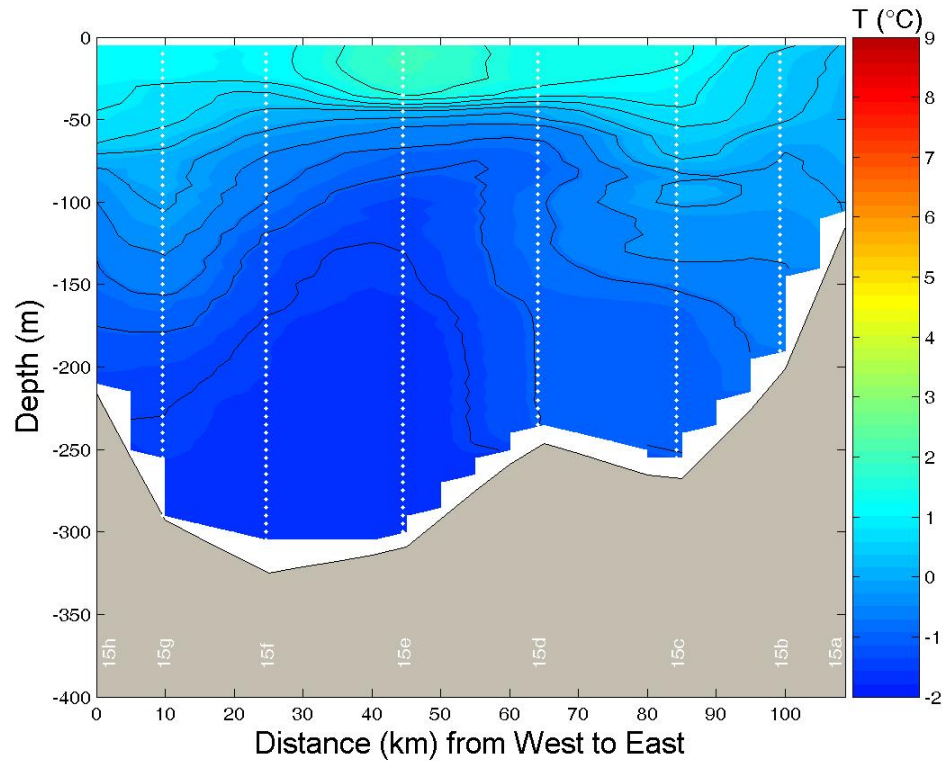


**APPENDIX 6.2.B.** Salinity and potential temperature along section 14. The south-western sites are on the left and the north-eastern sites are on the right.

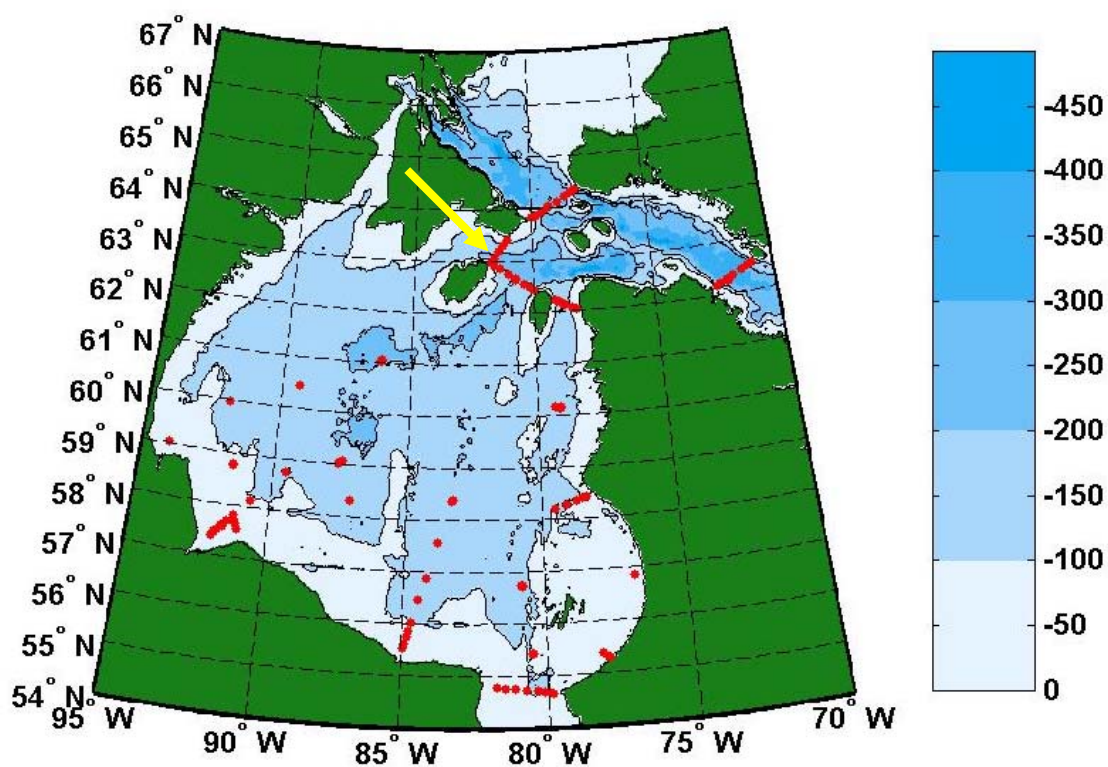


**APPENDIX 6.3.A.** The yellow arrow identifies the location of section 15 across Foxe Channel. This section is contoured on the next page.

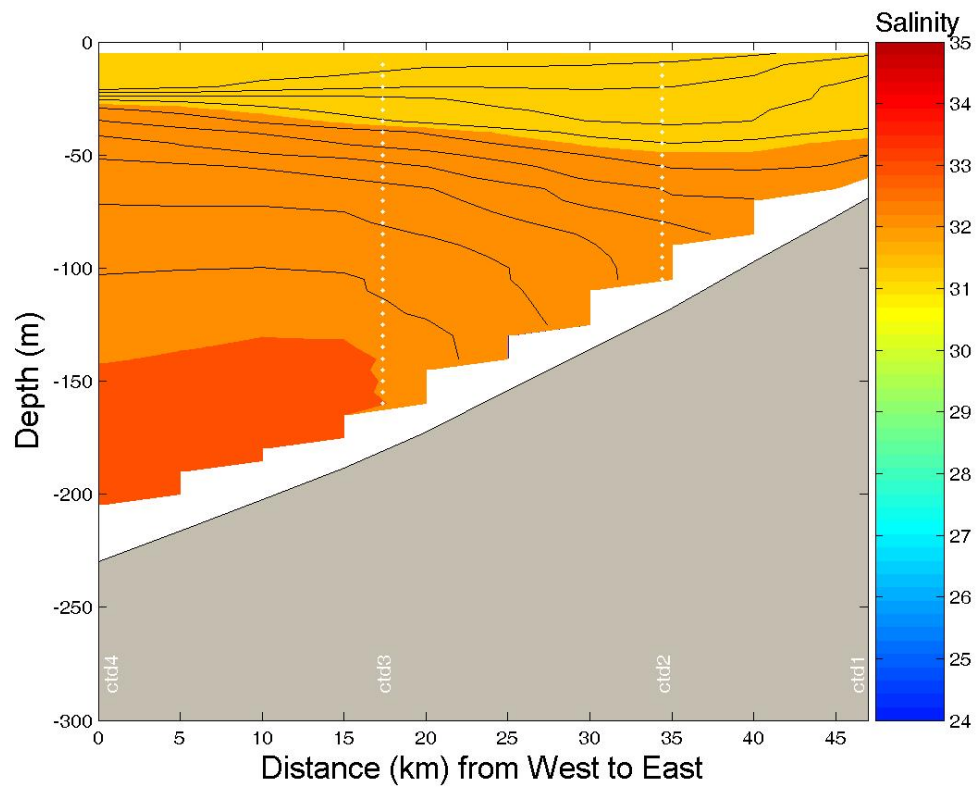
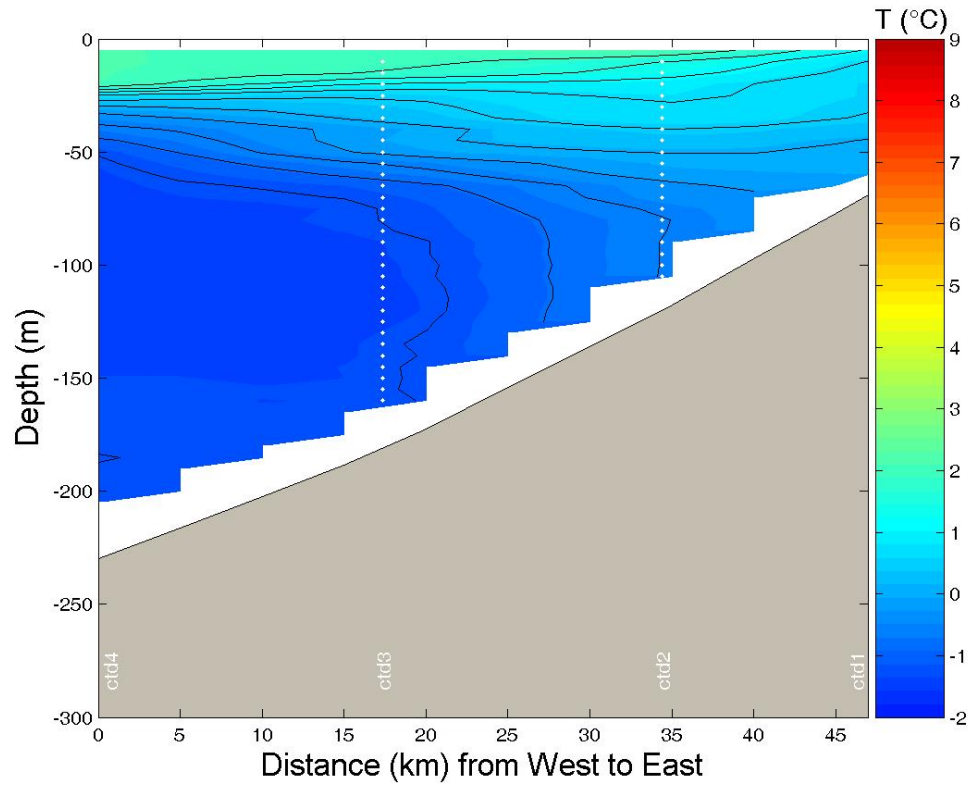




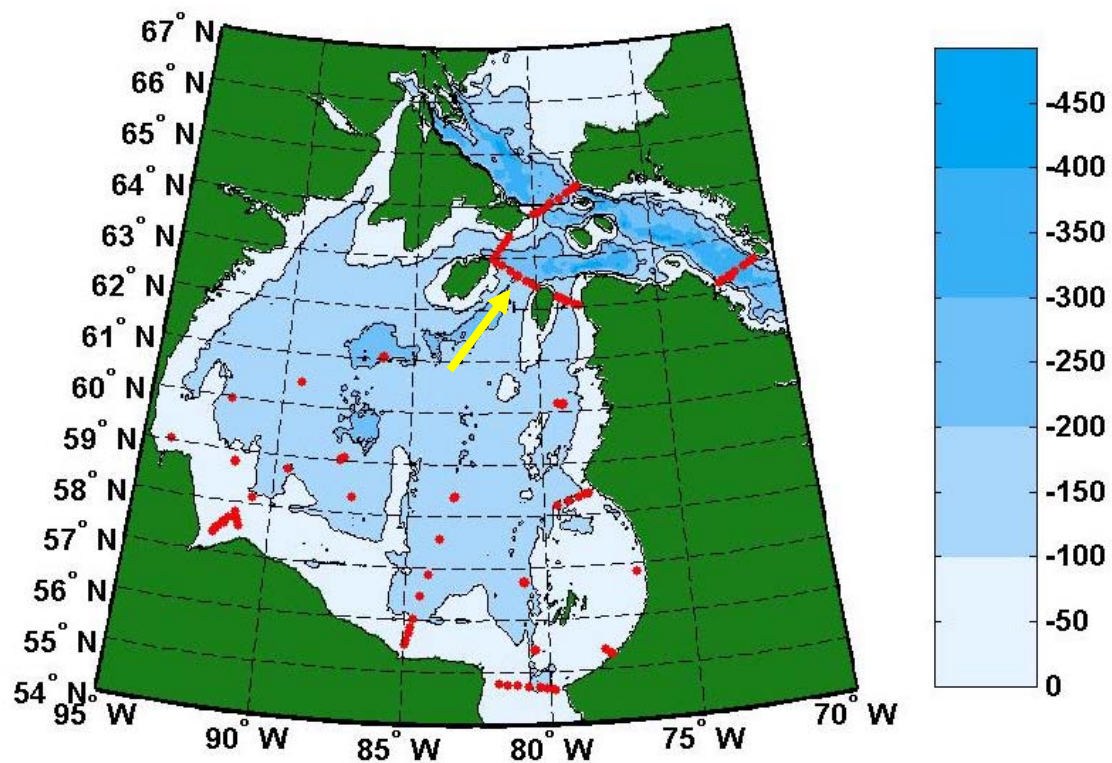
**APPENDIX 6.3.B.** Salinity and potential temperature along section 15. The southwestern sites are on the left and the north-eastern sites are on the right.



**APPENDIX 6.4.A.** The yellow arrow identifies the location of section 15-16 across Evans Strait. This section is contoured on the next page.

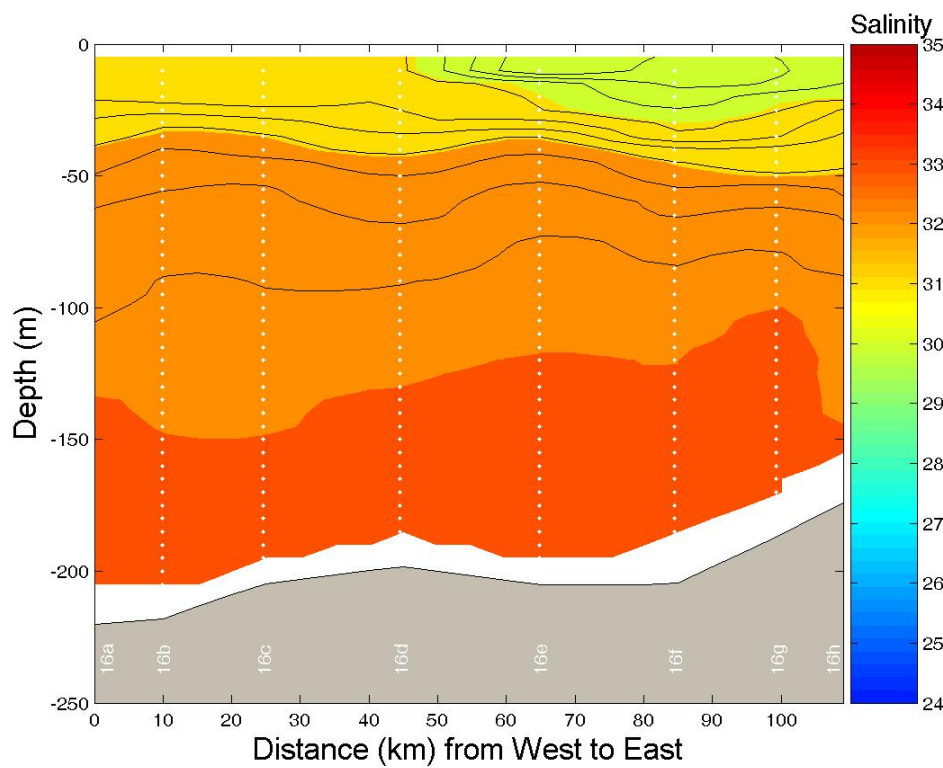
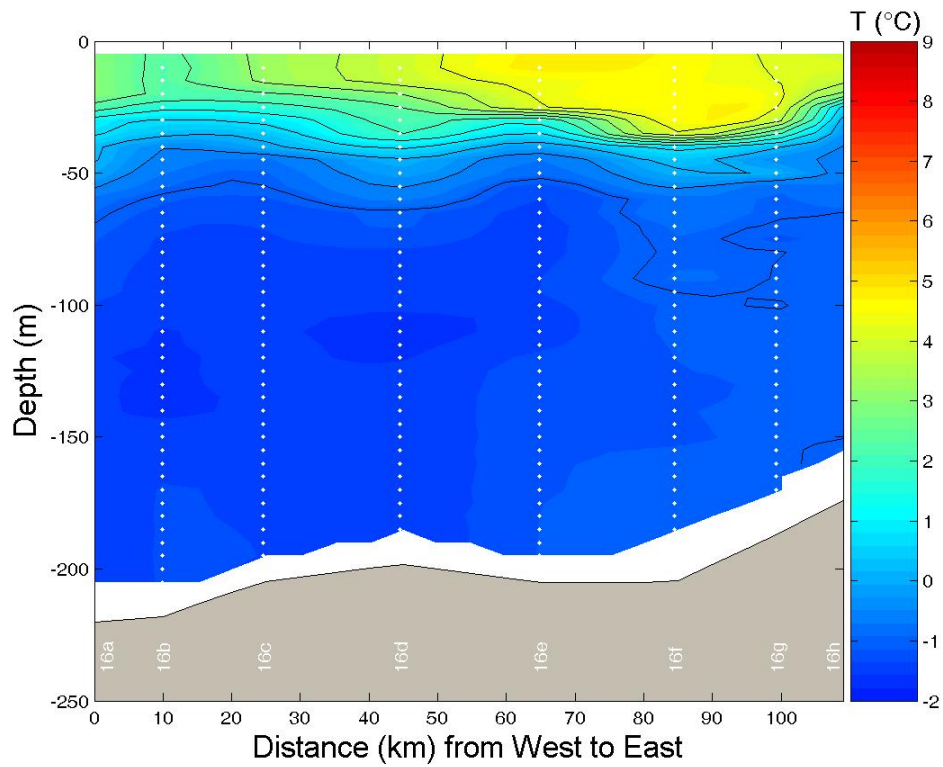


**APPENDIX 6.4.B.** Salinity and potential temperature along section 15-16. The southern sites are on the left and the northern sites are on the right.

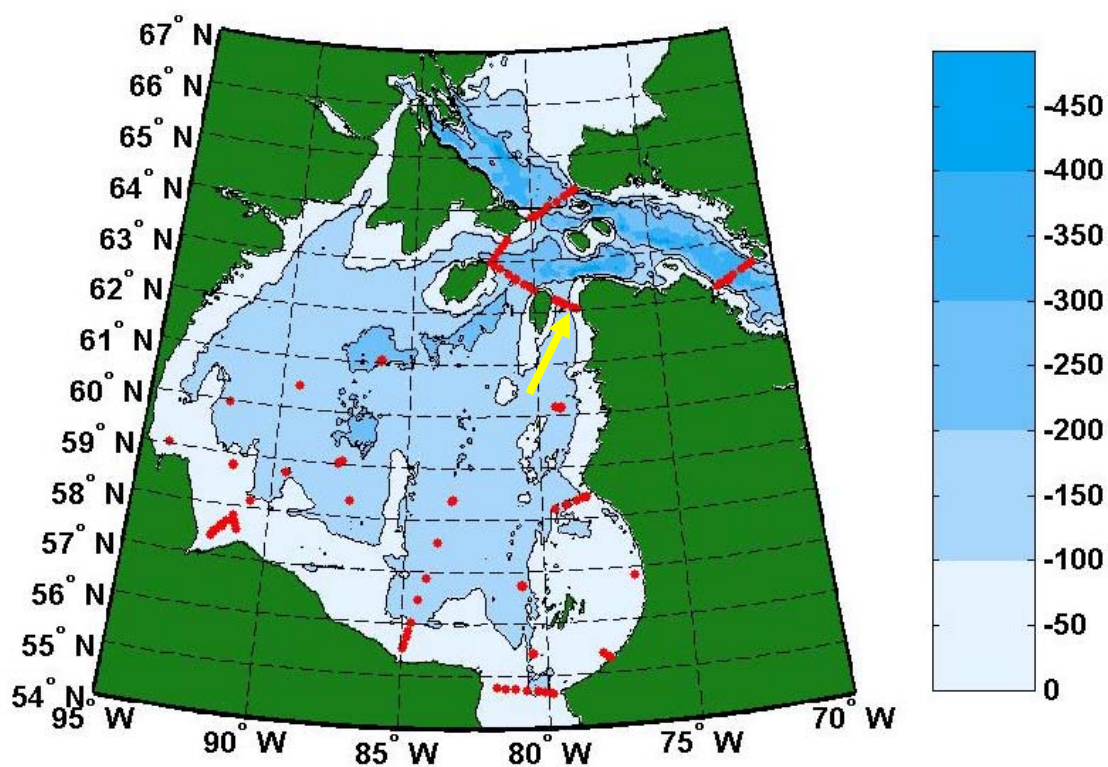


**APPENDIX 6.5.A.** The yellow arrow identifies the location of section 16 in Hudson Bay. This section is contoured on the next page.

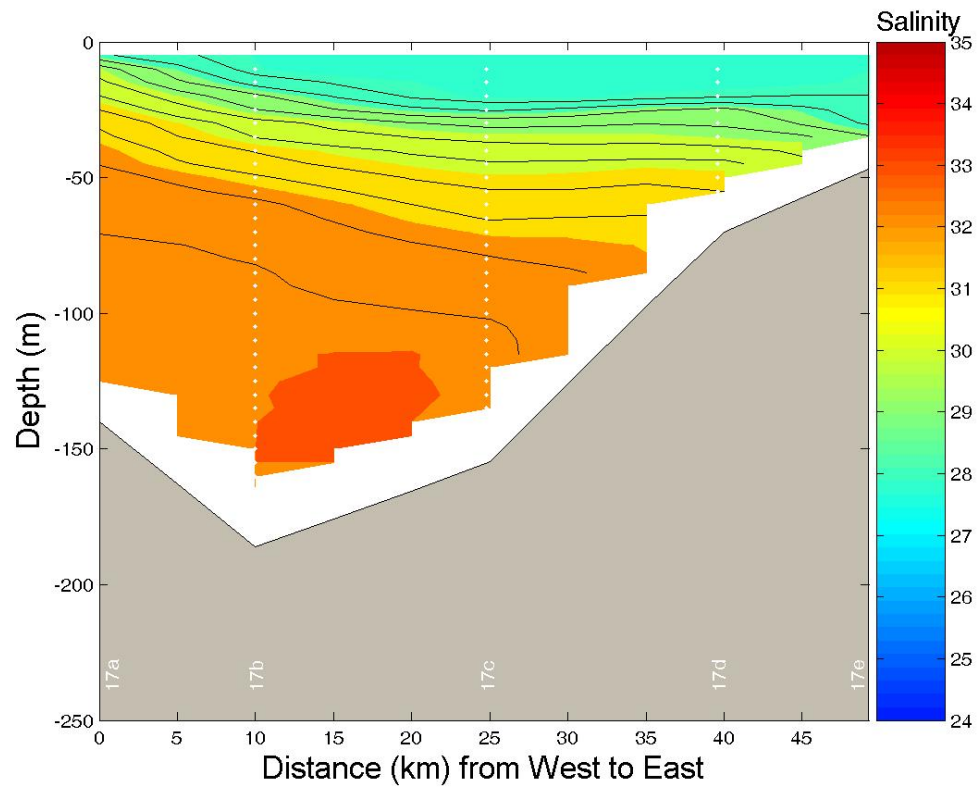
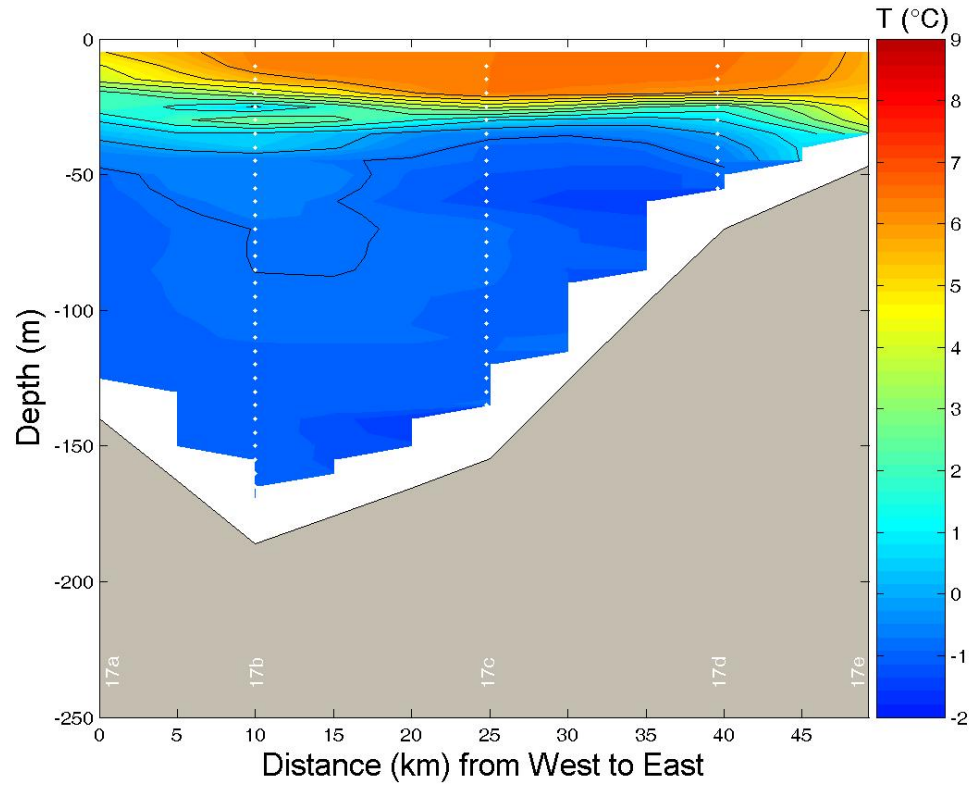




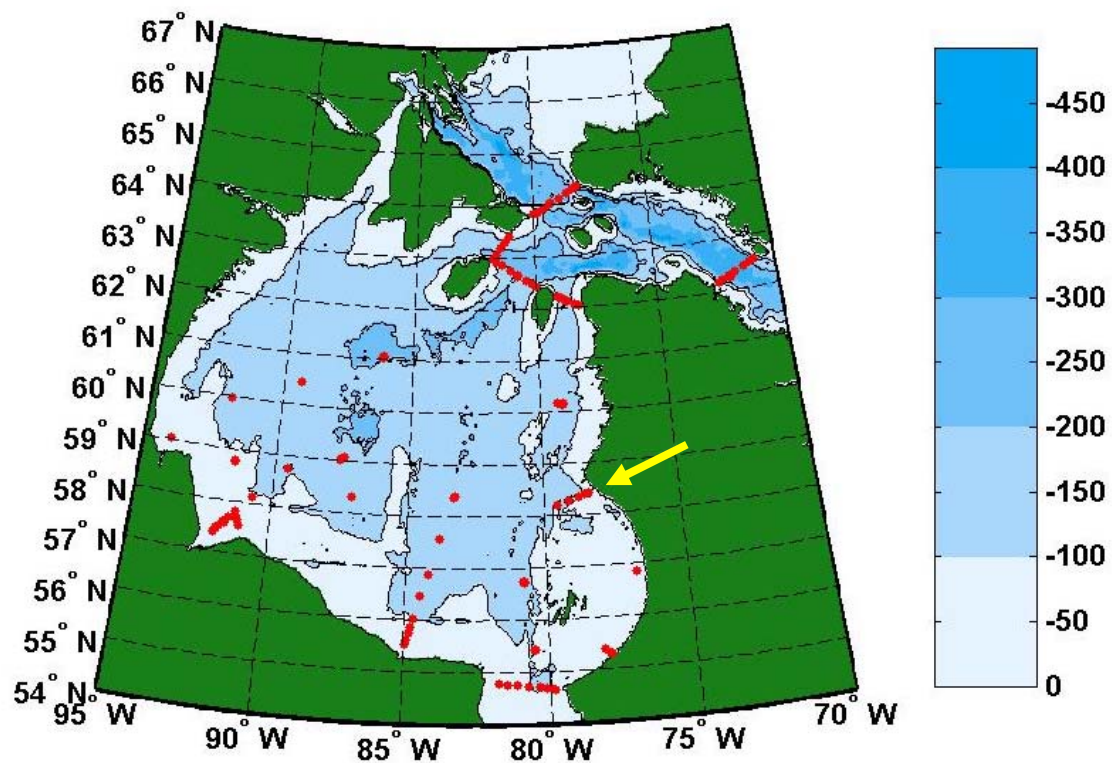
**APPENDIX 6.5.B.** Salinity and potential temperature along section 16. The north-western sites are on the left and the south-eastern sites are on the right.



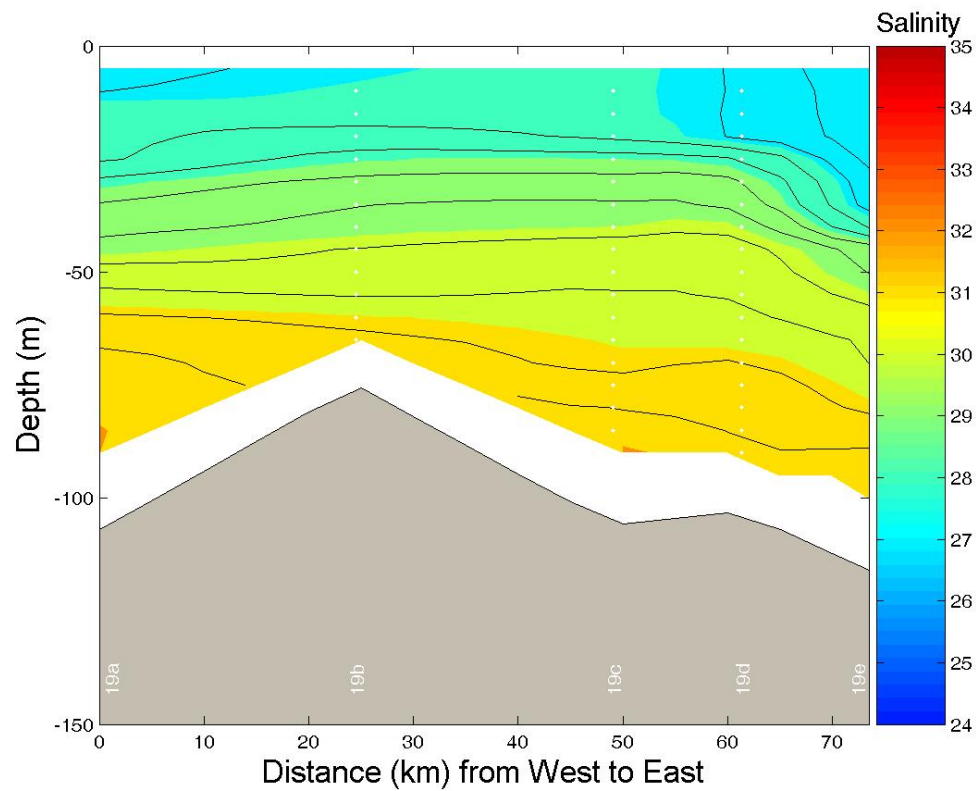
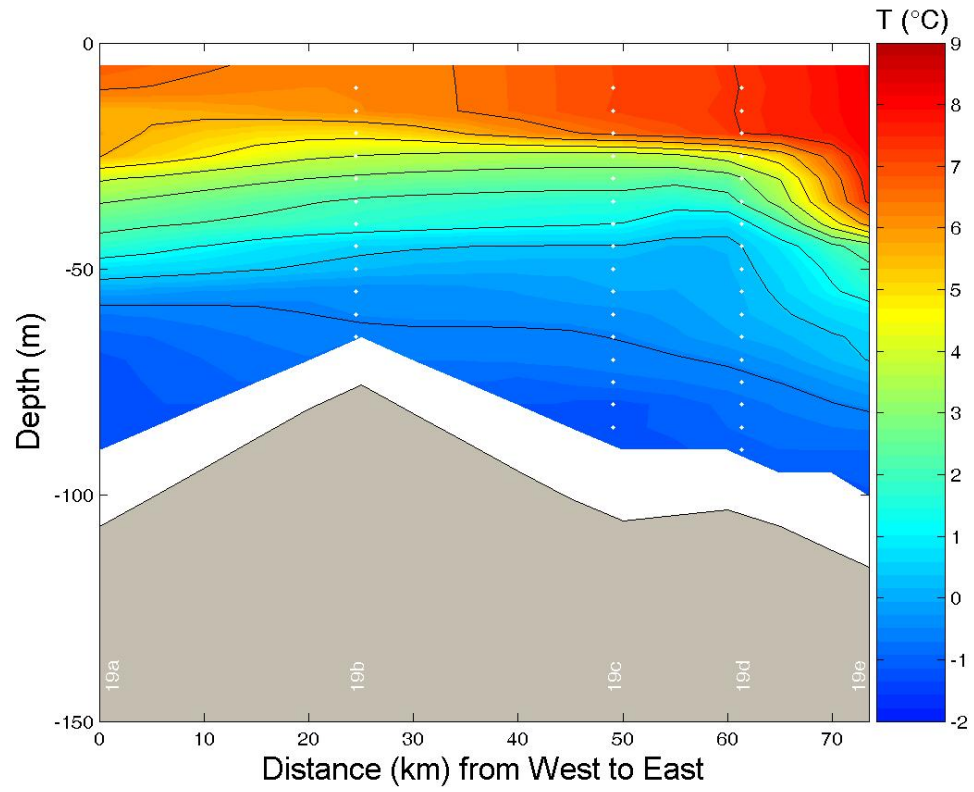
**APPENDIX 6.6.A.** The yellow arrow identifies the location of section 17 in Hudson Bay. This section is contoured on the next page.



**APPENDIX 6.6.B.** Salinity and potential temperature along section 17. The western sites are on the left and the eastern sites are on the right.

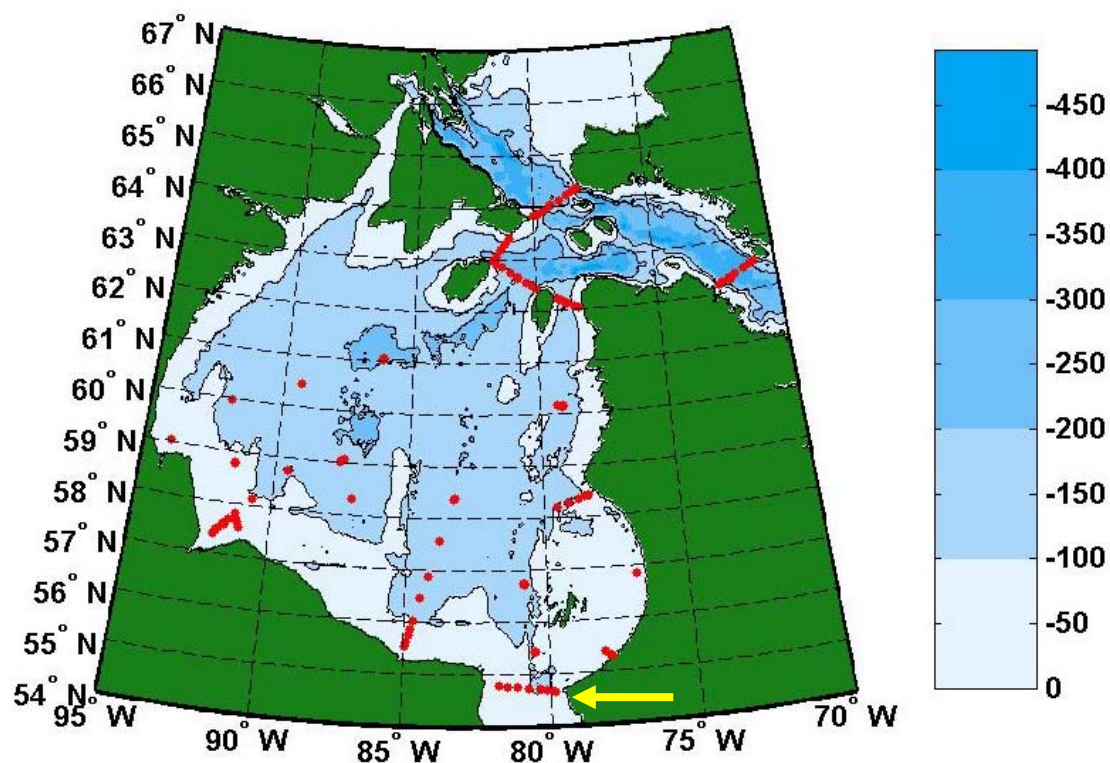


**APPENDIX 6.7.A.** The yellow arrow identifies the location of section 19 in Hudson Bay. This section is contoured on the next page.

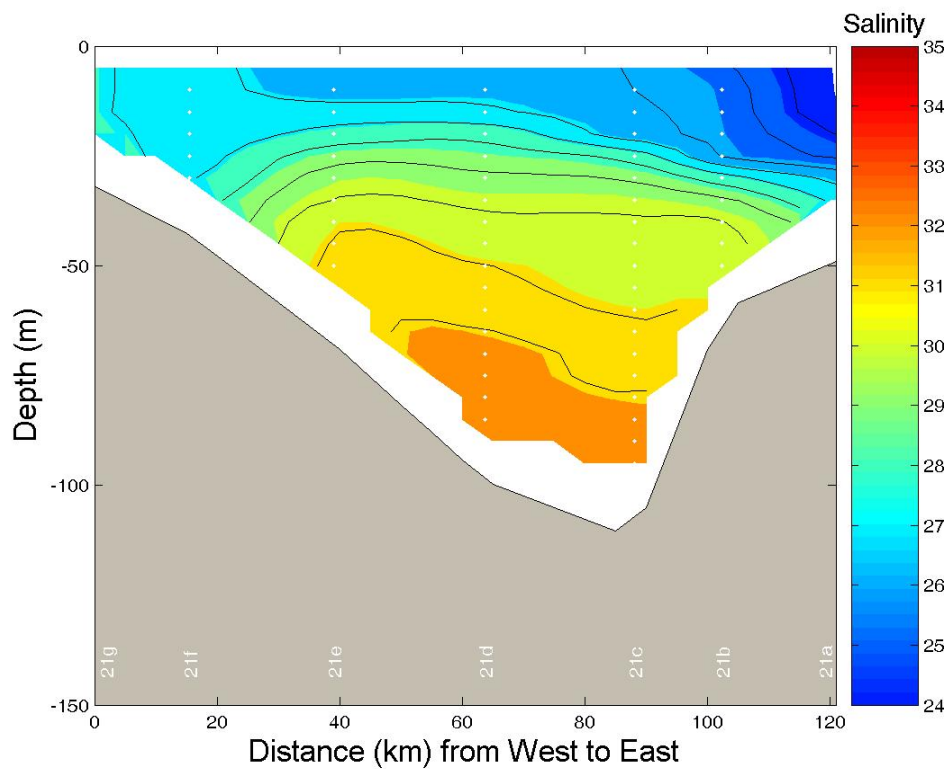
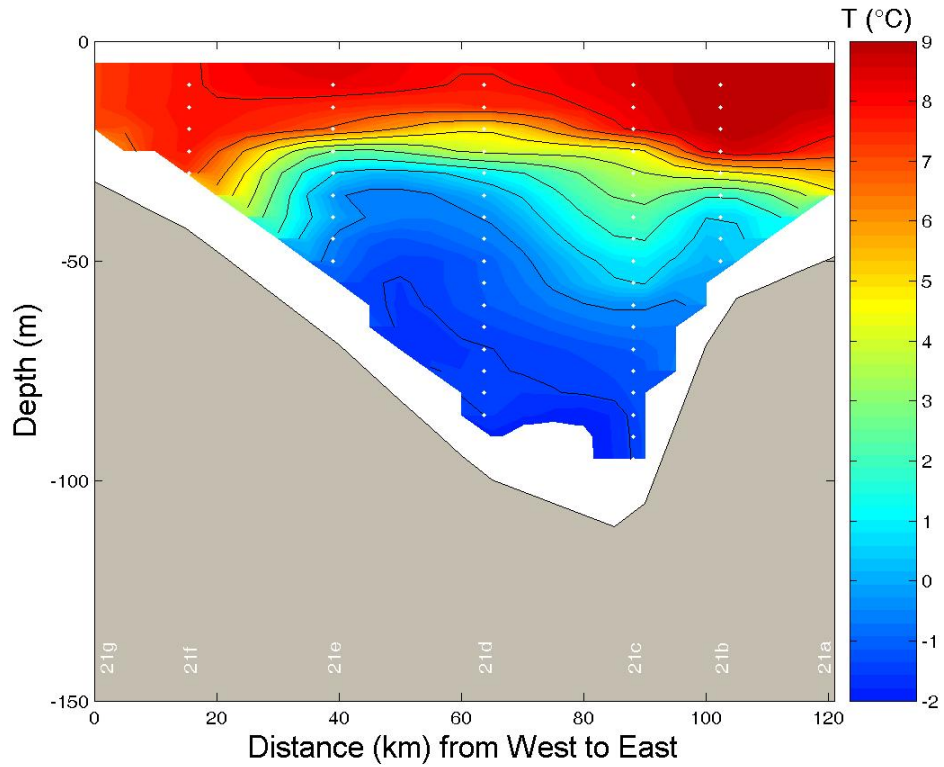


**APPENDIX 6.7.B.** Salinity and potential temperature along section 19. The western sites are on the left and the eastern sites are on the right.

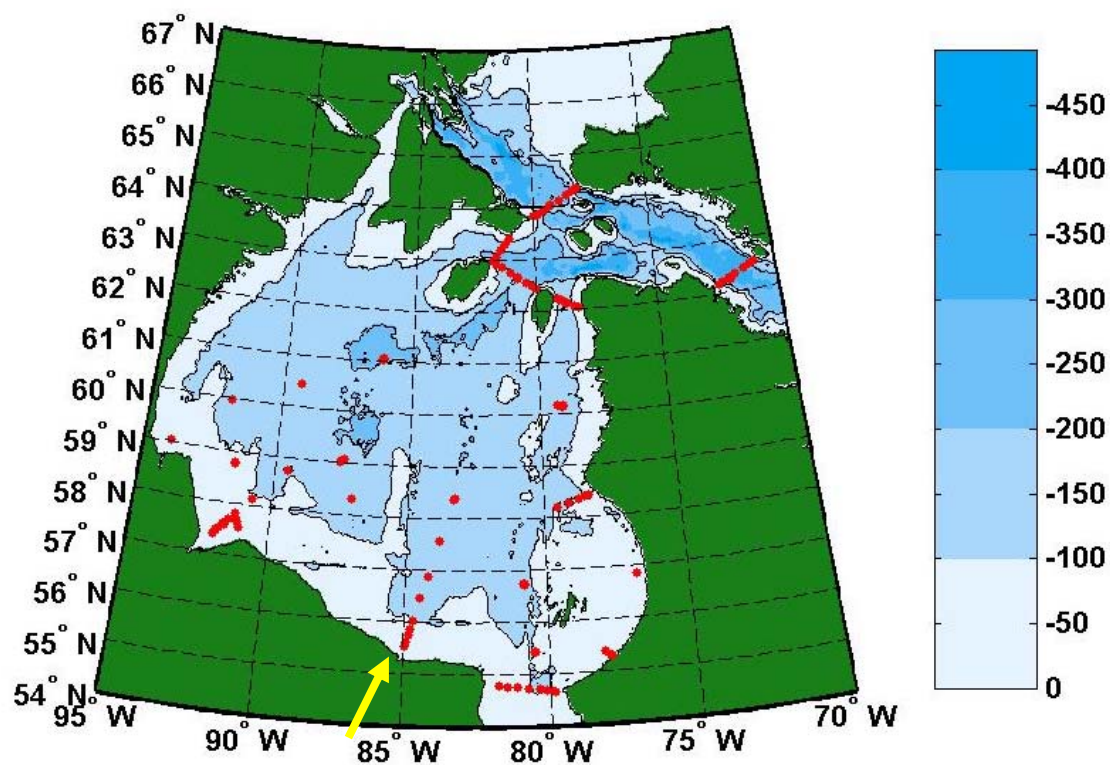




**APPENDIX 6.8.A.** The yellow arrow identifies the location of section 21 at the mouth of James Bay. This section is contoured on the next page.

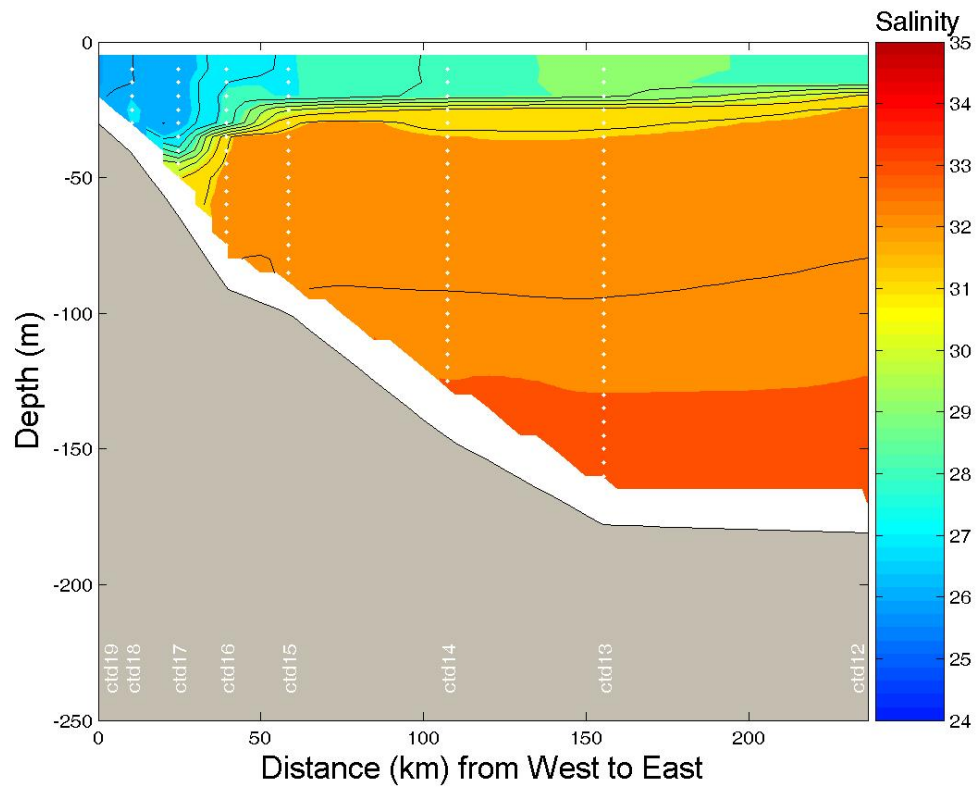
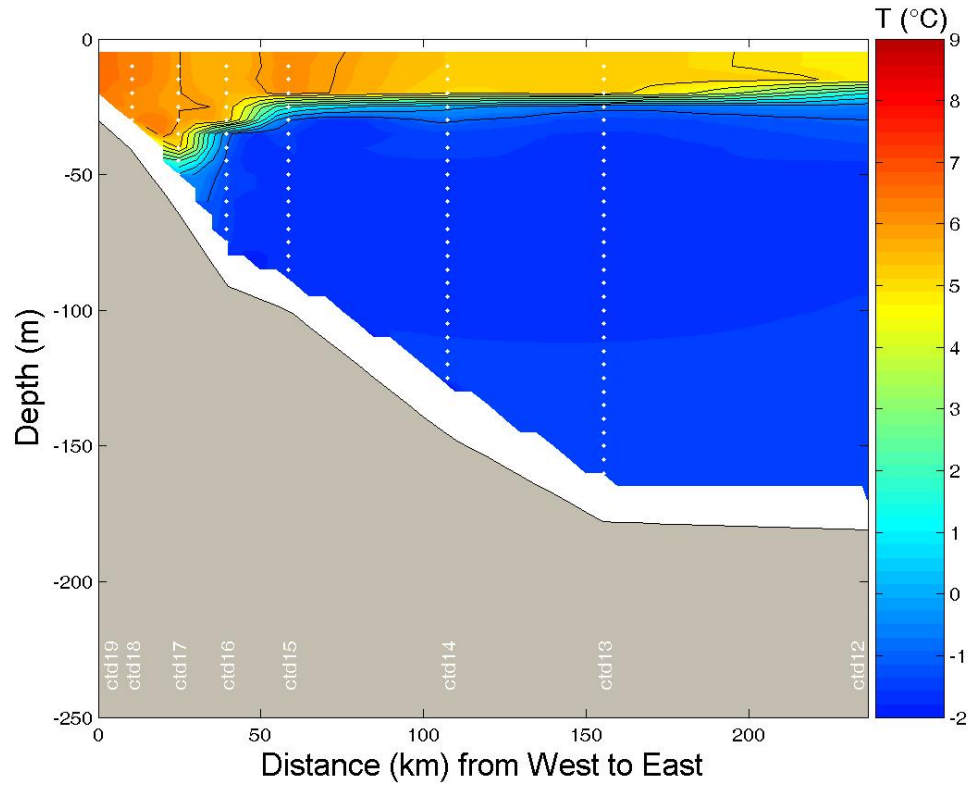


**APPENDIX 6.8.B.** Salinity and potential temperature along section 21 James Bay. The western sites are on the left and the eastern sites are on the right.

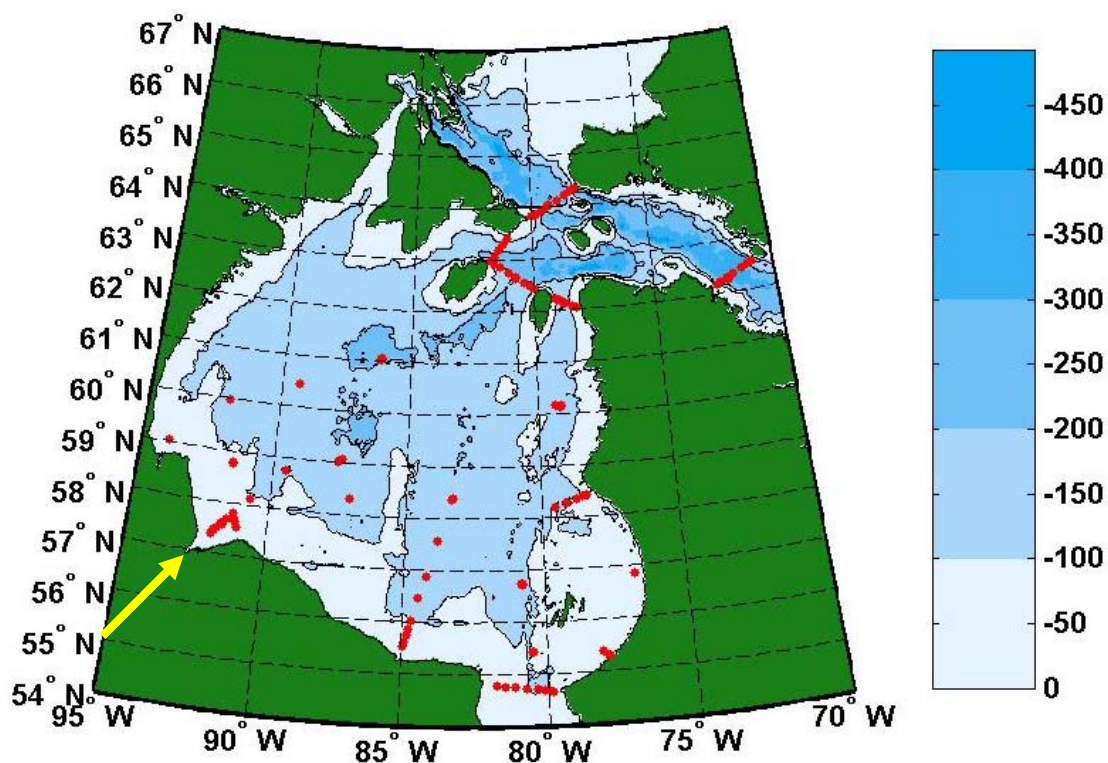


**APPENDIX 6.9.A.** The yellow arrow identifies the location of section Winisk River in Hudson Bay. This section is contoured on the next page.

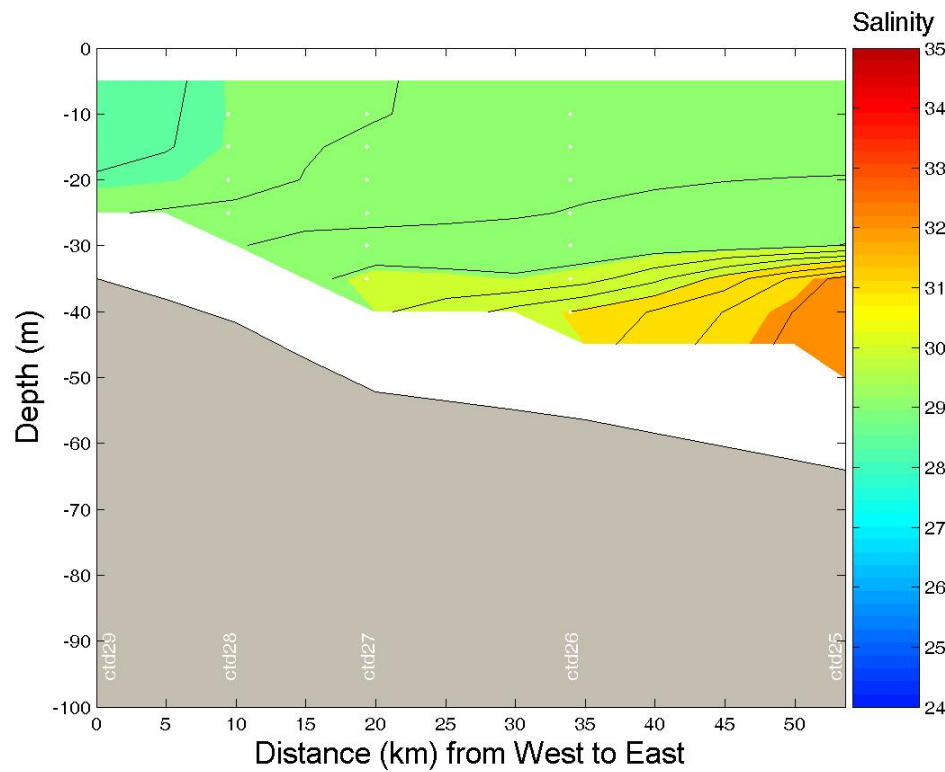
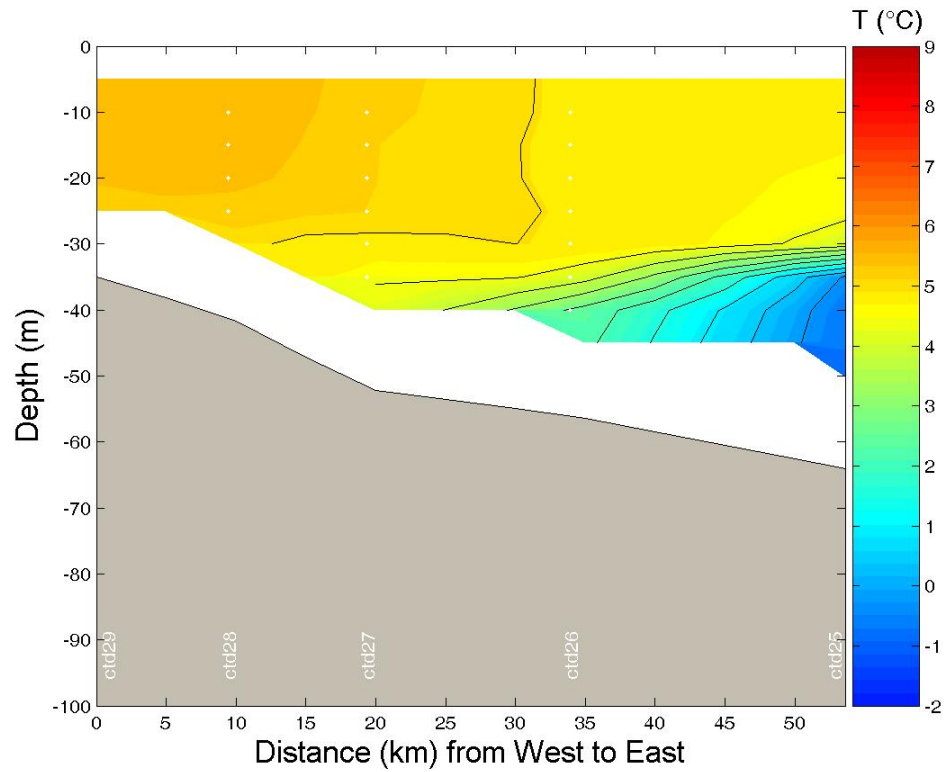




**APPENDIX 6.9.B.** Salinity and potential temperature along section Winisk River. The southern sites are on the left and the northern sites are on the right.



**APPENDIX 6.10.A.** The yellow arrow identifies the location of section Nelson River in Hudson Bay. This section is contoured on the next page.



**APPENDIX 6.10.B.** Salinity and potential temperature along section Nelson River. The south-western sites are on the left and the north-eastern sites are on the right.

**APPENDIX 7.** Example of an ADCP stick diagram from 2003-2004.

**APPENDIX 7.** Example of 2003-2004 ADCP data from the mooring CA08 showing the ADCP velocity between 16 and 80 meters.

