Proteomic sample collection locations from R/V Atlantic Explorer cruises at the BATS site, Bermuda Atlantic Time-Series, Hydrostation from 2009-2012 (Ocean Microbial Observatory project)

Website: https://www.bco-dmo.org/dataset/543730
Version: 0
Version Date: 2015-02-17

Project
» Transitions in the Surface Layer and the Role of Vertically Stratified Microbial Communities in the Carbon Cycle - An Oceanic Microbial Observatory (Ocean Microbial Observatory)

Contributors	Affiliation	Role
Carlson, Craig A.	University of California-Santa Barbara (UCSB)	Principal Investigator
Giovannoni, Stephen	Oregon State University (OSU)	Co-Principal Investigator
Copley, Nancy	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager

Abstract
Proteomic sample collection locations of large volume collections of seawater used to measure the proteomes of bacterioplankton communities from R/V Atlantic Explorer cruises at the BATS site, Bermuda Atlantic Time-Series, Hydrostation from 2009-2012.

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Coverage

Spatial Extent: **N**:32.1842 **E**:-64.4889 **S**:31.6638 **W**:-64.5115
Temporal Extent: 2009-06-18 - 2012-09-20

Dataset Description

Locations of large volume collections of seawater used to measure the proteomes of bacterioplankton communities in the NW Sargasso Sea, 2009-2012.

Methods & Sampling

None provided yet.

Data Processing Description

None provided yet.

BCO-DMO Processing:

- added conventional header with dataset name, PI name, version date, reference information
- renamed parameters to BCO-DMO standard
- added UNOLS cruise id's

Parameters

Parameter	Description	Units
cruise_id	UNOLS cruise identification	unitless
cruise_id2	cruise during which sample was collected	unitless
cast	Cast number	unitless
ISO_DateTime_UTC	date and time at start of cast formatted as yyyyMMdd'T'HH:mm	yyyyMMdd'T'HH:mm
lon	Longitude at start of cast; east is positive	decimal degrees
lat	Latitude at start of cast; north is positive	decimal degrees
depth	depth of sample collection	meters
volume	total collected volume in liters	lliters

Deployments

AE0912

Website	https://www.bco-dmo.org/deployment/543338
Platform	R/V Atlantic Explorer
Start Date	2009-06-18
End Date	2009-06-19
Description	Cruise for project "Microbial Observatory: Community Structure in the Carbon Cycle"

AE0914

Website	https://www.bco-dmo.org/deployment/543340
Platform	R/V Atlantic Explorer
Start Date	2009-06-30
End Date	2009-07-01
Description	Cruise for project "Microbial Observatory: Community Structure in the Carbon Cycle"

AE0923

Website	https://www.bco-dmo.org/deployment/543342
Platform	R/V Atlantic Explorer
Start Date	2009-10-02
End Date	2009-10-03
Description	Cruise for project "Microbial Observatory: Community Structure in the Carbon Cycle"

AE1004

Website	https://www.bco-dmo.org/deployment/514381
Platform	R/V Atlantic Explorer
Start Date	2010-03-02
End Date	2010-03-02
Description	Cruise information and original data are available from the NSF R2R data catalog.

AE1103

Website	https://www.bco-dmo.org/deployment/543356
Platform	R/V Atlantic Explorer
Start Date	2011-03-09
End Date	2011-03-10
Description	Cruise for project "Microbial Observatory: Community Structure in the Carbon Cycle" Underway data available at: SAMOS

AE1114

Website	https://www.bco-dmo.org/deployment/543358
Platform	R/V Atlantic Explorer
Start Date	2011-06-27
End Date	2011-06-28
Description	Cruise for project "Microbial Observatory: Community Structure in the Carbon Cycle" Underway data available at: SAMOS

AE1126

Website	https://www.bco-dmo.org/deployment/543350
Platform	R/V Atlantic Explorer
Start Date	2011-11-09
End Date	2011-11-10
Description	Cruise for project "Microbial Observatory: Community Structure in the Carbon Cycle" Underway data available at: SAMOS

AE1215

Website	https://www.bco-dmo.org/deployment/543348
Platform	R/V Atlantic Explorer
Start Date	2012-06-23
End Date	2012-06-25
Description	Cruise for project "Microbial Observatory: Community Structure in the Carbon Cycle" Underway data available at: SAMOS

AE1224

Website	https://www.bco-dmo.org/deployment/543346
Platform	R/V Atlantic Explorer
Start Date	2012-09-19
End Date	2012-09-20
Description	Cruise for project "Microbial Observatory: Community Structure in the Carbon Cycle" Underway data available from SAMOS.

AE1017

Website	https://www.bco-dmo.org/deployment/554174
Platform	R/V Atlantic Explorer
Start Date	2010-06-28
End Date	2010-06-29
Description	Cruise for Microbial Observatory: Community Structure in the Carbon Cycle project

AE1030

Website	https://www.bco-dmo.org/deployment/554197
Platform	R/V Atlantic Explorer
Start Date	2010-10-01
End Date	2010-10-02
Description	Cruise for Microbial Observatory: Community Structure in the Carbon Cycle project

Project Information

Transitions in the Surface Layer and the Role of Vertically Stratified Microbial Communities in the Carbon Cycle - An Oceanic Microbial Observatory (Ocean Microbial Observatory)

Website: http://www.bios.edu/research/projects/oceanic-microbial-observatory/

Coverage: Bermuda Atlantic Time-Series study site

(*Adapted from the NSF award abstract*)

The premise of this project is that stratified bacterioplankton clades engage in specialized biogeochemical activities that can be identified by integrated oceanographic and microbiological approaches. Specifically, the objective of this project is to assess if the mesopelagic microbial community rely on diagenetically altered organic matter and subcellular fragments that are produced by microbial processes in the euphotic zone and delivered into the upper mesopelagic by sinking or mixing. In past efforts this microbial observatory had greater success cultivating members of the euphotic zone microbial community, and revealed an unanticipated growth requirement for reduced sulfur compounds in alphaproteobacteria of the SAR11 clade. Genomic information showed that intense competition for substrates imposes trade-offs on bacterioplankton - there are regions of N dimensional nutrient space where specialists win. We postulate that specific growth requirements may explain some the regular spatial and temporal patterns that have been observed in upper mesopelagic bacterioplankton communities, and the difficulties of culturing some of these organisms.

The specific objectives of this project are: 1) to produce 13C and 15N labeled subcellular (e.g., soluble, cell wall,

and membrane) and DOM fractions from photosynthetic plankton cultures and use stable isotope probing to identify specific clades in the surface and upper mesopelagic microbial community that assimilate fractions of varying composition and lability. 2) to use fluorescence in situ hybridization approaches to monitor temporal and spatial variability of specific microbial populations identified from the SIP and HTC experiments. To increase resolution we will use CARD-FISH protocols. 3) to measure the proteomes of bacterioplankton communities to identify highly translated genes in the surface layer and upper mesopelagic, and community responses to seasonal nutrient limitation. 4) and, to cultivate these organisms via high throughput culturing (HTC) by pursuing the hypothesis that they require specific nutrient factors and/or diagenetically altered organic substrates. Complete genome sequences from key organisms will be sought and used as queries to study patterns of natural variation in genes and populations that have been associated with biogeochemically important functions.

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Funding

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