Synechococcus counts determined by epifluorescent microscopy from samples collected on R/V Atlantis cruise AT15-61 in the Eastern Tropical South Pacific in 2010 (Syne_ETSP project)

Website: https://www.bco-dmo.org/dataset/3765
Data Type: Cruise Results
Version: 1
Version Date: 2012-10-31

Project
» RAPID: Synechococcus diversity and Fe stress and the relationship to dissolved metals in the Eastern Tropical South Pacific (Syne_ETSP)

Contributors	Affiliation	Role
Webb, Eric A.	University of Southern California (USC-HIMS)	Principal Investigator
Sohm, Jill	University of Southern California (USC-HIMS)	Scientist
Copley, Nancy	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager
Rauch, Shannon	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager

Abstract
Synechococcus counts determined by epifluorescent microscopy from samples collected on R/V Atlantis cruise AT15-61 in the Eastern Tropical South Pacific in 2010.

Table of Contents

Coverage

Spatial Extent: **N**:-10 **E**:-80 **S**:-20 **W**:-100
Temporal Extent: 2010-02-01 - 2010-02-24

Dataset Description

Synechococcus epifluorescent microscopy counts from AT15-61 (ETSP2010) cruise.

Methods & Sampling

Dates are given in local (Chile) time. Clocks were not adjusted while at sea.

Data Processing Description

BCO-DMO calculated lon from the lon_360 column provided by the PI. Parameter names were changed to

conform to BCO-DMO convention.

[table of contents | back to top]

Data Files

File
Synechococcus_ETSP.csv (Comma Separated Values (.csv), 6.05 KB) MD5:32cc8238932e019e4adc31b3476daafb Primary data file for dataset ID 3765

[table of contents | back to top]

Parameters

Parameter	Description	Units
cruise_id	Cruise identifier.	text
cruise_synonym	Alternate identifier of the cruise.	text
sta	Station identifier.	unitless
date_local	Local date. format: mm/dd/YYYY	unitless
month_local	2-digit month of year, local. format: mm (01 to 12)	unitless
day_local	2-digit day of month, local. format: dd (01 to 31)	unitless
year	4-digit year. format: YYYY	unitless
lat	Latitude in degrees North. Negative = South.	degrees North
lon	Longitude in degrees East. Negative = West.	degrees East
lon_360	Longitude ranging from 0 to 360 degrees. Calculated from the original lon_360 provided by PI.	degrees
depth	Sample depth.	meters
cells_per_field	cells/field	unitless
vol_filt	Volume filtered in milliliters.	mL
area_filter	Area of filter in square micrometers.	um^2
fields_per_filter	fields/filter	unitless
abundance	Synechococcus abundance in cells per milliliter.	cells/mL
abund_log	Log of synechococcus abundance in cells per milliliter.	cells/mL

[table of contents | back to top]

Deployments

AT15-61

Website	https://www.bco-dmo.org/deployment/58785
Platform	R/V Atlantis
Start Date	2010-01-29
End Date	2010-03-03
Description	See more information at R2R: https://www.rvdata.us/search/cruise/AT15-61

[table of contents | back to top]

Project Information

RAPID: Synechococcus diversity and Fe stress and the relationship to dissolved metals in the Eastern Tropical South Pacific (Syne_ETSP)

Coverage: Eastern Tropical South Pacific, coast of Chile

The unicellular cyanobacterium *Synechococcus* is one of the most widespread and abundant photosynthetic organisms in the ocean, contributing substantially to marine primary production. It is also extremely diverse, with 16 clades identified so far. This diversity, however, has yet to be correlated with specific, well-defined ecological niches. It is important to define what these ecological niches are in order to determine the significance of *Synechococcus* diversity, i.e., does the clade present in a certain regime have a large impact on biogeochemical cycling in that area? In parallel, the distribution of the clades must also be defined, to able to understand more clearly the role of Synechococcus in the ocean, and how it might change in the future. In the funded project, "The role of iron (Fe) in controlling in situ distributions and activities of marine *Synechococcus* OCE-0825922" investigators Jill A Sohm (J.A.S.) and Eric Webb have been mapping the distribution of *Synechococcus* clades in the western Pacific, the North and South Atlantic, and off the coast of Los Angeles, in order to better define the ecological niches of the many clades of *Synechococcus*. **In this project, Webb and Sohm will participate in a research cruise occurring in February 2010 in the Eastern Tropical South Pacific (ETSP), a data poor region with little known about the ecology of its picocyanobacteria.** While it has been shown the *Synechococcus* from clade four dominate the upwelling region farther south of the proposed cruise, the diversity of the population farther offshore is much less well defined. **This cruise would allow expansion of the current database of *Synechococcus* clade distribution to an area where there is little to no data**, and add experimental field work to an existing project, testing the specific affects of Fe, light, temperature and nutrients on the diversity of field populations. These data combined with concurrent lab research will provide insight into the potential of oceanic change to affect the distribution and the activity of *Synechococcus*.

In addition to defining the role and impact of Fe limitation on marine *Synechococcus* activity and diversity in the field, this project will develop field incubation-tested, quantitative PCR-based Fe stress diagnostics that will be available to the community. Furthermore, the investigators will attempt to isolate and make available *Synechococcus* strains from the region; as such representatives are not in existence. The upkeep and addition to the culture collection in the Webb lab is an important service for the oceanographic community, as these strains are sent to any researcher that requests them without charge. Metadata obtained on this cruise will be shared with the oceanographic community by depositing them in a national database. Lastly this project will provide valuable research cruise experience and career development for one post-doctoral fellow, J.A.S., and one graduate student.

[table of contents | back to top]

Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-0825922
NSF Division of Ocean Sciences (NSF OCE)	OCE-0943319

[table of contents | back to top]