Niskin bottle data from R/V Pelagia 64PE325 in the subtropical Atlantic from October 2010 (Basin-scale Protists project)

Website: https://www.bco-dmo.org/dataset/471654
Version:
Version Date: 2013-11-15

Project
» Basin-scale distribution and activity of deep-sea protists in the North Atlantic Ocean (Basin-scale Protists)

Program
» Integrated Marine Biogeochemistry and Ecosystem Research -US (IMBER-US)

Contributors	Affiliation	Role
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Dataset Description

bottle data from subtropical N. Atlantic, Oct. 2010

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Data Files

File
bottle.csv (Comma Separated Values (.csv), 91.02 KB) MD5:5e713913713d86fd65e09190fc887d9b Primary data file for dataset ID 471654

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Parameters

Parameter	Description	Units
cruise_id	cruise identification	unitless
cruise_name	alternate cruise name	unitless
sta	station number	unitless

cast	cast number	unitless
bottle	bottle number	unitless
date	UTC date	yyyymmdd
time	UTC time	hhmm
depth_w	bottom depth	dbar
lat	latitude	decimal degrees
lon	longitude	decimal degrees
press	pressure of sample	decibars
depth	depth of sample	meters
temp	temperature	degrees Celsius
potemp	potential temperature	degrees Celsius
sal	salinity	practical salinity units (psu)
podens	potential density	kilograms per cubic meter
O2	oxygen	micromoles per kilogram
AOU	apparent oxygen utilization	micromoles per kilogram
PO4	phosphate	micromoles per kilogram
NH4	ammonia	micromoles per kilogram
NO3	nitrates	values below detection limit set to zero
NO2	nitrites	micromoles per kilogram
Si	silica	micromoles per kilogram
DOC	dissolved Inorganic Carbon	micromoles per kilogram
leu_assim	leucine assimilation	picomoles Leu/m3/day
php_k	Prokaryotic Heterotrophic Production using 1.55kg C/mol Leu	micromoles C/m3/day

DIC_fix	dissolved inorganic carbon fixation	micromoles C/m3/day

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Instruments

Dataset-specific Instrument Name	Niskin bottle
Generic Instrument Name	Niskin bottle
Dataset-specific Description	25 liter Niskin bottles
Generic Instrument Description	A Niskin bottle (a next generation water sampler based on the Nansen bottle) is a cylindrical, non-metallic water collection device with stoppers at both ends. The bottles can be attached individually on a hydrowire or deployed in 12, 24, or 36 bottle Rosette systems mounted on a frame and combined with a CTD. Niskin bottles are used to collect discrete water samples for a range of measurements including pigments, nutrients, plankton, etc.

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Deployments

64PE325

Website	https://www.bco-dmo.org/deployment/471613
Platform	R/V Pelagia
Report	http://melia.nioz.nl/phptoweb/dmg/melia-codis.php?script=search/bycruise.inc
Start Date	2010-10-08
End Date	2010-11-04
Description	Cruise leaving Las Palmas (Canary Islands) covered a loop including a transect along the Midatlantic Ridge and returning to Las Palmas

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Project Information

Basin-scale distribution and activity of deep-sea protists in the North Atlantic Ocean (Basin-scale Protists)

Coverage: Tropical and subtropical Atlantic

ABSTRACT

Little is known about the distribution and ecology of eukaryotic microbes of the deep sea water column. Most of these microbes are small heterotrophic flagellates that feed on bacteria, where biomass in turn is fueled by

the input of dissolved and particulate organic material from the surface. This study seeks to understand the distribution of eukaryotic microbes (i.e., protists) in the context of large, basin scale variations in hydrographic and chemical properties. The main hypothesis is that the abundance and taxonomic composition of protists serve as sensitive indicators of the strength and type (particulate or dissolved) of input of organic carbon into the deep ocean system. Samples in vertical profiles targeting major water masses across the North Atlantic will be collected. In addition, deep sea samples will be retrieved under pressure and incubated at in situ pressure and temperature in four newly designed chemostat systems. These cultures will be sub-sampled under pressure and examined for nutrient concentration, as well as for the purpose of monitoring the abundance of both prokaryotes and protists in the chambers. Using the same pressure samplers in short-term incubations, the investigators will explore the activity of deep sea protists by investigating the proportion of actively feeding organisms on fluorescently labeled bacteria. They will enumerate deep sea protists using a combination of fluorescence in situ hybridization and traditional staining methods, and will support taxonomic classifications using electron microscopy. Semi-automated epifluorescence microscopy with image analysis capabilities will be used to scan major filter areas and probe for rare microbes that normally fall below detection limits of other methods. In laboratory experiments, the investigators will use the newly built culture system to study pressure effects of eukaryotic protists while simulating temperature and pressure changes that sinking particles are exposed to when they sink to the abyss.

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Program Information

Integrated Marine Biogeochemistry and Ecosystem Research -US (IMBER-US)

Website: http://www.imber.info/

Coverage: global

The BCO-DMO database includes data from IMBER endorsed projects lead by US funded investigators. There is no dedicated US IMBER project or data management office. Those functions are provided by US-OCB and BCO-DMO respectively.

The information in this program description pertains to the Internationally coordinated IMBER research program. The projects contributing data to the BCO-DMO database are those funded by US NSF only. The full IMBER data catalog is hosted at the Global Change Master Directory (GCMD).

IMBER Data Portal: The IMBER project has chosen to create a metadata portal hosted by the NASA's Global Change Master Directory (GCMD). The GCMD IMBER data catalog provides an overview of all IMBER endorsed and related projects and links to datasets, and can be found at URL http://gcmd.nasa.gov/portals/imber/.

IMBER research will seek to identify the mechanisms by which marine life influences marine biogeochemical cycles, and how these, in turn, influence marine ecosystems. Central to the IMBER goal is the development of a predictive understanding of how marine biogeochemical cycles and ecosystems respond to complex forcings, such as large-scale climatic variations, changing physical dynamics, carbon cycle chemistry and nutrient fluxes, and the impacts of marine harvesting. Changes in marine biogeochemical cycles and ecosystems due to global change will also have consequences for the broader Earth System. An even greater challenge will be drawing together the natural and social science communities to study some of the key impacts and feedbacks between the marine and human systems.

To address the IMBER goal, four scientific themes, each including several issues, have been identified for the IMBER project: Theme 1 - Interactions between Biogeochemical Cycles and Marine Food Webs; Theme 2 - Sensitivity to Global Change: How will key marine biogeochemical cycles, ecosystems and their interactions, respond to global change?; Theme 3 - Feedback to the Earth System: What are the roles of the ocean biogeochemistry and ecosystems in regulating climate?; and Theme 4 - Responses of Society: What are the relationships between marine biogeochemical cycles, ecosystems, and the human system?

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-0826659

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