TITLE: **SWL00_Bottle (CTD+chl+nuts)_README.docx**

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

DATA ARCHIVE: PacMARS data archive data link

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-August 2000. 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, Nitrite+Nitrate, 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, 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 Tennessee 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 4 tabs within this file:

Tab 1 “2000-20chem-most current” is the data file with the parameters listed in more detail in the data format below.
Tab 2 “Data Note”-self explanatory
Tab 3 “Cast Notes”-self explanatory
Tab 4 “Electronic log” provides a listing of events at each station, date time, and inventory of components for the full Canadian-US cruise.
Tab 5 “2000-20chem-iosshell” is an internal IOS (Institute of Ocean Science, Canada) inventory of every sample
Tab 6 “ios header comment”-internal IOS comment file
Tab 7 “2020ctd” is a listing of the specific CTD file name, station, cast #, date/time, latitude, longitude, and station water depth.

DATA FORMAT

Data File Structure:
File Names (Formats): 2000-20chem-Merged.xls

Files Data Parameters by Column:
A Unique ID for sorting
B Cruise #
C Event Number
D Station Name - based on transect names, see cruise report
E Date: mo/day/yr
F Time (UTC) hh:mm
G Start Time yyyy/mm/dd hh:mm
H Latitude N
I Longitude W
J-M Columns to convert lat and long to decimal degrees
N Latitutude in decimal degrees
O Longitude in decimal degrees
P Station water column depth (m)
Q Nominal targeted depth in water column (m)
R Bottle Number-discrete bottle number on rosette; typically lower numbered bottles were in deeper water
S Sample Number
T Sample Log
U Tripping direction (downcast or upcast)
V Raw CTD sensor pressure depth
W Raw CTD sensor salinity
Y Raw CTD sensor Chla (µg/L)
Z Raw CTD transmission (%)
AA Raw CTD sensor stdDev Temp-standard deviation for temperature
AB Raw CT sensor StdDev Cond=Conductivity
AC Dissolved Oxygen (mL/L)
AD Dissolved Oxygen (mmol/m3)
AE Conductivity at bottle depth
AF Salinity bottle value(psu)
AG Nitrite+nitrate replicate 1(µM)
AH Nitrite+nitrate replicate 2 (µM)
AI Nitrite+nitrate average (µM)
AJ Final archive value Nitrite+nitrate average (µM)

AK Silicate replicate 1(µM)
AL Silicate replicate 2 (µM)
AM Silicate average (µM)
AN Final archive value Silicate (µM)
AO Orthophosphate replicate 1(µM)
AP Orthophosphate replicate 2 (µM)
AQ Orthophosphate average (µM)
AR Final archive value Silicate (µM) AG through AR measured at IOS
AS Alkalinity (µM)
AT Total CO2 (µmol/kg)
AU Chlorophyll (µg/L) Samples measured at sea
AV Phosphate (µM) Samples measured at Marine Science Institute, UC Santa Barbara
AW Silica (µM) Samples measured at Marine Science Institute, UC Santa Barbara
AX Nitrite+Nitrate (µM) Samples measured at Marine Science Institute, UC Santa Barbara
AY Ammonia (µM) Samples measured at Marine Science Institute, UC Santa Barbara
AZ Delta O-18 (per mil) Samples measured at the University of Tennessee
BA Station name
BB Nominal depth (m)

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.