**2015 Seacat Data Documentation – Eastern Bering Sea**

**Data submission to NOAA/PMEL 6/8/16**

**Section 1. Contributor Identification**

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**Section 2. General Dataset Description**

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| 1. Dataset Title: IPHC Oceanographic dataset | |
| 2. Dataset Abstract: The IPHC conducts an annual longline fish survey on a 10x10 nautical mile grid from southern Oregon north to the Gulf of Alaska, out along the Aleutian Island chain, and into the Bering Sea in depths ranging from 30 to 500 m. Beginning in 2000, the IPHC conducted a pilot project looking at the practicality of collecting oceanographic profile data alongside fishery data at the longline survey stations. The project was expanded to stations off Oregon in 2007 and coastwide starting in 2009. A Northern California area was added in 2013. Profiles were taken at each station immediately prior to hauling the longline gear so that oceanographic data collection is coincident with the haul. The data collected are surface to depth profiles of pressure (depth), temperature, salinity, dissolved oxygen, pH, and chlorophyll *a* concentration. | |
| 3. Dataset purpose/general description: Surface to depth profiles are collected at each of about 1200 longline fishing stations in the IPHC survey. The geographic range of the survey allows the IPHC to take an oceanographic “snapshot” each summer of conditions along the continental shelf in the north Pacific and parts of the Bering Sea that are useful to researchers worldwide as the time series builds. Furthermore, collecting these data coincident with longline survey fishing enable stock assessment scientists to examine the role of oceanographic conditions in relation to distributions of commercially caught groundfish. | |
| 4. Dataset collection dates  First day of data collection: 6/29/2015  Last day of data collection: 8/8/2015 | |
| 5. Dataset location  Northernmost latitude: 61o30.84 N  Southernmost latitude: 55o20.16 N  Easternmost longitude: 159o32.68 W  Westernmost longitude: 177o23.14 W  IPHC Survey region: E. Bering Sea (EBS) | 9. Vessel name and type  F/V Kema Sue (abbreviation: KSU)  80’ longline fishing vessel  F/V St. Peter (STP)  58’ longline fishing vessel |

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| 6. Instruments used to collect these data:  We use SBE19plus and SBE19plusV2 water column profilers made by Seabird Electronics Inc. in Bellevue, WA, outfitted with auxiliary sensors to measure dissolve oxygen (SBE43), pH(SBE18), and chlorophyll a concentration (WETLabs – ECO-FLRTD). | 10. Trip/cruise number  KSU - Trips 4, 5  STP – Trips 1, 2, 3, 4 |
| 7. Parameters measured  Pressure, temperature, conductivity (for salinity calculation), dissolved oxygen, pH, chlorophyll *a* concentration | 11. Station number range  9202-9530 |
| 8. Number and type of files/casts transferred  102 total casts – each cast provided in cnv, hex, and xml formats. | 12. Description of file names  NetCDF and text filenames have this prefix: IPHC2015 (Organization and year), 3-letter Vessel (see Section 2.9), 4-digit Area/station, cast (set) number cNNN (c and three digits).  Suffix is .nc (NetCDF) or .csv |

**Section 3. Scientific Content of Dataset**

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| Name of measured parameter | Unit of measure used for parameter | Observation method and instrument used | Data processing techniques |
| Pressure  Temperature  Salinity  Dissolved O2  pH  Chlorophyll *a*  Sigma-T  oxygen | Strain gauge (db)  ITS-90 oC  psu  ml/L  pH  µg/l  kg/m3  % saturation | SBE19plusV2  SBE19plusV2  SBE19plusV2  SBE43  SBE18  Wetlabs ECO-FL(RT)D (fluorometer, real-time, 6000-m rating)  calculated value  calculated value | All data are processed from raw using SeaBird “SEASOFT SBE Data Processing” software, and  a configuration (\*.con) file that includes integrated instrument serial numbers and calibration coefficients. Data are averaged to 1-meter from downcast, with occasional upcast fill if problems. Salinity is calculated from conductivity, temperature and pressure using the 1978 Practical Salinity Scale (PSS, IEEE Journal of Oceanic Engineering, V. OE-5, No.1, Jan.1980, p.14). Calculated values (2) are: sigma-T (density-1000) and % Oxygen concentration. |

**Section 4. File Format of Dataset**

Each station has one profile (referred to as cast or set) data file presented in two formats: comma-separated text (csv) and NetCDF (nc). All times are GMT. Data files include all downcast data, with occasional upcast information filling in if data problems occur in downcast and if substitution is reasonable. Nine data variables, as noted in section 3, are included with each cast.

NetCDF files: “classic” NetCDF format using PMEL-EPIC conventions. Files are readable using software with NetCDF capability including Ferret, Matlab, Unidata ncdump (NCO tools), and add-ons to R, Python and Perl. Missing or bad data are designated as 1.0e+35.

Axes (longitude, latitude, depth, time), and Attributes (meta information) are inherent in the NetCDF file format. These attributes are in each NetCDF file:

Latitude: North latitude 0-90° in decimal degrees, labeled “degree\_north”.

Longitude: positive decimal degrees, 0-180°, for Longitude West, negative decimal degrees for Longitude East (east of dateline), all labeled “degree\_west”.

VSLCDE: IPHC vessel code (3-letter) is designated in section 2.9 of this document.

SETNO: Set number is also called cast number and designates a single cast.

STNNO: 4-digit station number defining point location where data were collected.

TRPNO: Trip Number is designated in section 2.10 of this document.

REGION: Code for named region in Survey area is designated in section 2.5 of this document.

DATA\_CMNT: indicates original SeaSoft filename which includes set, station and year.

WATER\_DEPTH: Bottom depth which is measured by vessel instruments or estimated, and is useful as a rough estimate of true bottom depth.

CSV (text) files:

Files have 17 columns of data with a 1-line header of data-columns labels and units. Each line of data includes time and location. Missing data are designated as 999999

Data columns are:

Year, Latitude(deg), Longitude(deg), Station, VesselCode, Cast, WaterDepth(m), CastDate, Pressure(db), Temperature(C), Oxygen(ML/L), pH, Chlorophyll (micrograms/L), Salinity, Oxygen(microMol/kg), Oxygen(%Saturation), Sigma-T(kg/m\*\*3).

Latitudes: degrees N

Longitudes: 0 to 180 degrees, with negative for western and positive for eastern hemisphere.

Time of data collection: column 8 = 2-digit day, 3-character month, 4-digit year connected by dash characters as dd-mmm-yyyy

**Section 5. Instrument Calibration**

Configuration files 6192\_15.xmlcon and 6194\_15.xmlcon.

**Section 6. Other**

Overall, surface values 1-10m were edited or removed from most casts. This could be due to inadequate soak time at the surface, and instrument not being equilibrated before descent.

Oxygen data were removed from 34 of 36 profiles collected by F/V Kema Sue (KSU); and pH data were removed from c113 (stn 9420) and c114 (stn 9407).

Oxygen data were removed from 2 profiles collected by F/V St. Peter (STP), c021 (stn 9509) and c022 (stn 9510).

A few casts were near shore and very shallow (6-10 total depth); cast 063 (stn 9228) has been rejected – 6m depth and 3-4 bad points at top.

Casts c047, c063 and c066 are very shallow, but data have been retained.

Many oxygen values are low.

Near-shore low values for salinity, oxygen and pH are believable.