

TITLE: Readme File-“**SWL10 Sediment parameters\_README.docx**”

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ORIGINAL AWARD TITLE: Benthic carbon cycling and ecosystem structure in the northern Bering and Chukchi Seas

\* Chukchi Sea Offshore Monitoring in Drilling Area (COMIDA): Chemical and Benthos (CAB) Project

DATA ARCHIVE: DBO data archive link: <http://dbo.eol.ucar.edu/>

\* COMIDA CAB project <http://arcticstudies.org/cab>

#### DATASET OVERVIEW:

This dataset contains summary measurements of surface sediment collected at each station for the identified cruise, including: sediment grain size ( $\leq 0$  phi, 1 phi, 2 phi, 3 phi, 4 phi,  $\geq 5$  phi, 1-4 phi, and modal phi size), total organic carbon (TOC), total organic nitrogen (TON), C/N and surface sediment chlorophyll (chl a). Surface sediment chlorophyll (chl a) content is scaled up to mg Chl a/m<sup>2</sup>.

#### INSTRUMENT DESCRIPTION:

A van Veen grab (0.1 m<sup>2</sup> sediment grab), weighted with 32 kg of lead was used in the collection of surface sediment samples and a subsample for the parameter was made for a top door on the grab once back on deck.

#### DATA COLLECTION AND PROCESSING

Sediment for grain size and organic carbon and nitrogen content was collected from the first van Veen grab used for collection of sediment samples, packaged in whirl-pak bags, and frozen for post-cruise analyses at land-based facilities. Sediment grain size was determined in the laboratory, normally (but not exclusively) after removal of organics and of iron oxides following the process of Gee and Bauder (1986). Sediment samples were acidified and provided to the CBL's Nutrient Analytical Service's Lab (NASL) for determination of TOC and TON. Procedures and techniques used by NASL are available at <http://nasl.cbl.umces.edu/>. In addition, replicate surface samples (1 cm) were collected with a cut-off 10 cc syringe and subsequently processed for chlorophyll a (chl a) content at each station. Sediment chlorophyll-a samples were extracted and processed shipboard using a Turner Designs AU-20 fluorometer (Welschmeyer non-acidification method) following a 12-hour in the dark incubation with 90% acetone at 4°C method (see Cooper et al. 2012, 2013 for further details).

## DATA FORMAT

Data File Structure: Excel

File Names (Formats): “**SWL11 Sediment parameters.xlsx**”

### Data Parameters:

- CruiseID - Cruise number or other identifier
- CastNum - equals CTD cast number from beginning to end of cruise (=station number)
- StationNme - Station Name – based on DBO transect or region name
- DBO Line/Region – DBO 1,2,3,4, or 5 transect line or within the DBO bounding box (see DBO EOL data site for bounding boxes)
- DBOstation - DBO official station ID name (see DBO EOL data site for coordinates)
- HistStationNme=Historical Station Name
- DataDate - yyyy/moday
- DataYear - year of collection
- Latitude -in decimal degrees (°N)
- Longitude - in decimal degrees (°W)
- Bottom Depth (m)
- SurfSed (Surface Sediment) Phi size-percent of surface sediment grain size fraction:
  - phi\_≥0 (gravel and rock), phi\_1 (coarse sand), phi\_2 (medium sand), phi\_3 (fine sand), phi\_4 (very fine sand), phi\_1-4 (sand total), phi\_≥5 (silt and clay).
- SurfSed Modal Size– highest percent of surface sediment grain size phi class in sample
- SurfSed TOC - total organic carbon (%) in surface sediment
- SurfSed TON - total organic nitrogen (%) in surface sediment
- SurfSed CN - carbon-to-nitrogen ratio (wt./wt.) in surface sediment
- SedSed chla - Sediment chlorophyll content in surface sediments (mg/m<sup>2</sup>)

Data Version Number and Date: Version 1, 07/10/15

## REFERENCES

- 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.
- Gee, G.W., & Bauder J.W. (1986), Particle-size analysis. p. 383–411. In A. Klute (ed.) Methods of soil analysis. Part 1. 2nd ed. Agron. Monogr. 9. ASA and SSSA, Madison, WI.
- Grebmeier, J.M., Howard M. Feder and C. Peter McRoy (1989), Pelagic-benthic coupling on the shelf of the northern Bering and Chukchi Seas. II. Benthic community structure, Marine Ecology Progress Series, 51, 253-268.
- Cooper, L.W., J.M. Grebmeier, I.L. Larsen, V.G. Egorov, C. Theodorakis, H.P. Kelly, and J.R. Lovvorn, 2002. Seasonal variation in water column processes and sedimentation of organic materials in the St. Lawrence Island polynya region, Bering Sea. Mar. Ecol. Prog. Ser. 226, 13–26.
- 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.