CTD Station Locations from R/V Kilo Moana, R/V Seward Johnson KM0703, SJ0609 in the tropical and subtropical Southwest Pacific, and tropical North Atlantic from 2006-2007 (DIAZOTROPHS project)

Website: https://www.bco-dmo.org/dataset/3266
Version: 16Nov2009
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Project
» Biology and Ecology of Newly Discovered Diazotrophs in the Open Ocean (DIAZOTROPHS)

Contributors	Affiliation	Role
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Dataset Description

DIAZOTROPHS - CTD Station Locations

Methods & Sampling

Generated from CTD profile files

Data Processing Description

Generated from CTD profile files

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Data Files

File
CTD_Stations.csv (Comma Separated Values (.csv), 3.07 KB) MD5:e4c56107b413f69f4ff2b59f2052393a Primary data file for dataset ID 3266

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Parameters

Parameter	Description	Units
Cruise	Cruise Id	text
Station	Station Id (Station number.Cast number at station)	nn.xx
date	date sampling began	YYYYMMDD
time	time sampling began	hhmm
lon	longitude; negative denotes West	decimal degrees
lat	latitude; negative denotes South	decimal degrees

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Deployments

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. **Methods & Sampling** Generated from CTD profile file **Processing Description** Generated from CTD profile file

SJ0609

Website	https://www.bco-dmo.org/deployment/58017
Platform	R/V Seward Johnson
Start Date	2006-06-18
End Date	2006-07-31
Description	Leg 1 of the cruise began in Ft. Pierce FL with a rapid transit to Bridgetown, Barbados and two hydrostations (001-002) en route. Leg 2 extended from Barbados to Mindelo, Cape Verde, with nine hydrostations (003-010, 012). Leg 3 included a run south to the equator, then northwestward to Barbados with eleven hydrostations (013-023). **Methods & Sampling** Generated from CTD profiles **Processing Description** Generated from CTD profiles

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Project Information

Biology and Ecology of Newly Discovered Diazotrophs in the Open Ocean (DIAZOTROPHS)

Coverage: Tropical and Subtropical Southwest Pacific and tropical North Atlantic

Biology and Ecology of Newly Discovered Diazotrophs in the Open Ocean

The productivity of the oceans is limited by the availability of nutrients, which has implications for the fluxes of carbon between the atmosphere and oceans. In a previous award the PIs found that previously unrecognized N2-fixing unicellular cyanobacteria are active and abundant in oligotrophic oceans. This finding has important implications for nitrogen cycling in the oceans and for the role of "new" nitrogen in carbon fixation.

The PIs will address three major issues:
First, there are at least two distinct groups of cyanobacteria that appear to be separated in space and time, due to unknown ecological variables.

Second, the geographic distribution and factors controlling the distribution are unknown, so it is not clear how these organisms should be included in biogeochemical models.

Finally, one of the groups of cyanobacteria appears to fix N2 during the day,

which revives the enigma of simultaneous nitrogen fixation and photosynthesis that was previously limited to discussions of Trichodesmium.

PUBLICATIONS PRODUCED AS A RESULT OF THIS RESEARCH

Burns, J.A., Zehr, J.P., Montoya, J P, Kustka, A.B., and Capone, D. G.. "Effect of EDTA addtiions on natural Trichodesmium spp. (CYANOPHYTA) populations," Journal of Phycology, v.42, 2006, p. 900.

Campbell, L, E.J. Carpenter, J.P. Montoya, A.B. Kustka, D.G. Capone. "Picoplankton community structure within and outside a Trichodesmium bloom in the southwestern Pacific Ocean," Vie et Milieu, v.55, 2005, p. 185.

Capone, D.G., J.A. Burns, J.P. Montoya, A. Subramaniam, C. Mahaffey, T. Gunderson, A.F. Michaels, and E.J. Carpenter. "Nitrogen fixation by Trichodesmium spp.: An important source of new nitrogen to the tropica and subtropical North Atlantic Ocean," Global Biogeochemical Cycles, v.19, 2005, p. doi:10.10.

Holl, C.M. & J.P. Montoya. "Interactions between nitrate uptake and nitrogen fixation continuous cultures of the marine diazotroph Trichodesmium (Cyanophyta)," Journal of Phycology, v.41, 2005, p. 1178.

Holl, C.M., T.A. Villareal, C.D. Payne, T.D. Clayton, C. Hart, J.P. Montoya. "Trichodesmium in the western Gulf of Mexico: 15N2-fixation and natural abundance stable isotope evidence," Limnology and Oceanography, v.52, 2007, p. 2249.

Holl, C.M., Waite, A.M., Pesant, S., Thompson, P, Montoya, J P. "Unicellular diazotrophy as a source of nitrogen to Leeuwin Current coastal eddies," Deep-Sea Research I, v.54, 2007, p. 1045.

Krauk, J.M, T.A. Villareal, J.A. Sohm, J.P. Montoya, and D.G. Capone. "Plasticity of N:P ratios in laboratory and field populations of Trichodesmium spp.," Aquatic

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Montoya, J P, Holl, C.M., Zehr, J.P., Hansen, A., Villareal, T.A., Capone, D.G..
"High rates of N2-fixation by unicellular diazotrophs in the oligotrophic Pacific,"
Nature, v.430, 2004, p. 1027.

Montoya, J.P., M. Voss, and D.G. Capone. "Spatial variation in N2-fixation rate
and diazotroph activity in the Tropical Atlantic," Biogeosciences, v.4, 2007, p. 396.

Subramaniam, A, P.L. Yager, E.J. Carpenter, C. Mahaffey, K. Bjorkman, S. Cooley,
A. Kustka, J.P. Montoya, A. Sañudo-Wilhelmy, R. Shipe, and D.G. Capone. "Amazon River
enhances diazotrophy and carbon sequestration in the tropical North Atlantic Ocean,"
Proc. Natl. Acad. Sci, v.105, 2008, p. 10460.

Waite, AM; Muhling, BA; Holl, CM; Beckley, LE; Montoya, JP; Strzelecki, J; Thompson, PA;
Pesant, S. "Food web structure in two counter-rotating eddies based on delta N-15 and
delta C-13 isotopic analyses," DEEP-SEA RESEARCH PART II-TOPICAL STUDIES IN OCEANOGRAPHY,
v.54, 2007, p. 1055-1075. View record at Web of Science

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Gordon and Betty Moore Foundation (GBMF)	unknown DIAZOTROPHS Moore
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