01610 TITLE: **SWL2010_Chem-Merged_README.docx**

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ORIGINAL AWARD TITLE: Pacific Marine Arctic Regional Synthesis (PacMARS)

DATA ARCHIVE: PacMARS data archive data link http://pacmars.eol.ucar.edu

DATASET OVERVIEW:
This dataset includes measurements of water samples collected at hydrographic stations from the annual Canadian Coast Guard Service Sir Wilfrid Laurier cruise during July 2010. Data includes by column, Cruise #, Event #, Station Number (#), Station Name (Stn. Name), Station Water Depth (m), Date (yy/mm/dd), time (hh:mm), latitude (°N), and longitude (°W), nominal depth (w), Rosette Bottle #, Sample Number, bottle trip location, raw CTD data (pressure, temperature (°C), Salinity, dissolved Oxygen concentration, Chlorophyll a concentration, nutrients (Phosphate, Silica, Nitrate+Nitrite, Ammonium) and delta-O18 (stable oxygen isotope) values. Additional parameters in the columns from sensors and data descriptors are provided in this file and defined below.

INSTRUMENT DESCRIPTION:
Water samples were collected from rosette bottles attached to a Seabird Model SBE19 CTD for nutrients, chlorophyll and oxygen-18/16 ratios. Water temperature, salinity, and other data that were electronically measured with sensors on the CTD are also provided for the depths where each bottle was closed.

DATA COLLECTION AND PROCESSING
Water column collections included water sampling for inorganic nutrients, dissolved oxygen, oxygen-18/16 ratios of seawater, and chlorophyll *a* at up to 6 depths at each station from the rosette bottles. Sensor data for temperature and salinity are also included. Subsamples for inorganic nutrients were collected from the CTD rosette, filtered shipboard, and frozen for post cruise analyses. Nutrient samples were processed by technical support at the Institute of Ocean Sciences, Department of Fisheries and Oceans Canada as part of a collaborative study. Samples were processed for all 4 nutrients: phosphate, nitrite + Nitrate+Nitrite, silica, and to a limited extent, ammonia, as well as dissolved oxygen. Water samples for $^{18}O/^{16}O$ ratios were collected in small vials, sealed to prevent evaporation and returned to the lab for analysis. These samples were analyzed at the University of Maryland Center for Environmental Science using a Thermo DeltaPlus Stable Isotope Mass Spectrometer. The water column chlorophyll was analyzed shipboard using a Turner Designs AU-20 fluorometer (non-acidfication or Welschmeyer method) following a 24-hour in the dark incubation with 90% acetone at 4°C method (see Cooper et al. 2012, 2013 for further details).

There are 11 tabs within this file:

Tab 1 “201005_SWL_Chem” is the data file with the parameters listed in more detail in the data format below. Nutrient data are from MSI Lab, UC Santa Barbara
Tab 2 “Cast Event Notes”-self explanatory
Tab 3 “Overview and Data Notes”-self explanatory
Tab 4 “ELECTRONIC SAMPLE LOG” provides a listing of events at each station, date time, and inventory of components for the full Canadian-US cruise.
Tab 5 “Stn location summary”
Tab 6 “For ODV”
Tab 7 “Bottle Quality”
Tab 8 “Daily Log”
Tab 9 “Bongos”
Tab 10 “XCTD log”
Tab 11 “Drift Bottles”

Data File Structure:
File Names (Formats): **2010_SWL_Chem-Merged.xls**

Files Data Parameters by Column:

A	Unique ID for sorting
B	Cruise #
C	Cast #
D	Station name
E	Cast start time [UTC] (mm/dd/yyyy ; hh:mm)
F-H	Columns to convert lat to decimal degrees
I	Latitude in decimal degrees
J-M	Columns to convert long to decimal degrees
N	Longitude in decimal degrees
O	Station water column depth [m]
P	Cast depth [m]
Q	Raw pressure [dbar]
R	Sample # [All others match to this sample number]
S	Bottle integrity (good (*),leak (L), fail (F), bad: water from unknown depth (B))
T	Tripping direction (downcast or upcast) [US (up stop), UN (up no stop), USM (up stop mix) or DN (down no stop)]
U	Rosette bottle #
V	CTD Scan raw
W	CTD Pressure [dbar] raw
X	CTD Temperature-1 [ITS-90 C] raw
Y	CTD Temperature-2 [ITS-90 C] raw
Z	CTD Conductivity-1 [mS/cm] raw
AA	CTD Conductivity-2 [mS/cm] raw
AB	CTD Salt-1 [ ] raw
AC	CTD Salt-2 [ ] raw
AD	CTD Oxygen [volts] upcast raw
AE	CTD Oxygen [mL/L] upcast raw
AF	CTD Oxygen [% Sat] upcast raw
AG	CTD Fluo [mg/m3] raw
AH	CTD Transmission [%] raw
AI	CTD CDOM [mg/m3] raw
AJ	CTD PAR raw

AK CTD Nitrate+Nitrite+Nitrite ISUS [volts] raw
AL CTD Alt [m] raw
AM CTD SPAR raw
AN CTD StdDev T90-1 raw
AO CTD StdDev T90-2 raw
AP CTD StdDev Cond-1
AQ CTD StdDev Cond-2
AR CTD StdDev DO-1 [volts] raw
AS CTD StdDev Fluor raw
AT CTD StdDev Trans raw
AU CTD StdDev CDOM raw
AV CTD StdDev PAR raw
AW CTD StdDev Nitrate+Nitrite ISUS raw
AX CTD StdDev Alt raw
AY CTD StdDev SPAR raw
AZ Salt Sample #
BA Salt-1
BB IOS QF-1
BC Salt-2
BD IOS QF-2
BE Analyst Comment
BF Salt
BG IOS QF
BH Nutrient Sample #
BI Frozen sample
BJ Nitrate+Nitrite-1 [µM]
BK IOS QF-1
BL Nitrate+Nitrite-2 [µM]
BM IOS QF-2
BN Analyst Comment
BO Silicate-1 [µM]
BP IOS QF-1
BQ Silicate-2 [µM]
BR IOS QF-2
BS Analyst Comment
BT Phosphate-1 [µM]
BU IOS QF-1
BV Phosphate-2 [µM]
BW IOS QF-2
BX Analyst Comment
BY Nitrate+Nitrite [µM]
BZ IOS QF
CA Silicate [µM]
CB IOS QF
CC Phosphate [µM]
CD IOS QF
CE Chl Sample #
CF Filtered Volume [L]
CG Extraceted Volume [L]
CH ChlTOT-1 [ug/L]
CI IOS QF-1

CJ Analyst Comment
CK ChlTOT [ug/L]
CL IOS QF
CM PhaeTOT [ug/L]
CN IOS QF
CO DIC Sample # (Dissolved inorganic carbon)
CP DIC System -1
CQ DIC-1 [µmol/kg]
CR IOS QF-1
CS DIC System -2
CT DIC-2 [µmol/kg]
CU IOS QF-2
CV DIC [µmol/kg]
CW IOS QF
CX Alkalinity Sample #
CY Alkalinity-1 System
CZ Alkalinity-1 [µmol/kg]
DA IOS QF-1
DB Alkalinity-2 System
DC Alkalinity-2 [µmol/kg]
DD IOS QF-2
DE Alkalinity [µmol/kg]
DF IOS QF
DG O18 Sample #
DH O18-1 [‰ VSMOW] These samples analyzed at the University of Maryland Center for Environmental Science
DI IOS QF-1
DJ O18-2 [‰ VSMOW]
DK IOS QF-2
DL dup or re
DM O18 [‰ VSMOW]
DN IOS QF
DO Sort Reference
DP END

Data Version Number and Date: Version 1, 05/07/14

Software Compatibility: This dataset will be posted in Microsoft Excel for Mac 2011, Version 14.4.1

REFERENCES

Cooper, L.W., M.A. Janout, K.E. Frey, R. Pirtle-Levy, M.L. Guarinello, J.M. Grebmeier, and J.R. Lovvorn. 2012. The relationship between sea ice break-up, water mass variation, chlorophyll biomass, and sedimentation in the northern Bering Sea. Deep Sea Research Part II 65, 141-162; doi:10.1016/j.dsr2.2012.02.002.

Cooper, L.W, M.G. Sexson, J.M. Grebmeier, R. Gradinger, C.W. Mordy, J.R. Lovvorn. 2013. Linkages Between Sea Ice Coverage, Pelagic-Benthic Coupling and the Distribution of Spectacled Eiders: Observations in March 2008, 2009 and 2010 from the Northern Bering Sea, Deep Sea Research Part II, Topical Studies in Oceanography, 94, 31-43.