BioProject accession information for Trichodesmium colonies from R/V Atlantic Explorer AE1409, R/V Kilo Moana KM1513 and other cruises in the N. Atlantic, S. Pacific and N. Pacific, 2007-2015 (P Processing by Tricho project)

Website: https://www.bco-dmo.org/dataset/716817
Data Type: Cruise Results
Version:
Version Date: 2017-10-27

Project
» Dissolved Phosphorus Processing by Trichodesmium Consortia: Quantitative Partitioning, Role of Microbial Coordination, and Impact on Nitrogen Fixation (P Processing by Tricho)

Contributors	Affiliation	Role
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Coverage

Spatial Extent: **N**:24.5 **E**:178.44 **S**:-27.41 **W**:-158.284
Temporal Extent: 2007-03-01 - 2015-07-29

Dataset Description

Trichodesmium field sample sequence data from the July 2015 SCOPE cruise (R/V Kilo Moana KM1513) in the NW Pacific, the May 2014 PABST cruise (R/V Atlantic Explorer AE1409) in the Sargasso Sea, and other cruises in March 2007, May 2008, and August 2012 in North and South Pacific Subtropical Gyres, the and North Atlantic Subtropical Gyre. Links to the NCBI GenBank BioProjects are provided.

The accessions and further associated metadata are reported at NCBI GenBank as:
PRJNA314461
PRJNA330990
PRJNA381915 - to be made publicly accessible by 2018-10-27

Methods & Sampling

BioProject **PRJNA314461**; cruises KM0703, X0804, KM1309:Sample acquisition and processing (pdf)

BioProject **PRJNA330990**; cruise AE1409: [Sample acquisition and processing (pdf)](#)

BioProject **PRJNA381915**; cruise KM1513: [Sample acquisition and processing (pdf)](#)

Data Processing Description

BCO-DMO Processing:
Added conventional header with dataset name, PI name, version date.
Modified parameter names to conform with BCO-DMO naming conventions.
Split lat_lon into separate latitude and longitude columns
Added columns: cruise_id, cruise_name
Added links to NCBI GenBank BioProject accession pages

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Data Files

File
tricho_accessions.csv (Comma Separated Values (.csv), 19.89 KB)   MD5:14e352674262df82258c118bf5d216b2   Primary data file for dataset ID 716817

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Parameters

Parameter	Description	Units
cruise_id	official UNOLS cruise identifier	unitless
cruise_name	project cruise name	unitless
sample_name	sequencing facility sample identifier	unitless
sample_title	laboratory sample identifier	unitless
bioproject_accession	collection of biological data related to a single initiative	unitless
organism	cyanobacterium used in this study	unitless
strain	population of organism that descends from a single organism or pure culture isolate; not applicable to this dataset	unitless
isolate	specific individual from which this sample was obtained; not applicable to this dataset	unitless

host	host organism; not applicable to this dataset	unitless
isolation_source	physical; environmental; geographic source of the sample	unitless
collection_date	date sample was obtained	year-month-day
geo_loc_name	geographical origin of the sample	unitless
sample_type	sample type such as: whole organism; mixed culture; cell culture; metagenomic assembly	unitless
biomaterial_provider	laboratory and principal investigator where sample came from	unitless
collected_by	laboratory and principal investigator where organism was isolated	unitless
depth	vertical distance below the surface where sample was collected	meters
env_biome	descriptor of the broad ecological context of sample	unitless
genotype	observed genotype; not applicable to this dataset	unitless
lat	sample collection latitude; north is positive	decimal degrees
lon	sample collection longitude; east is positive	decimal degrees
passage_history	duration of sample	not applicable
samp_size	amount of sample collected	colonies
NCBI_accession_link	link to NCBI GenBank BioProject accession page	unitless

Instruments

Dataset-specific Instrument Name	Illumina Miseq platform
Generic Instrument Name	Automated DNA Sequencer
Generic Instrument Description	A DNA sequencer is an instrument that determines the order of deoxynucleotides in deoxyribonucleic acid sequences.

Dataset-specific Instrument Name	net
Generic Instrument Name	Plankton Net
Dataset-specific Description	Used to collect Trichodesmium colonies.
Generic Instrument Description	A Plankton Net is a generic term for a sampling net that is used to collect plankton. It is used only when detailed instrument documentation is not available.

Dataset-specific Instrument Name	
Generic Instrument Name	Thermal Cycler
Generic Instrument Description	A thermal cycler or "thermocycler" is a general term for a type of laboratory apparatus, commonly used for performing polymerase chain reaction (PCR), that is capable of repeatedly altering and maintaining specific temperatures for defined periods of time. The device has a thermal block with holes where tubes with the PCR reaction mixtures can be inserted. The cycler then raises and lowers the temperature of the block in discrete, pre-programmed steps. They can also be used to facilitate other temperature-sensitive reactions, including restriction enzyme digestion or rapid diagnostics. (adapted from http://serc.carleton.edu/microbelife/research_methods/genomics/pcr.html)

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Deployments

AE1409

Website	https://www.bco-dmo.org/deployment/565190
Platform	R/V Atlantic Explorer
Start Date	2014-05-08
End Date	2014-05-26
Description	May 2014 cruise conducted as part of the "Dissolved Phosphorus Processing by Trichodesmium Consortia: Quantitative Partitioning, Role of Microbial Coordination, and Impact on Nitrogen Fixation" project.

KM1513

Website	https://www.bco-dmo.org/deployment/640720
Platform	R/V Kilo Moana
Start Date	2015-07-24
End Date	2015-08-05
Description	The objective of the cruise is deploy free-drifting surface drifters in the vicinity of the Hawaii Ocean Time-series (HOT) station (Station ALOHA), which is defined as a circle with a 6 nautical mile radius centered at 22° 45'N, 158°W. The surface drifters will be monitored for the duration of the cruise and the Kilo Moana will conduct water-column sampling using the CTD-rosette alongside one of the drifters for the duration of the cruise. Cruise Plan Cruise Binder

KM0703

Website	https://www.bco-dmo.org/deployment/58016
Platform	R/V Kilo Moana
Report	http://www.rvdata.us/catalog/KM0703
Start Date	2007-03-14
End Date	2007-04-18
Description	The cruise began in Townsville, Australia and sampled the Coral Sea, a transect southward toward the Tasman Sea, and a transect northward toward New Caledonia, with twelve hydrostations (001-012). It then made a run eastward to 170 deg W, a northward run to 15 deg S, then a transect to the east before ending in Suva, Fiji after carrying out fourteen stations (013-026). Cruise information and original data are available from the NSF R2R data catalog.

KM1309

Website	https://www.bco-dmo.org/deployment/717844
Platform	R/V Kilo Moana
Start Date	2013-05-22
End Date	2013-06-05

AE0810

Website	https://www.bco-dmo.org/deployment/58062
Platform	R/V Atlantic Explorer
Start Date	2008-05-03
End Date	2008-05-25
Description	One in a series of transect cruises to study the biological and biogeochemical aspects of the marine phosphorus cycle. Note the cruise identifiers for the Atlantic Explorer were originally formatted as XYY## (e.g. X0806 was the 6th cruise in 2008). The data files include cruise IDs of this type. The vessel operator changed the cruise ID syntax several years after the cruise and the official cruise ID syntax was changed to AEYY##. For example, AE0810 should be the same cruise as X0810. One exception for this dataset is that X0804 is cruise ID AE0810 (unclear how the cruise numbering scheme got so confused). Database validation showed that AE0804 was not the correct cruiseid based on information at R2R. The cruiseid was then updated to reflect the corrected information (the May 2008 cruise was AE0810. Additional Information from R2R Site

Project Information

Dissolved Phosphorus Processing by Trichodesmium Consortia: Quantitative Partitioning, Role of Microbial Coordination, and Impact on Nitrogen Fixation (P Processing by Tricho)

Coverage: Western Tropical North Atlantic

Description from NSF award abstract:
Colonies of the cyanbacterium *Trichodesmium* are responsible for a large fraction of N2 fixation in nutrient-poor, open-ocean ecosystems, ultimately fueling primary production in both *Trichodesmium* and in the broader planktonic community. However, in some parts of the ocean, the scarcity of dissolved phosphorus limits rates of *Trichodesmium* N2 fixation. *Trichodesmium* colonies employ an arsenal of strategies to mitigate the effects of phosphorus limitation, and the consortia of epibiotic bacteria in the colonies may play a significant role in phosphorus acquisition.

In this study, researchers from Woods Hole Oceanographic Institution and Columbia University will use metagenomic and metatranscriptomic sequencing to investigate how phosphorus metabolism is coordinated in *Trichodesmium* consortia, and to discern the role of quorum sensing in phosphorus acquisition and partitioning. Results from this study are expected to expand understanding of *Trichodesmium* from a monospecific colony whose primary function is fixing CO2 and N2 toward a unique planktonic consortium with a diverse, complex, and highly coordinated overall metabolism that exerts profound control over the cycling of inorganic and organic nutrients in the oligotrophic upper ocean.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1332912

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