# From 2005 to 2009 the CCGS Nahidik made measurements on the Canadian Beaufort Shelf.

S. Zimmermann v21 Dec 2023

 “There are several components to the Department of Fisheries and Oceans science program on the Nahidik which together form an integrated study of the physical oceanography, phytoplankton, zooplankton, ichthyoplankton, fish and benthos of the Canadian Beaufort Shelf.” (From 2009 report)

Bill Williams oversaw the CTD, TSG (and ADCP and Met?) data collection.

Patricia Ramlal (DFO Winnipeg, Patricia.Ramlal@dfo-mpo.gc.ca) oversaw the chemistry collection.

This program was continued in a new way with added area as the CBS-MEA program from 2015? to 2023+

A copy of the CTD files, Event Logs Cruise Reports put here:

**N:\SHARE\DATA\Nahidik 2005 to 2009 - COPY**

The CTD files have at least the standard SBE Data Processing steps applied, and cursory comparisons with salinity water sample data to confirm CTD salinity was on-track. They can be considered final especially when considered coastal observations. However, accuracy and precision have not been determined and no doubt further processing could be applied.

The data copied here have also been put into the respective year – data folders (see below)

Arctic drive folders and what data are currently in them:

**2005** N:\SHARE\DATA\2000-2010\2005\2005-038\_ NAHIDIK

CTD

Note that CTD and sensors were on loan from Mike Papst, Freshwater Institute (DFO Winnipeg). The IOS Arctic group has no calibration records on these sensors except what is seen in the \*.cnv file.

SBE19 SN 198990-1535 2Hz sample rate

 Oxygen SBE43 sn0798

 Fluorometer Seapoint

Cruise report mentions “Niskin bottle cast x 2” so its likely water sample salts were collected, however event log does not say what depth bottle closed at (unless they all closed at bottom).

Need to check with Bill Williams for bottle data, or leave as is.

Cruise-ID is given here as 2005-038 however the IOS archives has the same ID already in use by a different cruise. ?What is the history of this cruise ID?

**2006** N:\SHARE\DATA\2000-2010\2006\2006-042\_Nahidik

 CTD



These CTD and sensor belong to the IOS Arctic groups. See instruments spreadsheet (N:\SHARE\UTILITIES\Instruments\CALIBRATIONS-Arctic\_2024-02-15.xlsx) for lab calibration information.

The SBE19+ had been converted from a SBE16.

 SBE19+ 4057 2 Jun 2006, 21 Feb 2008

 SBE43 sn 52 7 Oct 2005, 13 Mar 2008

 Flr SCF 2805 New for 2006 (approximately)

 Trans sn163 12 Jul 2006 for 2pt cal (open/blcked) , path 10cm

OBS Backscatter likely sn10133 as listed in con file

Cruise report mentions “Near bottom and Near surface Niskin bottle cast” so its likely water sample salts were collected. The Event log lists “Niskin” events through the cruise with bottom depth but not specific trip depth.

Need to check with Bill Williams for bottle data, or leave as is.

**2007** N:\SHARE\DATA\2000-2010\2007\2007-071\_Nahidik

CTD and Salt samples (and ADCP, AVOS, SPAR, TSG)

The SBE25 CTD system was new for 2007 program

|  |  |  |  |
| --- | --- | --- | --- |
| **Component** | **Make/Model** | **Serial number** | **Cal dates** |
| CTD logger | Seabird SBE 25 | 0415 |  |
| Temperature sensor | Seabird SBE 3F | 4444 | 14 Mar 07, 18 Dec 07 |
| Conductivity sensor | Seabird SBE 4C | 3209 | 28 Feb 07, 4 Dec 07 |
| Pressure (strain gauge) 1000dbar | Seabird SBE 29 | 0693 | 20 Feb 07, 24 Oct 13 |
| Pressure (strain gauge) 350dbar | Seabird SBE 29 | 0530 | 14 Feb 07 |
| Dissolved Oxygen | Seabird SBE 43 | 1202 | 21 mar 07, 13 Mar 08 |
| Pump | Seabird SBE 5T | 4646 |  |
| Fluorometer | Seapoint | SCF2859 | New 2006 |
| Transmissometer | Wetlabs | CST-1047DR | New 7 Feb 07, 27 Apr 07 |
| Optical Backscatter | Seapoint | 11074 | New 23 Mar 07 |
| PAR sensor | Biospherical, QSP200PD | 20273 | Sn20280? 15Jun07 |
| Altimeter, Benthos  | Benthos PSA-916D | 41098 | New 12 Feb 07 |
| Nitrate, ISUS | Satlantic | 121 | New 2007 |
| Nitrate, ISUS battery pack | Satlantic | 053 | New 2007 |
| Niskin Bottles, 5 litre | Seabird |  |  |
| PDIM | Seabird  | 0113 |  |
| Carousel | Seabird SBE 32 | 0591 |  |
| Deck unit | Seabird SBE 33 | 0132 |  |

Bill processed the CTD data using 3 con files (see N:\SHARE\DATA\2000-2010\2007\2007-071\_Nahidik\Instruments\SBE25 sn0415) that were copied to match cast name (N:\SHARE\DATA\2000-2010\2007\2007-071\_Nahidik\DATA\_PROCESSING\CTD\using change\_con\_files.bat)

**2008** N:\SHARE\DATA\2000-2010\2008\2008-049\_Nahidik

CTD and Salt, O18 samples

CTD data have been processed and perhaps checked against water sample salt however no report or adjustments made.

Contact Bill for raw/processing files so bottle files can be created, salt and O18 data added.

Similar setup to 2007. Note pressure sensor and fluorometer gain may change during cruise as in 2007.

|  |  |  |  |
| --- | --- | --- | --- |
| **Component** | **Make/Model** | **Serial number** | **Cal date** |
| CTD logger | Seabird SBE 25 | 0415 |  |
| Temperature sensor | Seabird SBE 3F | 4444 | 18-Dec-2007 |
| Conductivity sensor | Seabird SBE 4C | 3209 | 04-Dec-2007 |
| Pressure (strain gauge) 1000dbar | Seabird SBE 29 | 0603 |  |
| Pressure (strain gauge) 350dbar | Seabird SBE 29 | 0530 | 14 Feb 07 |
| Dissolved Oxygen | Seabird SBE 43 | 1202 | 13-Mar-2008 |
| Pump | Seabird SBE 5T | 4646 |  |
| Fluorometer | Seapoint SCF | 2859 | New 2006 |
| Transmissometer | Wetlabs CST | 1047 | 27 APR 2007 |
| Optical Backscatter | Seapoint | 11074; 11342 | 03/23/07  |
| PAR sensor (damaged early on) | Biospherical, QSP2200PD | 20273 | 02/09/07 |
| Altimeter, Benthos  | Benthos PSA-916D | 41098 |  |
| Nitrate, ISUS (bad data, broken) | Satlantic | 121 |  |
| Nitrate, ISUS battery pack | Satlantic | 053 |  |
| Niskin Bottles, 5 litre | Seabird |  |  |
| PDIM | Seabird  | 0113 |  |
| Carousel | Seabird SBE 32 | 0591 or 0616? |  |
| Deck unit | Seabird SBE 33 | 0132 or 0140 |  |

**2009** N:\SHARE\DATA\2000-2010\2009\2009-55-Nahidik

CTD and Salt, O18 samples

Cruise report states same CTD system as in 2008 however there is an addition of the Surface reference PAR and the ISUS nitrate sensor appears to be broken.

|  |  |  |  |
| --- | --- | --- | --- |
| **Component** | **Make/Model** | **Serial number** | **Calibration** |
| CTD logger | Seabird SBE 25 | 0415 |  |
| Temperature sensor | Seabird SBE 3F | 4444 | 6 Feb 09 |
| Conductivity sensor | Seabird SBE 4C | 3209 | 6 Feb 09 |
| Pressure (strain gauge) 1000dbar | Seabird SBE 29 | 0603 |  |
| Pressure (strain gauge) 350dbar | Seabird SBE 29 | 0530 | 14 Feb 07 |
| Dissolved Oxygen | Seabird SBE 43 | 1202 | 4 Feb 09 |
| Pump | Seabird SBE 5T | 4646 |  |
| Fluorometer | Seapoint SCF | 2859 | 2006 |
| Transmissometer | Wetlabs CST | 1047 | 27 Apr 07 |
| Optical Backscatter | Seapoint | 11074 | 23 Mar 07 |
| PAR sensor  | Biospherical, QSP2200PD | 20280 | 2007 |
| Surface PAR sensor | Biospherical QSR2200 | 20317 | 24 Mar 2008 |
| Altimeter, Benthos  | Benthos PSA-916D | 41098 |  |
| Nitrate, ISUS (bad data, broken) | Satlantic | 121 |  |
| Nitrate, ISUS battery pack | Satlantic | 053 |  |
| Niskin Bottles, 5 litre | Seabird |  |  |
| PDIM | Seabird  | 0113 |  |
| Carousel | Seabird SBE 32 | 0591 or 0616 |  |
| Deck unit | Seabird SBE 33 | 0132 or 0140 |  |

Contact Bill for raw/processing files so bottle files can be created, salt and O18 data added.

**In general for 2005 to 2009 data sets**

To do

Add files to OSDCommon:\Cruise\_Data\_Raw\ for Jeannette Bedard to work on.

 Priority is 2008 and 2008, but having the others will be good.

Chem: Make chemistry files and add water sample salinity (at least 2007, 2008, 2009) and O18 (2008 and 2009 )

CTD: Run through IOS Shell processing with calibration to salt samples….or a least make comparison for an accuracy statement.

CTD: Convert to IOS header format and put into IOS Data Archive

CTD: May all be missing meta data (location, date and time, depth) that will need adding from the station log.

These other data exists but will dealt with later. Ideally the data sets will be put on the Arctic drive and can be accessed later:

TSG data? (Bill Williams or Patricia Ramlal?) Bill says these data are a mix of good and bad and would need careful exploration to pull together a good data set.

 Meterological data (Bill Williams) Exists in raw form for 2007

 ADCP data (Bill Williams) ) Exists in raw form for 2007

Chemistry data – this may already have been put into a DFO-Winnipeg data base by Patricia Ramlal? So at least have information about how to find data.

Update on chemistry: Patricia Ramlal took water samples and a search shows data here:

See <https://open.canada.ca/data/en/dataset/5cda7dd8-0f57-45a3-a631-d242d36fc957>

However it is just the chemistry values with depth and location, no associated CTD data.

Other resources:

Look here for more sensor calibration information

N:\SHARE\UTILITIES\Instruments\ CALIBRATIONS-Arctic\_2024-02-23.xlsx

N:\SHARE\UTILITIES\Instruments\SEABIRD