Station location information from R/V Atlantic Explorer cruise AE1409 in the Western Tropical North Atlantic from May 2014 (P Processing by Tricho project)

Website: https://www.bco-dmo.org/dataset/709693
Data Type: Cruise Results
Version: 1
Version Date: 2017-07-20

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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Abstract
Station location information from R/V Atlantic Explorer cruise AE1409 in the Western Tropical North Atlantic from May 2014 (P Processing by Tricho project).

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Coverage

Spatial Extent: **N**:30.4177 **E**:-52.1795 **S**:7.4681 **W**:-64.9988
Temporal Extent: 2014-05-09 - 2014-05-27

Dataset Description

Station location information from cruise AE1409.

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.
Re-formatted date from dd-MMM-YY to yyyymmdd.

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Data Files

File
Stations.csv (Comma Separated Values (.csv), 551 bytes) MD5:f383cb07c72d4b69526c8462305a7e1a Primary data file for dataset ID 709693

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Related Publications

Frischkorn, K. R., Rouco, M., Van Mooy, B. A. S., & Dyhrman, S. T. (2017). Epibionts dominate metabolic functional potential of Trichodesmium colonies from the oligotrophic ocean. The ISME Journal, 11(9), 2090–2101. doi:10.1038/ismej.2017.74
General

Van Mooy, B. A. S., Krupke, A., Dyhrman, S. T., Fredricks, H. F., Frischkorn, K. R., Ossolinski, J. E., … Sylva, S. P. (2015). Major role of planktonic phosphate reduction in the marine phosphorus redox cycle. Science, 348(6236), 783–785. doi:10.1126/science.aaa8181
Methods

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Parameters

Parameter	Description	Units
Station	Numeric identifier for the station where the data was collected.	unitless
Lat	Latitude of sampling. Positive values indicate North.	Decimal Degrees
Long	Longitude of sampling. Negative values indicate West.	Decimal Degrees
Date	Sampling date formatted as YYYYMMDD.	YYYYMMDD

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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.

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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-1332898
NSF Division of Ocean Sciences (NSF OCE)	OCE-1332912

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