Environmental sensor data collected in Palau marine lakes from small boats, 2011-2015

Website: https://www.bco-dmo.org/dataset/768037
Data Type: Other Field Results
Version: 1
Version Date: 2019-05-13

Project
» Do Parallel Patterns Arise from Parallel Processes? (PaPaPro)

Program
» Dimensions of Biodiversity (Dimensions of Biodiversity)

Contributors	Affiliation	Role
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Abstract
Environmental sensor data describing Palau lake environments, 2011-2015. Reported parameters include depth, temperature, conductivity, salinity, oxygen, pH, light, and chlorophyll.

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Coverage

Spatial Extent: **N**:7.3237 **E**:134.5089 **S**:7.1506 **W**:134.3447
Temporal Extent: 2011-06-04 - 2015-09-15

Dataset Description

Environmental sensor data describing Palau lake environments, 2011-2015. Reported parameters include depth, temperature, conductivity, salinity, oxygen, pH, light, and chlorophyll.

* NOTE: The P.I.'s are using this dataset to write papers. Please contact them before using these data to make sure you are not duplicating efforts.

Methods & Sampling

The sonde with sensors was deployed manually from a raft or other floating craft (e.g. Caddis Fly inflatable seat). The sonde was lowered at one meter intervals and, at each depth interval, the reading was allowed to stabilize before readings were transcribed from the handheld meter to a dive slate in the field. Following return

to the laboratory, data on the dive slate were entered into a spreadsheet, a preliminary plot made, and any apparent erroneous data (e.g. density inversions) were double-checked for accuracy of transcription and corrected as necessary.

Data Processing Description

BCO-DMO Processing:
- added conventional header with dataset name, PI name, version date
- renamed parameters to BCO-DMO standard
- reformatted date from dd-Mon-yy to yyyy-mm-dd (ISO date format)
- replaced blanks cells with nd
- removed blank lines and unmatched quote ('); eg. isn't becomes 'is not'

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Data Files

File
1_lake_environ.csv (Comma Separated Values (.csv), 161.35 KB) MD5:87d3f2ce8fc4cd623f1c57f3a4b0348a Primary data file for dataset ID 768037

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Related Publications

Meyerhof, M. S., Wilson, J. M., Dawson, M. N., & Michael Beman, J. (2016). Microbial community diversity, structure and assembly across oxygen gradients in meromictic marine lakes, Palau. Environmental Microbiology, 18(12), 4907–4919. doi:10.1111/1462-2920.13416
Methods

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Parameters

Parameter	Description	Units
lake_code	3-letter code for sampled lake name	unitless
year	Sampling year	unitless
date_ISO	Sampling date in ISO format (yyyy-mm-dd)	unitless
face	cardinal direction indicating in which section of the lake basin sampling was conducted	unitless
depth	depth at which the measurement made	meters
temperature	water temperature	degrees Celsius
conductivity	Conductivity	microSiemans/centimeter (mS/cm)
salinity	salinity	parts per thousand (ppt)
oxygen	Dissolved oxygen; LDO	milligrams/liter (mg/L)
pH	pH	unitless
PAR	Photosynthetically Active Radiation; Li-Cor Ambient Light sensor	micromol/second/meter^2 (umol s-1m-2)
CHL	Chlorophyll a concentration	micrograms/liter (ug/L)
method	Type of meter used for the measurement: "Quanta" or "DS5" or "old-meter" (an earlier Quanta)	unitless

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Instruments

Dataset-specific Instrument Name	Garmin GPSMAP 60CSx handheld GPS unit
Generic Instrument Name	GPS receiver
Generic Instrument Description	Acquires satellite signals and tracks your location. This term has been deprecated. Use instead: https://www.bco-dmo.org/instrument/560

Dataset-specific Instrument Name	Hydrolab DS5
Generic Instrument Name	Hydrolab Series 5 probes
Dataset-specific Description	Dissolved oxygen, temperature, pH, chlorophyll fluorescence and salinity/conductivity were measured using a HydroLab DS5 Multiparameter Data Sonde (Hach Company, Loveland, CO, USA).
Generic Instrument Description	Multi-parameter probes that can measure from 12 (MS5) to 16 (DS5 and DS5X) parameters simultaneously. Measurements include temperature, depth, conductivity, salinity, specific conductance, TDS, pH, ORP, dissolved oxygen, turbidity, chlorophyll a, blue-green algae, Rhodamine WT, ammonium, nitrate, chloride, PAR and total dissolved gases. These probes can be deployed at depths up to 200 m and can be used in continuous monitoring programs.

Dataset-specific Instrument Name	Hydrolab Quanta Multi-Probe Meter multiparameter water quality sonde
Generic Instrument Name	Water Quality Multiprobe
Dataset-specific Description	Multiparameter water quality sonde measuring Temperature, Conductivity, Depth, pH, Oxygen Reduction Potential (ORP), Dissolved Oxygen (Clark Cell), Turbidity.
Generic Instrument Description	An instrument which measures multiple water quality parameters based on the sensor configuration.

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Deployments

Palau_lakes

Website	https://www.bco-dmo.org/deployment/542180
Platform	Small boats - CRRF
Start Date	2010-08-21
End Date	2016-06-14
Description	Palau marine lakes

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Project Information

Do Parallel Patterns Arise from Parallel Processes? (PaPaPro)

Website: http://marinelakes.ucmerced.edu/

Coverage: Western Pacific; Palau; Indonesia (West Papua)

This project will survey the taxonomic, genetic, and functional diversity of the organisms found in marine lakes, and investigate the processes that cause gains and losses in this biodiversity. Marine lakes formed as melting ice sheets raised sea level after the last glacial maximum and flooded hundreds of inland valleys around the world. Inoculated with marine life from the surrounding sea and then isolated to varying degrees for the next

6,000 to 15,000 years, these marine lakes provide multiple, independent examples of how environments and interactions between species can drive extinction and speciation. Researchers will survey the microbes, algae, invertebrates, and fishes present in 40 marine lakes in Palau and Papua, and study how diversity has changed over time by retrieving the remains of organisms preserved in sediments on the lake bottoms. The project will test whether the number of species, the diversity of functional roles played by organisms, and the genetic diversity within species increase and decrease in parallel; whether certain species can greatly curtail diversity by changing the environment; whether the size of a lake determines its biodiversity; and whether the processes that control diversity in marine organisms are similar to those that operate on land.

Because biodiversity underlies the ecosystem services on which society depends, society has a great interest in understanding the processes that generate and retain biodiversity in nature. This project will also help conserve areas of economic importance. Marine lakes in the study region are important for tourism, and researchers will work closely with governmental and non-governmental conservation and education groups and with diving and tourism businesses to raise awareness of the value and threats to marine lakes in Indonesia and Palau.

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Program Information

Dimensions of Biodiversity (Dimensions of Biodiversity)

Website: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503446

Coverage: global

(adapted from the NSF Synopsis of Program)
Dimensions of Biodiversity is a program solicitation from the NSF Directorate for Biological Sciences. FY 2010 was year one of the program. [MORE from NSF]

The NSF Dimensions of Biodiversity program seeks to characterize biodiversity on Earth by using integrative, innovative approaches to fill rapidly the most substantial gaps in our understanding. The program will take a broad view of biodiversity, and in its initial phase will focus on the integration of genetic, taxonomic, and functional dimensions of biodiversity. Project investigators are encouraged to integrate these three dimensions to understand the interactions and feedbacks among them. While this focus complements several core NSF programs, it differs by requiring that multiple dimensions of biodiversity be addressed simultaneously, to understand the roles of biodiversity in critical ecological and evolutionary processes.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1241255

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