Alongtrack data from R/V Atlantis AT15-61 in the Eastern Tropical South Pacific from January 2010 (Syne_ETSP project)

Website: https://www.bco-dmo.org/dataset/3629
Version:
Version Date: 2012-03-02

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

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Dataset Description

The alongtrack data from RV/Atlantis cruise 15-61 were recorded by the shipboard data acquisition system (Calliope).

The research objectives and planned science activities on this cruise include upper water column biogeochemistry and shallow and deep sediment trap deployment at six major (> 24h) stations and 6 minor (< 24h) stations in the Peru Basin.

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Data Files

File
alongtrack.csv (Comma Separated Values (.csv), 8.45 MB) MD5:ba62c75ce6656c6e86c50b6781757b53 Primary data file for dataset ID 3629

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Parameters

Parameter	Description	Units
cog	GPS course over ground	degrees
cond_ss	Sea Surface Conductivity (FSI)	mmho/cm or milli-Siemens/centimeter
yrday_gmt	GMT day and decimal time, as 326.5 for the 326th day of the year, or November 22 at 1200 hours (noon).	no units
flvolt	Fluorescence	mV
head	Ship's heading	degrees true
head2	ship's heading using Phins	degrees true
humidity	IMET % relative humidity	%
humidity2	Relative humidity from port side using WXT520	%
lat	Decimal Latitude; South is negative	decimal degrees
lon	Decimal Longitude; West is negative	decimal degrees
press_bar	Barometric pressure; not corrected for 19.5m height above waterline	no units
press_bar2	Barometric pressure from port side using WXT520	no units
radiation_s	IMET Shortwave Radiation	watts/square meter
rain_accum	Rain accumulation from port side using WXT520	mm
rain_intensity	Rain intensity from port side using WXT520	mm/h
sal_ss	Salinity calculated from SST and SSC	psu?
sog	GPS speed over ground	knots
sound_vel	Sound velocity	meters/second
temp_air	Air Temp	degrees C
temp_air2	Air temperature from port side using WXT520	degrees C
temp_ss	Sea Surface Temperature	degrees C
time_gmt	GMT Time	hh:mm:ss
wind_dir_c	True Wind Direction	deg
wind_dir_r	Relative wind direction from port side using WXT520	degrees ship relative
wind_speed_c	True Wind Speed	m/s
wind_speed_r	Relative wind speed from port side using WXT520	m/sec

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Instruments

Dataset-specific Instrument Name	Anemometer
Generic Instrument Name	Anemometer
Dataset-specific Description	Gill WindObserver II Ultrasonic Anemometer
Generic Instrument Description	An anemometer is a device for measuring the velocity or the pressure of the wind. It is commonly used to measure wind speed. Aboard research vessels, it is often mounted with other meteorological instruments and sensors.

Dataset-specific Instrument Name	Fluorometer
Generic Instrument Name	Fluorometer
Dataset-specific Description	WetLabs Wet-Star fluorometer located in the Hydro Lab clean seawater piping. A MetraByte A/D converter is used to convert the 0-5 vdc fluorometer output to serial data. This device sets the output decimal point as necessary for best resolution, which results in a 1 vdc fluorometer value being represented as +01000.00 in the raw MetraByte serial stream.
Generic Instrument Description	A fluorometer or fluorimeter is a device used to measure parameters of fluorescence: its intensity and wavelength distribution of emission spectrum after excitation by a certain spectrum of light. The instrument is designed to measure the amount of stimulated electromagnetic radiation produced by pulses of electromagnetic radiation emitted into a water sample or in situ.

Dataset-specific Instrument Name	Global Positioning System Receiver
Generic Instrument Name	Global Positioning System Receiver
Dataset-specific Description	NorthStar 941 GPS receiver NMEA (National Marine Electronics Association) output Format: $--RMC,hhmmss.ss,S,lat,a,lon,a,x.x,y.y,ddmmyy,m.m,d*hh Time = UTC of position fix S = Status ("A" = valid, "V" = receiver warning) Lat & Lon x.x = speed over ground (knots) y.y = Course over ground (degrees true) ddmmyy = date m.m,d = magnetic variation, degrees ("E" subtracts from true, "W" adds to true)
Generic Instrument Description	The Global Positioning System (GPS) is a U.S. space-based radionavigation system that provides reliable positioning, navigation, and timing services to civilian users on a continuous worldwide basis. The U.S. Air Force develops, maintains, and operates the space and control segments of the NAVSTAR GPS transmitter system. Ships use a variety of receivers (e.g. Trimble and Ashtech) to interpret the GPS signal and determine accurate latitude and longitude.

Dataset-specific Instrument Name	Improved Meteorological Recorder
Generic Instrument Name	Improved Meteorological Recorder
Dataset-specific Description	Sensors mounted on the bow mast at a height of 20 m above the waterline. http://www.whoi.edu/page.do?cid=11368&pid=8415&tid=282
Generic Instrument Description	An IMET Recorder is an instrument package that can be mounted on a ship or buoy to record mean weather data including air and sea-surface temperature, incoming short and long-wave radiation, precipitation, humidity, wind velocity and barometric pressure. Each sensor in the system communicates digitally and returns calibrated values to a central data recorder.

Dataset-specific Instrument Name	Knudsen 320 BR deepwater echosounder
Generic Instrument Name	Knudsen 320 BR deepwater echosounder
Dataset-specific Description	Knudsen bathymetry (Knudsen) Depth to surface (meters). Format: $PKEL99,HF,xx.xx,cc.cc,LF,yy.yy,cc.cc,ssss,lat,lon "HF" High freq header xx.xx 12 kHz depth to surface using cc.cc & ssss corrections (meters) cc.cc depth of 12 kHz transducer (meters) "LF" Low freq header yy.yy 3.5 kHz depth to surface using cc.cc & ssss corrections (meters) cc.cc depth of 3.5 kHz transducer (meters) ssss sound speed used for depth calculations (m/s) Lat Latitude Lon Longitude Note - 12 kHz and 3.5 kHz transducers are at 5.95m (19.5 ft) depth on Atlantis.
Generic Instrument Description	The Knudsen 320 B/R deepwater echosounder is a digital data logging system used to measure water depth (e.g. depth of the seafloor). The system is configured to work with different frequency transducers. For example, the Edo 323 B is a 12 kHz High Frequency (HF) transducer or it can be configured to work with an array of 3.5 kHz Low Frequency (LF) transducers mounted in the hull of a vessel.

Dataset-specific Instrument Name	Thermosalinograph
Generic Instrument Name	Thermosalinograph
Dataset-specific Description	Seabird SBE 45 MicroTSG -or- Falmouth Scientific TSG. Located in bow thruster room; intake ~5m BWL
Generic Instrument Description	A thermosalinograph (TSG) is used to obtain a continuous record of sea surface temperature and salinity. On many research vessels the TSG is integrated into the ship's underway seawater sampling system and reported with the underway or alongtrack data.

Dataset-specific Instrument Name	Weather transmitter
Generic Instrument Name	Weather Transmitter
Generic Instrument Description	The ship-mounted Vaisala Weather Transmitter WXT520 measures: Wind speed and direction; Liquid precipitation: rainfall, duration, intensity; Barometric pressure; Air temperature and Relative humidity. (for more information see http://www.vaisala.com/en/products/multiweathersensors/Pages/WXT520.aspx)

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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

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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.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-0850801
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