

Nutrient measurements from Niskin bottle samples from R/V Oceanus OC415-02, OC415-04 cruises in the Sargasso Sea in 2005 (EDDIES project)

Website: <https://www.bco-dmo.org/dataset/3049>

Version: 13 March 2007

Version Date: 2007-03-13

Project

» [Eddies Dynamics, Mixing, Export, and Species composition](#) (EDDIES)

Program

» [Ocean Carbon and Biogeochemistry](#) (OCB)

Contributors	Affiliation	Role
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Dataset Description

Methodology: none provided with data. Analyses performed by Paul Henderson (phenderson@whoi.edu) at WHOI Nutrients Facility.

DMO note: The SiO₄ silicate data were originally called SiO₂; Paul Henderson in the nutrients facility confirmed the data are SiO₄. Cast number was matched in the Niskin bottle data to retrieve event, date, time, lon and lat, as well as depth_n, press and depth.

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Data Files

File

nutrients_OC415-02.csv(Comma Separated Values (.csv), 36.79 KB)
MD5:2709e9ac091cf8c8ae2708a60cec6fbf

version 09 March 2007
PI: James Ledwell (WHOI)

OC415-2 EDDIES 2005 Tracer 1 cruise
Nutrient measurements from Niskin bottle samples

nutrients_OC415-04.csv(Comma Separated Values (.csv), 27.08 KB)
MD5:7cdb027bb456f2c0d21543ac8f83dbb7

version 13 March 2007
PI: James Ledwell (WHOI)

OC415-4 EDDIES 2005 Tracer 2 cruise
Nutrient measurements from Niskin bottle samples

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Parameters

Parameter	Description	Units
event	unique sampling event number from cruise event log	YYYYMMDDhhmm
date	date of cast (UTC)	YYYYMMDD
time	time of cast (UTC)	hhmm
lon	longitude, negative denotes West	decimal degrees
lat	latitude, negative denotes South	decimal degrees
cast	CTD cast number	dimensionless
Nis	Niskin bottle order number	dimensionless
depth_n	nominal depth	meters
press	pressure, from CTD	decibars
depth	depth, calculated from CTD pressure	meters
SiO4	Silicate	micromoles/liter
PO4	Phosphate	micromoles/liter
NO2_NO3	Nitrite plus Nitrate (NO2 in this region is essentially non-detectable)	micromoles/liter
bot	Niskin bottle number	dimensionless
SID_nuts	sample ID; Nutrients	alphanumeric

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Instruments

Dataset-specific Instrument Name	Niskin bottle
Generic Instrument Name	Niskin bottle
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

OC415-02

Website	https://www.bco-dmo.org/deployment/57964
Platform	R/V Oceanus
Start Date	2005-07-18
End Date	2005-08-04
Description	<p>EDDIES project 2005 Tracer 1 cruise Funded by: NSF OCE-0241310 Original cruise data are available from the NSF R2R data catalog</p> <p>Methods & Sampling</p> <p>PI: James Ledwell of: Woods Hole Oceanographic Institution dataset: Nutrient measurements from Niskin bottle samples dates: 19 July 2005 to 01 August 2005 (20050719-20050801) location: N: 30.785 S: 28.406 W: -67.681 E: -66.577 project/cruise: EDDIES/OC415-2 2005 Tracer 1 platform: R/V Oceanus Methodology: none provided with data. Analyses performed by Paul Henderson (phenderson@whoi.edu) at WHOI Nutrients Facility. Change history: 070305: original data contributed by email from Larry Anderson; /eddies/data/2005_data/oc415-2/nutrients/EddiesOC415-2.txt.1 070309: prepared for OCB database by Nancy Copley (OCB DMO) and Cyndy Chandler (OCB DMO) 070529: data is considered final; no change from preliminary version; data identical to EddiesOC415-2.txt.1 DMO note: The SiO₄ silicate data were originally called SiO₂; Paul Henderson in the nutrients facility confirmed the data are SiO₄. Cast number was matched in the Niskin bottle data to retrieve event, date, time, lon and lat, as well as depth_n, press and depth.</p>

OC415-04

Website	https://www.bco-dmo.org/deployment/57967
Platform	R/V Oceanus
Report	http://ocb.whoi.edu/EDDIES/CRUISES/2005/OC415-4_cruise_report.pdf
Start Date	2005-08-29
End Date	2005-09-15
Description	<p>EDDIES project 2005 Tracer 2 cruise Funded by: NSF OCE-0241310 The cruise end date was originally entered as 9/14/2005 (source: UNOLS final ship schedule), but this was changed in February 2015 to end date 9/15/2005. The official record from the vessel operator shows the end date being 9/15/2015. Original cruise data are available from the NSF R2R data catalog</p> <p>Methods & Sampling PI: James Ledwell of: Woods Hole Oceanographic Institution dataset: Nutrient measurements from Niskin bottle samples dates: 01 September 2005 to 11 September 2005 (20050901-20050911) location: N: 30.460 S: 29.558 W: -70.374 E: -69.236 project/cruise: EDDIES/OC415-4 2005 Tracer 2 platform: R/V Oceanus Methodology: none provided with data. Analyses performed by Paul Henderson (phenderson@whoi.edu) at WHOI Nutrients Facility. Change history: 070305: original data contributed by email from Larry Anderson; /eddies/data/2005_data/oc415-4/nutrients/EddiesOC415-4.txt.1 070309: prepared for OCB database by Nancy Copley (OCB DMO) and Cyndy Chandler (OCB DMO) 070313: changed bot param name and reordered depths to match Niskin data 070529: data is considered final; no change from preliminary version; data identical to EddiesOC415-4.txt.1 DMO note: The SiO4 silicate data were originally called SiO2; Paul Henderson in the nutrients facility confirmed the data are SiO4. Cast number was matched in the Niskin bottle data to retrieve event, date, time, lon and lat, as well as press and depth. Cast 5 data originally recorded on nutrient sample log sheet as cast 6, but this was corrected after Chief Scientist checked the original CTD cast log sheets.</p>

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Project Information

Eddies Dynamics, Mixing, Export, and Species composition (EDDIES)

Website: http://science.whoi.edu/users/olga/eddies/EDDIES_Project.html

Coverage: Sargasso Sea

The original title of this project from the NSF award is: Collaborative Research: Impacts of Eddies and Mixing on Plankton Community Structure and Biogeochemical Cycling in the Sargasso Sea".

Prior results have documented eddy-driven transport of nutrients into the euphotic zone and the associated accumulation of chlorophyll. However, several key aspects of mesoscale upwelling events remain unresolved by the extant database, including: (1) phytoplankton physiological response, (2) changes in community structure, (3) impact on export out of the euphotic zone, (4) rates of mixing between the surface mixed layer and the base of the euphotic zone, and (5) implications for biogeochemistry and differential cycling of carbon and associated bioactive elements. This leads to the following hypotheses concerning the complex, non-linear biological regulation of elemental cycling in the ocean:

H1: Eddy-induced upwelling, in combination with diapycnal mixing in the upper ocean, introduces new nutrients into the euphotic zone.

H2: The increase in inorganic nutrients stimulates a physiological response within the phytoplankton community.

H3: Differing physiological responses of the various species bring about a shift in community structure.

H4: Changes in community structure lead to increases in export from, and changes in biogeochemical cycling within, the upper ocean.

Publications

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Program Information

Ocean Carbon and Biogeochemistry (OCB)

Website: <http://us-ocb.org/>

Coverage: Global

The Ocean Carbon and Biogeochemistry (OCB) program focuses on the ocean's role as a component of the global Earth system, bringing together research in geochemistry, ocean physics, and ecology that inform on and advance our understanding of ocean biogeochemistry. The overall program goals are to promote, plan, and coordinate collaborative, multidisciplinary research opportunities within the U.S. research community and with international partners. Important OCB-related activities currently include: the Ocean Carbon and Climate Change (OCCC) and the North American Carbon Program (NACP); U.S. contributions to IMBER, SOLAS, CARBOOCEAN; and numerous U.S. single-investigator and medium-size research projects funded by U.S. federal agencies including NASA, NOAA, and NSF.

The scientific mission of OCB is to study the evolving role of the ocean in the global carbon cycle, in the face of environmental variability and change through studies of marine biogeochemical cycles and associated ecosystems.

The overarching OCB science themes include improved understanding and prediction of: 1) oceanic uptake and release of atmospheric CO₂ and other greenhouse gases and 2) environmental sensitivities of biogeochemical cycles, marine ecosystems, and interactions between the two.

The OCB Research Priorities (updated January 2012) include: ocean acidification; terrestrial/coastal carbon fluxes and exchanges; climate sensitivities of and change in ecosystem structure and associated impacts on biogeochemical cycles; mesopelagic ecological and biogeochemical interactions; benthic-pelagic feedbacks on biogeochemical cycles; ocean carbon uptake and storage; and expanding low-oxygen conditions in the coastal and open oceans.

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