CTD cast sheets from the R/V Kilo Moana KM0701 cruise in the South Pacific during 2007 (WP2 project)

Website: https://www.bco-dmo.org/dataset/3407
Data Type: document
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Project
» Ecotypic Diversity and Adaptation of Prochlorococcus in the Stratified, High Temperature Waters of the Western Pacific Warm Pool (WP2)

Contributors	Affiliation	Role
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Table of Contents

- Dataset Description
  - Methods & Sampling
  - Data Processing Description
- Parameters
- Deployments
- Project Information
- Funding

Dataset Description

One .pdf file containing all the original cast sheets for the CTD casts

Methods & Sampling

Originals generated aboard vessel during CTD collection

Data Processing Description

Original .doc files contributed by Zackary Johnson converted to .pdf files and combined into a single file

[table of contents | back to top]

Parameters

Parameters for this dataset have not yet been identified

[table of contents | back to top]

Deployments

KM0701

Website	https://www.bco-dmo.org/deployment/58165
Platform	R/V Kilo Moana
Report	http://bcodata.whoi.edu/WP2/wp2_cruise_report.pdf
Start Date	2007-01-03
End Date	2007-02-12
Description	A cruise aboard the R/V Kilo-Moana from Hawaii to Brisbane, Australia through the stratified WPWP during January – February 2007. For additional information on KILO MOANA data/data formats see: Formats_of_data_2007.pdf Cruise information and original data are available from the NSF R2R data catalog.

[table of contents | back to top]

Project Information

Ecotypic Diversity and Adaptation of Prochlorococcus in the Stratified, High Temperature Waters of the Western Pacific Warm Pool (WP2)

Website: http://www.soest.hawaii.edu/oceanography/zij/wp2/

Coverage: Western Pacific

In most tropical and subtropical ecosystems, the prokaryotic cyanobacteria Prochlorococcus plays a critical role in ecosystem structure and biogeochemistry because it is the numerically dominant photoautotrophic picoplankter. Although the worldwide distributions of Prochlorococcus are generally understood, the precise reasons for its overwhelming ecological success have remained elusive. This picture has recently become complicated by the discovery that Prochlorococcus is not monophyletic and that different genetic clades of Prochlorococcus have remarkably different distributions with depth and over oceanic basins. Thus, our understanding of factors that structure Prochlorococcus populations in the natural environment, and our ability to predict how this structure might respond to environmental changes, are limited. The PIs will address this by focusing on naturally occurring populations in the Western Pacific Warm Pool, an area where Prochlorococcus is known to dominate, but where there are no data on clade abundances. In addition to being a large region of the Pacific Ocean with significance to the global carbon cycle, the Western Pacific Warm Pool (WPWP) is of particular interest because it is typically highly stratified, with surface waters having extreme temperatures and light levels compared to those at depth. Populations of Prochlorococcus at the surface and at depth experience different environmental pressures, and may belong to different clades and have different adaptive physiologies. The PIs will test this hypothesis on a cruise from Hawaii to Brisbane, Australia through the stratified WPWP. Samples from this transect will be used to quantify (using quantitative PCR) the six known clades of Prochlorococcus and to search for new clades (using clone libraries and isolates) and their abundances. The ultimate goal is to relate clade abundances to temperature, light, nutrient concentrations and other measured biological, chemical and physical variables.

This project will encompass multiple layers of outreach to scientists and the scientific community at large. Data and strains will be deposited at national repositories and results will be disseminated through publications, professional meeting presentations, and a project web site. Undergraduates and graduate students will be trained, and students will be an integral part of the data collection, analysis, and dissemination phases and will be encouraged to present at national meetings. Cross-institutional training will enhance graduate student education. The PIs will integrate results from this project into undergraduate and graduate curricula at their home institutions and will be attending the NSF sponsored 'Scientific Inquiry in the K-16 Classroom' seminar to develop methods to link results to primary education. The PIs will use presentations and activities with local outreach groups, such as the Hawaii Academy of Sciences, to encourage scientific understanding through mentoring, science symposia and science competitions for primary and secondary school students.

WP2/KM0701 Cruise Report

[table of contents | back to top]

Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-0526462
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[table of contents | back to top]