Description

Brief Description: CTD, oxygen, and optic profile measurements from glider dives

Full resolution profiles (surface to 600 m, or near bottom of water column) of temperature, potential temperature, salinity, and dissolved oxygen from Seaglider equipped with CTD, oxygen, and optical sensors.

Processing Description

Latitude and longitude (parameter names lat and lon) were measured at the surface and linearly interpolated when the glider was at depth. Parameter name GPS value id indicates measurements while glider was at the surface (value = 1) or interpolated while diving (value = 0). No interpolation or smoothing was performed on other data.

Temperature and salinity (parameter names temp and sal): Temperature and salinity data were calculated using pre deployment calibration coefficients. A first-order lag correction was applied to raw measurements of temperature and conductivity (due to temperature latency). For each dive, out of range measurements and spikes (3 interquartile ranges above or below the median in windows of 15 contiguous measurements) were flagged and replaced with NaNs, which were repopulated by linear interpolation. Data were smoothed with an 11-point median filter. Parameters potemp and sigma_0 were calculated from the smoothed temp and sal datasets.

Dissolved oxygen, O2 (parameter name O2_cal): Oxygen data from the Aanderaa optode were corrected for time lags in oxygen and temperature. The resulting oxygen has an error of ±2 µmol kg-1.

Particulate backscattering coefficients, bbp (parameter names bbp470, bbp700): Backscattering digital counts were converted to β at 117° by subtracting factory-provided dark counts and multiplying by factory calibration scale factors

Particulate organic carbon (POC) derived from bbp(700) (parameter name POC_bbp): The regression to convert ship downcast bbp at 700 nm to POC is: POC (mg C m-3) = 19607*bbp700 + 17.621; $R^2 = 0.85$, $p < 0.01$. Because all backscatter sensors were cross calibrated with the ship CTD downcast, this regression was directly applied to glider bbp at 700 nm to compute glider POC.

Chlorophyll fluorescence (parameter names chl_raw): Chlorophyll fluorescence measured by glider ECOPuck BB2F was calibrated with discrete chlorophyll samples taken from calibration profiles. The regression was CHL = (FL -141)*0.00225 ($R^2 = 0.94$, $p < 0.01$).

Show Funding Sources

Funding Source	Award Number
NSF Division of Polar Programs	ANT-0838980

Show Deployments

Deployment	Synonyms	Start Date	Platform	Investigator	
SG502-RS-10 o	---	11/21/2010	Seaglider	Dr. Walker Smith Dr. Karen Heywood	**data info**
SG503-RS-10 o	---	11/29/2010	Seaglider	Dr. Walker Smith Dr. Karen Heywood	**data info**
				Dr. Walker Smith Dr. Karen Heywood	**data info**
				Dr. Walker Smith Dr. Karen Heywood	**data info**

Show Instruments

Hide Aanderaa Oxygen Optodes
Short Name: AOO

Community Standard Description
Generic Description
Aanderaa Oxygen Optodes are instruments for monitoring oxygen in the ocean.
PI supplied instrument name: Aanderaa Oxygen Optodes
Dataset-specific description

Hide Druck PDCR 4020 pressure sensor
Short Name: Druck PDCR 4020
Generic Description
The PDCR 4000 Series provides a complete range of mV output pressure transducers offering advanced levels of measurement accuracy stability and flexibility.
PI supplied instrument name: Druck PCDR 4020 pressure sensor
Dataset-specific description

Hide Seaglider
Short Name: Seaglider
Generic Description
The Seaglider is an autonomous underwater vehicle developed sold through iRobot (now Konigsberg). These free-swimming vehicles gather conductivity-temperature-depth (CTD) data and transmit it to shore in near-real time via satellite data telemetry. Seagliders make oceanographic measurements traditionally collected by research vessels or moored

instruments.
PI supplied instrument name: Seaglider
Dataset-specific description

Hide Wet Labs ECO Puck BB2F-VMG
Short Name: ECO Puck BB2F-VMG
Generic Description
The ECO BB measures scattering at 117 degrees, the angle determined as a minimum convergence point for variations in the volume scattering function (VSF) induced by suspended materials and water itself. As a result, the signal measured is less determined by the type and size of the materials in the water and is more directly correlated to the concentration. The meter provides unparalleled accuracy for any single-angle measurement in determining the optical backscattering coefficient: an important parameter for remote sensing and in many in-water bio-optical applications.
PI supplied instrument name: Wet Labs ECO Puck BB2F-VMG
Dataset-specific description

Show Parameters

Supplied Name	Supplied description	Supplied Units	Standard Name
dive_id	dive identification number	dimensionless	dive_id
Glider_ID	Seaglider instrument identifier	dimensionless	Glider_ID
GPS_id	GPS value id; measurement taken while on surface (value=1) or interpolated while diving (value=0)	integer	GPS_id
date	date (UTC) start of sampling	YYYYMMDD	date
julian_day_yr0	time when sample was taken in decimal days since Jan-0-0000	dimensionless	julian_day_yr0
lat	latitude	decimal degrees	lat
lon	longitude	decimal degrees	lon
start_date	date sampling begins	YYYYMMDD	date_begin
start_time	time sampling begins	HHMM	time_begin
end_date	date sampling ends	YYYYMMDD	date_end
end_time	time sampling ends	HHMM	time_end

Supplied Name	Supplied description	Supplied Units	Standard Name
depth	depth at which sample was taken	m	depth
temp	Temperature	degrees Celsius	temp
potemp	Potential Temperature	degrees Celsius	potemp
sal	Salinity	dimensionless	sal
sigma_0	potential density minus 1000	kilograms/meter^3	sigma_0
O2_cal	dissolved oxygen concentration measured from Aanderaa Optode 3830 oxygen sensor;	micromol/kilogram	O2_cal
POC_bbp	particulate organic carbon from bbp(700); based on POC and bbp(700) measurements	milligrams/meter^3	POC_bbp
bbp470	particulate backscattering coefficient at 470 nm; bbp(470) from ECOPuck BB2F;based on factory calibrations	$\beta(\theta c)$ /m /sr	bbp470
bbp700	particulate backscattering coefficient at 700 nm; bbp(700) from ECOPuck BB2F; intercalibrated with KN19303 bbp(700) measurements	$\beta(\theta c)$ /m /sr	bbp700
chl_raw	chlorophyll fluorescence (raw output minus dark counts)	milligrams/meter^3	chl_raw