CTD data from the R/V Endeavor (EN538) cruise in the subarctic Atlantic Ocean during 2014 (DimBio NABE project)

Website: https://www.bco-dmo.org/dataset/564097
Version: 2015-07-31

Project
» Functional diversity of marine eukaryotic phytoplankton and their contributions to the C and N cycling (DimBio NABE)

Program
» Dimensions of Biodiversity (Dimensions of Biodiversity)

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Dataset Description

Data from downward CTD casts made during the August-September 2013 EN532 cruise aboard R/V Endeavor. Data have been depth-averaged over a 1 m depth interval.

Related Dataset:
EN532 - CTD
Chlorophyll-a: EN532 and EN538
Nutrients: EN532 and EN538
FCM: EN532 and EN538
Particulate N and NO3 isotopes: EN532

Methods & Sampling

Study sites in the subarctic Atlantic Ocean along the 20 °W meridian between 58 °N and 60 °N in May 2014. A transect from the US East coast (RI) to the subarctic study sites was performed as well.

Data Processing Description

BCO-DMO Processing:

- added conventional header with dataset name, PI name, version date
- renamed parameters to BCO-DMO standard

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Data Files

File
EN538_ctd.csv (Comma Separated Values (.csv), 4.34 MB) MD5:971918ce35fe34a3730ac08e54d09f84 Primary data file for dataset ID 564097

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Related Datasets

IsRelatedTo

Ward, B. B., Allen, A. E., Sigman, D. M. (2022) **Chlorophyll-a concentrations from CTD cast deployments and underway seawater inflow from Endeavor 532 and Endeavor 538 cruises in 2013 and 2014.** Biological and Chemical Oceanography Data Management Office (BCO-DMO). (Version 2) Version Date 2017-07-17 doi:10.26008/1912/bco-dmo.651784.2 [view at BCO-DMO]

Ward, B. B., Allen, A. E., Sigman, D. M. (2025) **Pico- and Nanoplankton concentrations from CTD cast deployments collected from the R/V Endeavor (EN532, EN538) cruises in the subarctic Atlantic Ocean from 2013-2014.** Biological and Chemical Oceanography Data Management Office (BCO-DMO). (Version 2) Version Date 2025-01-08 doi:10.26008/1912/bco-dmo.651890.2 [view at BCO-DMO]

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Parameters

Parameter	Description	Units
cruise_id	cruise identification	unitless
cast	cast number	unitless
ISO_DateTime_start_UTC	time cast started; ISO format	unitless
lat	latitude; north is positive	decimal degrees
lon	longitude; east is positive	decimal degrees
depth	depth	meters
yrday	UTC day and decimal time; as 326.5 for the 326th day of the year or November 22 at 1200 hours (noon).	yrday_utc
temp	temperature	degrees Celsius
sal	salinity	PSU
fluor	fluorescence	rfu
O2	oxygen	mol/l
PAR	Photosynthetically Available [Active] Radiation; downwelling irradiance	microEinstein/m^2/sec
attenuation	light attenuation	%

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Instruments

Dataset-specific Instrument Name	
Generic Instrument Name	Sea-Bird SBE 911plus CTD
Generic Instrument Description	[tethered, real-time] The Sea-Bird SBE 911 plus is a type of CTD instrument package for continuous measurement of conductivity, temperature and pressure. The SBE 911 plus includes the SBE 9plus Underwater Unit and the SBE 11plus Deck Unit (for real-time readout using conductive wire) for deployment from a vessel. The combination of the SBE 9 plus and SBE 11 plus is called a SBE 911 plus. The SBE 9 plus uses Sea-Bird's standard modular temperature and conductivity sensors (SBE 3 plus and SBE 4). The SBE 9 plus CTD can be configured with up to eight auxiliary sensors to measure other parameters including dissolved oxygen, pH, turbidity, fluorescence, light (PAR), light transmission, etc.). more information from Sea-Bird Electronics

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Deployments

EN538

Website	https://www.bco-dmo.org/deployment/563697
Platform	R/V Endeavor
Report	http://dmoserv3.bco-dmo.org/data_docs/DimBio_NABE/EN538_CruiseReport.pdf
Start Date	2014-04-29
End Date	2014-05-22
Description	Study sites in the subarctic Atlantic Ocean along the 20 °W meridian between 58 °N and 60 °N in May 2014. A transect from the US East coast (RI) to the subarctic study sites was performed as well.

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Project Information

Functional diversity of marine eukaryotic phytoplankton and their contributions to the C and N cycling (DimBio NABE)

Coverage: North Atlantic Ocean, transects from southwest to northeast

This project will investigate the taxonomic, genetic and functional diversity of eukaryotic phytoplankton at two North Atlantic sites (subarctic and subtropical) in two seasons. The PIs will use diagnostic microarrays for community analysis based on functional genes (both DNA and RNA) and next generation sequencing (i.e., transcriptomics using 454 technology) to identify the players, both in terms of community composition and activity, and to explore the functional diversity of the natural assemblage. In order to identify which groups are active in C and N assimilation and which N source is being utilized by the different size and functional groups, both filter-separated and flow cytometry-sorted samples will be used to 1) measure 13C primary production and 15N assimilation by incubations with isotope tracers, 2) measure the natural stable N isotope signatures of different taxonomic groups and 3) link the molecular diversity to the functional diversity in C and N transformations. Using flow cytometry linked to mass spectrometry, these investigators have found an unexpectedly strong differentiation in the form of N assimilated by prokaryotes and eukaryotes, with eukaryotes being more dynamic.

This project will investigate the taxonomic, genetic and functional diversity of eukaryotic phytoplankton and to link this diversity and assemblage composition to the carbon and nitrogen biogeochemistry of the surface ocean. Taxonomic diversity will be investigated by identifying the components of the phytoplankton assemblages using molecular, chemical and microscope methods. Genetic diversity will be explored at several levels, including direct sequencing of clone libraries of key functional genes and metatranscriptomic sequencing and microarray analysis of size fractionated/sorted phytoplankton assemblages. Using natural abundance and tracer stable isotope methods, genetic and taxonomic diversity will be linked to functional diversity in C and N assimilation in size- fractionated and taxon-sorted populations.

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Program Information

Dimensions of Biodiversity (Dimensions of Biodiversity)

Website: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503446

Coverage: global

(adapted from the NSF Synopsis of Program)
Dimensions of Biodiversity is a program solicitation from the NSF Directorate for Biological Sciences. FY 2010 was year one of the program. [MORE from NSF]

The NSF Dimensions of Biodiversity program seeks to characterize biodiversity on Earth by using integrative, innovative approaches to fill rapidly the most substantial gaps in our understanding. The program will take a broad view of biodiversity, and in its initial phase will focus on the integration of genetic, taxonomic, and functional dimensions of biodiversity. Project investigators are encouraged to integrate these three dimensions to understand the interactions and feedbacks among them. While this focus complements several core NSF programs, it differs by requiring that multiple dimensions of biodiversity be addressed simultaneously, to understand the roles of biodiversity in critical ecological and evolutionary processes.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1136477

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