Depth, temperature, oxygen, salinity, and fluorescence from 0-4500m depth CTD profiles conducted during the R/V Kilo Moana cruise KM1427 in the North Pacific Ocean in December of 2014

Website: https://www.bco-dmo.org/dataset/734763
Data Type: Cruise Results
Version: 1
Version Date: 2018-05-11

Project
» Relating the Optical Properties of CDOM within the Ocean Basins to Source and Structure (CDOM Optical Properties)

Contributors	Affiliation	Role
Blough, Neil V.	University of Maryland - College Park (UMD)	Principal Investigator, Contact
Del Vecchio, Rossana	University of Maryland - College Park (UMD)	Co-Principal Investigator
York, Amber D.	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager

Abstract
CTD profiles were conducted during the R/V Kilo Moana cruise KM1427 in the North Pacific Ocean in December of 2014. Profiles ranging from 0-4500 meters measured depth, temperature, oxygen, salinity, and fluorescence.

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Coverage

Spatial Extent: **Lat**:22.75 **Lon**:-158
Temporal Extent: 2014-12 - 2014-12

Dataset Description

This dataset has been submitted to BCO-DMO and is in the process of being served.

Related Datasets:
* TOC: https://www.bco-dmo.org/dataset/735956
* Absorption coefficients: https://www.bco-dmo.org/dataset/735970

Methods & Sampling

Samples were collected using a CTD rosette with Niskin bottles and immediately transferred into acid rinsed carboys (20 L). Samples were then filtered through a 0.2 um maxi capsule filter (Pall Corporation) prior to the acquisition of measurements.

For more information see Cartisano et al., 2018.

Data Processing Description

These data were analyzed with the software available on board the research vessel (software: Seasave v7.22.5). The data were then exported into Excel for further analysis.

BCO-DMO Data Manager Processing Notes:
* added a conventional header with dataset name, PI name, version date
* modified parameter names to conform with BCO-DMO naming conventions
* rounded depth to four decimal places. It was between 5-9 decimal places long.

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Related Publications

Cartisano, C. M., Del Vecchio, R., Bianca, M. R., & Blough, N. V. (2018). Investigating the sources and structure of chromophoric dissolved organic matter (CDOM) in the North Pacific Ocean (NPO) utilizing optical spectroscopy combined with solid phase extraction and borohydride reduction. Marine Chemistry. doi:10.1016/j.marchem.2018.05.005
Results
,
Methods

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Parameters

Parameter	Description	Units
Depth	Water depth	meters (m)
Temperature	Water temperature (ITS-90)	degrees Celsius
Oxygen	Dissolved oxygen (from SBE 43)	micomoles per kilogram (umol/kg)
Salinity	Water salinity	Practical Salinity Units (PSU)
Fluorescence	Chl a fluorescence (from WET Labs ECO-AFL/FL)	milligrams per meters squared (mg/m^3)

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Instruments

Dataset-specific Instrument Name	SBE 911plus / 917plus CTD
Generic Instrument Name	CTD Sea-Bird SBE 911plus
Generic Instrument Description	The Sea-Bird SBE 911 plus is a type of CTD instrument package for continuous measurement of conductivity, temperature and pressure. The SBE 911 plus includes the SBE 9plus Underwater Unit and the SBE 11plus Deck Unit (for real-time readout using conductive wire) for deployment from a vessel. The combination of the SBE 9 plus and SBE 11 plus is called a SBE 911 plus. The SBE 9 plus uses Sea-Bird's standard modular temperature and conductivity sensors (SBE 3 plus and SBE 4). The SBE 9 plus CTD can be configured with up to eight auxiliary sensors to measure other parameters including dissolved oxygen, pH, turbidity, fluorescence, light (PAR), light transmission, etc.). more information from Sea-Bird Electronics

Dataset-specific Instrument Name	WET Labs ECO-AFL/FL
Generic Instrument Name	Fluorometer
Generic Instrument Description	A fluorometer or fluorimeter is a device used to measure parameters of fluorescence: its intensity and wavelength distribution of emission spectrum after excitation by a certain spectrum of light. The instrument is designed to measure the amount of stimulated electromagnetic radiation produced by pulses of electromagnetic radiation emitted into a water sample or in situ.

Dataset-specific Instrument Name	
Generic Instrument Name	Sea-Bird SBE 43 Dissolved Oxygen Sensor
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

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Deployments

KM1427

Website	https://www.bco-dmo.org/deployment/734731
Platform	R/V Kilo Moana
Start Date	2014-12-08
End Date	2014-12-12
Description	Project: Center for Microbial Oceanography (C-MORE) 2014, Leg 5 Original cruise data are available from the NSF R2R data catalog: https://www.rvdata.us/search/cruise/KM1427

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Project Information

Relating the Optical Properties of CDOM within the Ocean Basins to Source and Structure (CDOM Optical Properties)

Coverage: Station Aloha-Hawaii-North Pacific Ocean

Chromophoric dissolved organic matter (CDOM) is optically measured material in the oceans resulting from the degradation of organic matter. While the importance of CDOM in the optical properties and biogeochemistry of marine waters has been well established over the last several decades, the source and structure of this material within the ocean basins remains unclear. Some studies indicate that CDOM is produced primarily in situ from either the chemical or biological processing of marine materials, while others have provided evidence that CDOM is primarily a remnant of terrestrial matter that has been diluted and modified during transit to and within the oceans. In this study, researchers from the University of Maryland Center for Environmental Studies will use complete spectral absorption and emission properties combined with chemical and mass spectral tests on samples from the North Pacific Ocean to determine the source and structure of CDOM. The results will be compared with those previously acquired, or to be acquired, from the Delaware Bay, the Middle Atlantic Bight, and the Equatorial Atlantic. By employing this multifaceted approach, the researchers will significantly advance our knowledge of CDOM.

Broader Impacts: This project will provide support for graduate and undergraduate student training, and results will be broadly disseminated through peer-reviewed research publications and presentations at national meetings, where student-led presentations will be emphasized.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1357411

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