CTD casts collected at station Kahe and ALOHA between June 15 and June 24, 2019 onboard R/V Kilo Moana cruise KM1910.

Website: https://www.bco-dmo.org/dataset/854106
Data Type: Cruise Results
Version: 1
Version Date: 2022-01-12

Project
» EAGER Collaborative Research: Early career chief scientist training for biological and chemical oceanographers
(Chief Sci KM1910)

Contributors	Affiliation	Role
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Abstract
CTD hydrocast data from KM1910. Dataset includes up- and down-cast vertical profiles of pressure, temperature, salinity, dissolved oxygen, chloropigment fluorescence, beam transmissometry, and photosynthetically active radiation from all CTD rosette casts conducted during the cruise (22 discrete casts).

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Coverage

Spatial Extent: **N**:22.8327 **E**:-157.922 **S**:21.3433 **W**:-158.424
Temporal Extent: 2019-06-16 - 2019-06-24

Methods & Sampling

The CTD rosette package consisted of a 24-place carousel and an aluminum rosette frame equipped with 24 12-L PVC bottles. The CTD and rosette were deployed on a 3-conductor cable (0.322 cm) collecting data at 24 Hz. Raw data were stored on both a shipboard server and laptop computer.

The CTD rosette was equipped with: SeaBird CTD (conductivity, temperature, depth), SeaPoint chlorophyll fluorometer, SBE dissolved oxygen, beam tranmissometer (C-star) and PAR sensor.

Data Processing Description

CTD data were processed and quality controlled following Hawaii Ocean Time-series protocols.

CTD data were quality controlled and screened for spikes when the CTD rosette speed was less than 0.25 m s-

1 or its acceleration was greater than 0.25 m s. Data were averaged into 2 dbar pressure bins.

CTD-based dissolved oxygen measurements were calibrated to discrete oxygen samples measured on the ship by Winkler titration. Discrete bottle oxygen samples were collected and analyzed using a computer-controlled potentiometric end-point titration procedure. Precision of the Winkler titration method averages ~0.2%. The calibration procedure consists of fitting a non-linear equation to the CTD oxygen current and oxygen temperature.

Similarly, the SeaPoint fluorescence measurements were calibrated, post-cruise, to discrete bottle samples collected from selected hydrocasts. CTD sensor drift was corrected via calibration with bottle fluorometric chlorophyll a plus accessory pheopigments analyzed at the shore based laboratory using a Turner Designs Model 10-AU fluorometer. A linear relationship of the form, Vchl = b·Vfluor + a, was used to convert all fluorescence data to chloropigment.

BCO-DMO Processing Description:

* Merged all individual CTD files
* Combined CTD files with the eventlog, adding the latitude, longitude, times, cast number, station number and event number.
* Converted times to ISO format and Zulu times (HST to UTC time).
* Adjusted column names to comply with database requirements.

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Data Files

File
ctd_casts_all.csv(Comma Separated Values (.csv), 4.65 MB) MD5:d5e1d748998327c6a128ac961f3adf0c Primary data file for dataset ID 854106

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Related Publications

Karl, D., Winn, C., Hebel, D., and Letelier, R. Hawai'i Ocean Time-Series Program Field and Laboratory Protocols. https://hahana.soest.hawaii.edu/hot/protocols/protocols.html#
Methods

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Parameters

Parameter	Description	Units
event_id	Cruise number (KM1910), Station number, CTD Cast number	unitless
ctd_direction	Up or down cast	unitless
event_number	Cruise event number	unitless
station_number	Station 1 = Kahe, Station 2= ALOHA	unitless
cast_number	CTD cast number	unitless
latitude_in	Latitude at beginning of CTD cast, south is negative	decimal degrees
longitude_out	Longitude at end of CTD cast, west is negative	decimal degrees
ISO_DateTime_UTC_In	Date/Time (UTC) at beginning of CTD cast in ISO format (YYYY-MM-DDTHH:MMZ)	unitless
ISO_DateTime_UTC_Out	Date/Time (UTC) at end of CTD cast in ISO format (YYYY-MM-DDTHH:MMZ)	unitless
CHLPIG	Chloropigment	micrograms/L
CTDPRS	Pressure	decibar
CTDTMP	Temperature	ITS-90
CTDSA	Salinity	PSS-78
CTDOXY	Dissolved Oxygen	umole/L
PAR	Photosynthetically active radiation	Volts
BEAM_AT	Beam transmission	per meter
XMISS	Percent transmission	percentage (%)
NUMBER	Number of observations	unitless
QUALT1	Quality flags	unitless

Instruments

Dataset-specific Instrument Name	Biospherical QSP-2300 Log Scalar PAR sensor
Generic Instrument Name	Biospherical PAR sensor
Generic Instrument Description	Unspecified Biospherical PAR. An irradiance sensor, designed to measure Photosynthetically Active Radiation (PAR).

Dataset-specific Instrument Name	Conductivity Sensor - SBE Model 4-02/0 (dual)
Generic Instrument Name	Sea-Bird SBE 43 Dissolved Oxygen Sensor
Dataset-specific Description	Conductivity Sensor - SBE Model 4-02/0 (dual)
Generic Instrument Description	The Sea-Bird SBE 43 dissolved oxygen sensor is a redesign of the Clark polarographic membrane type of dissolved oxygen sensors. more information from Sea-Bird Electronics

Dataset-specific Instrument Name	Temperature Probe – SBE Model 3-02/F (dual)
Generic Instrument Name	Sea-Bird SBE-3 Temperature Sensor
Dataset-specific Description	Temperature Probe – SBE Model 3-02/F (dual)
Generic Instrument Description	The SBE-3 is a slow response, frequency output temperature sensor manufactured by Sea-Bird Electronics, Inc. (Bellevue, Washington, USA). It has an initial accuracy of +/- 0.001 degrees Celsius with a stability of +/- 0.002 degrees Celsius per year and measures seawater temperature in the range of -5.0 to +35 degrees Celsius. more information from Sea-Bird Electronics

Dataset-specific Instrument Name	Conductivity Sensor - SBE Model 4-02/0 (dual)
Generic Instrument Name	Sea-Bird SBE-4 Conductivity Sensor
Dataset-specific Description	Conductivity Sensor - SBE Model 4-02/0 (dual)
Generic Instrument Description	The Sea-Bird SBE-4 conductivity sensor is a modular, self-contained instrument that measures conductivity from 0 to 7 Siemens/meter. The sensors (Version 2; S/N 2000 and higher) have electrically isolated power circuits and optically coupled outputs to eliminate any possibility of noise and corrosion caused by ground loops. The sensing element is a cylindrical, flow-through, borosilicate glass cell with three internal platinum electrodes. Because the outer electrodes are connected together, electric fields are confined inside the cell, making the measured resistance (and instrument calibration) independent of calibration bath size or proximity to protective cages or other objects.

Dataset-specific Instrument Name	Wetlabs C-Star 25cm
Generic Instrument Name	WET Labs {Sea-Bird WETLabs} C-Star transmissometer
Dataset-specific Description	Wetlabs C-Star 25cm
Generic Instrument Description	The C-Star transmissometer has a novel monolithic housing with a highly intgrated opto-electronic design to provide a low cost, compact solution for underwater measurements of beam transmittance. The C-Star is capable of free space measurements or flow-through sampling when used with a pump and optical flow tubes. The sensor can be used in profiling, moored, or underway applications. Available with a 6000 m depth rating. More information on Sea-Bird website: https://www.seabird.com/c-star-transmissometer/product?id=60762467717

Deployments

KM1910

Website	https://www.bco-dmo.org/deployment/841636
Platform	R/V Kilo Moana
Report	https://datadocs.bco-dmo.org/docs/305/Chief_Sci_KM1910/data_docs/matt_church_EAGER_cruise_plan_06_17_2019.pdf
Start Date	2019-06-15
End Date	2019-06-24
Description	NSF Chief Scientist Training Cruise. For more information, see Rolling Deck to Repository (R2R): https://www.rvdata.us/search/cruise/KM1910 (cruise DOI: 10.7284/908380)

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Project Information

EAGER Collaborative Research: Early career chief scientist training for biological and chemical oceanographers (Chief Sci KM1910)

Coverage: Station ALOHA (22.75N, 158W), North Pacific Ocean

NSF Award Abstract:

Intellectual Merit
The PIs request funds to provide training in leading and organizing research cruises to early career researchers in the areas of Biological and Chemical Oceanography. Participants in this training program would be introduced to pre-cruise planning and logistics, receive training in commonly used oceanographic sampling equipment, and conduct shipboard measurements during a 10-day oceanographic cruise to the North Pacific Subtropical Gyre (NPSG). The goal of this training program is to prepare early career scientists for leading and participating in interdisciplinary oceanographic research at sea.

Broader Impacts
The proposed program addresses the broader impacts criteria successfully. The research cruise and follow-up reports and publications focus on interdisciplinary questions important for advancing the field. Given the rapid changes that oceanic systems are undergoing, it is important to have a cadre of junior scientists who are adept at managing interdisciplinary collaborations and conducting research at sea. The PIs are considering ways to connect with diverse audiences in recruiting participants. The impact on early career oceanographers will be very strong. This will create an experience that will be a major impact on the careers of the trainees, especially if they stay in the oceanography field.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1911831

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