

# 2009 Seacat Data Documentation Form

## Data submission to NOAA/PMEL

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### Section 1. Contributor Identification

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### Section 2. General Dataset Description

1. Dataset Title: IPHC Oceanographic Profile Data	
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 coast-wide in 2009. 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, conductivity (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 will likely be useful to researchers worldwide as the time series builds. Furthermore, collecting these data coincident with longline survey fishing will 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: 6/29/09 Last day of data collection: 8/08/09	
5. Dataset location Northernmost latitude: 54°10.15' N Southernmost latitude: 52°28.83' N Easternmost longitude: 163°46.37' W Westernmost longitude: 171°33.63' W IPHC Survey region: Unalaska (UN)	9. Vessel name and type F/V Free to Wander (abbreviation: FTW) 58' longline fishing vessel

<b>6. Instruments used to collect these data:</b> We use SBE19plus and SBE19plusV2 water column profilers made by Seabird Electronics Inc. in Bellevue, WA, outfitted with auxiliary sensors to measure dissolved oxygen (SBE43), pH(SBE18), and chlorophyll a concentration (WETLabs – ECO-FLRTD)	<b>10. Trip/cruise number</b> Trips: 3,4,5,6,7
<b>7. Parameters measured</b> Pressure, temperature, conductivity (translated to salinity), dissolved oxygen, pH, chlorophyll-a concentration. Calculated: Sigma-T, Oxygen saturation.	<b>11. Station number range</b> 6001-6066
<b>8. Number and type of files/casts transferred</b> 63 total final casts/files. 64 original files, formats in xml and cnv (SeaBird software) per cast. Processed data in two formats (1 cast/set per file): NetCDF files (PMEL:EPIC standard), and ODV-friendly tab-delimited ASCII file with 2-line header. Duplicate data: stn 6009, cast 110 and stn. 6008, cast 111. Used former, deleted latter.	<b>12. Description of file names</b> NetCDF and TXT Filename prefix: IPHC2009 (Organization and year), 3-letter Vessel (see Section 2.9), 4-digit Area, cast (set) number cNNN (c and three digits). Suffix is .nc or .txt

### Section 3. Scientific Content of Dataset

Name of measured parameter	Unit of measure used for parameter	Observation method and instrument used	Data processing techniques
Pressure Temperature Salinity Dissolved O <sub>2</sub> pH Chlorophyll-a Sigma-T oxygen	Strain guage (db) ITS-90 °C psu ml/L pH mg/m <sup>3</sup> kg/m <sup>3</sup> % saturation	SBE19plusV2 SBE19plusV2 SBE19plusV2 SBE43 SBE18 Wetlabs-ECO-FLRTD 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. 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): sigma-T (density-1000) and % Oxygen concentration.

### Section 4. File Format of Dataset

Each file contains one station profile (cast/set) in both text (txt suffix) and NetCDF (nc suffix) file formats. All times are GMT. Attributes contained in the NetCDF file are:

Latitude: all North latitude 0-90° in decimal degrees, and labeled “degree\_north” (NetCDF) or “degrees north” (txt files)

Longitude in txt files (ODV-friendly):

positive decimal degrees from 0-360° and labeled “degrees east”  
Longitude in NetCDF files:  
positive decimal degrees from 0-180° and labeled “degree\_west” or “degree\_east”  
CRUISE: IPHC vessel code and region abbreviation (see Sec.6)  
CAST: IPHC set number, defines one profile of data at one location  
STATION\_NAME: 4-digit IPHC survey station number  
DATA\_CMNT: lists data source CNV file name

Data columns described in the header information are as follows:

Column 1: scan (row number)  
Column 2: depth (dbar pressure)  
Column 3: temperature (°C)  
Column 4: dissolved oxygen (ml/L)  
Column 5: pH  
Column 6: chlorophyll *a* concentration (mg/m<sup>3</sup>)  
Column 7: Salinity (psu)  
Column 8: oxygen (umol/kg)  
Column 9: Sigma-T (kg/ m<sup>3</sup> Calculated)  
Column 10: oxygen (% saturation)

Data files include all downcast data, with occasional upcast information filling in if data problems occur in downcast.

## **Section 5. Instrument Calibration**

Configuration file included (6196\_09.con).

Winkler titrations were not performed for calibration of dissolved oxygen data. Water samples necessary for calibration were not collected due to field circumstances. SeaBird SBE-43 instruments are considered very reliable. In more usual cases, bottle data are collected, and slope and offset calibration values are applied to profile data. For low values of oxygen concentration, calibration values are generally small, and larger for higher values. Oxygen concentrations greater than 100% (supersaturation) are not unusual. This can be due to variations in temperature and salinity due to heating rates and ventilation of the water column, wind and turbulence at the surface, and biological influences (photosynthesis). Oxygen data should be used with the consideration that water samples were not collected and corrections have not been applied. Data are indicative of variations in spatial patterns, but are not exact.

## **Section 6. Other**

GIS generated map is included to illustrate distribution of stations.