

Nutrients: low-level nitrite+nitrate and phosphate from R/V Oceanus OC404-01, OC404-04, OC415-01, OC415-03 cruises in the Sargasso Sea, 2004-2005 (EDDIES project)

Website: <https://www.bco-dmo.org/dataset/3048>

Version: 16 November 2007

Version Date: 2007-11-16

Project

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

Program

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

Contributors	Affiliation	Role
Hansell, Dennis	University of Miami Rosenstiel School of Marine and Atmospheric Science (UM-RSMAS)	Principal Investigator
Chandler, Cynthia L.	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager

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Dataset Description

PI: Dennis Hansell
of: Rosenstiel School of Marine & Atmospheric Science (RSMAS), University of Miami
dataset: Nutrients - low-level nitrite+nitrate and phosphate
platform: R/V Oceanus

Methodology: none provided with data

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Parameters

Parameter	Description	Units
sta	station number	dimensionless
lon	longitude, negative denotes West	decimal degrees
lat	latitude, negative denotes South	decimal degrees
SID_nuts	unique sample identifier	alphanumeric
depth_n	sample depth, nominal	meters
NO2_NO3	nitrite + nitrate	micromoles/liter
PO4	phosphate	micromoles/liter
date	sampling date	YYYYMMDD
time	sampling time	HHMM
depth	sample depth	meters
depth_QF	sample depth quality flag	dimensionless
temp_CTD	temperature, from CTD, ITS-90	degrees Celsius
temp_QF	CTD temperature quality flag	dimensionless
salt_CTD	CTD salinity, PSS-78	dimensionless
salt_QF	CTD salinity quality flag	dimensionless
oxygen_CTD	CTD oxygen	micromoles/kilogram
oxyCTD_QF	CTD oxygen quality flag	dimensionless
fluor_CTD	CTD relative fluorescence	RFU
fluor_QF	relative fluorescence quality flag	dimensionless
irrad	irradiance	microEinsteins/meter ² /second
irrad_QF	irradiance quality flag	dimensionless
density	density	kilograms/meter ³
density_QF	density quality flag	dimensionless
DNN	dissolved nitrate plus nitrite	micromoles/liter
DNN_QF	DNN quality flag	dimensionless
DIP	dissolved inorganic phosphate (soluble reactive phosphate)	micromoles/liter
DIP_QF	DIP quality flag	dimensionless
event	unique sampling event number	YYYYMMDDhhmm
sal_CTD	CTD salinity, PSS-78	dimensionless
temp	temperature, from CTD, ITS-90	degrees Celsius
NO2	nitrite	micromoles/liter
TOC	total organic Carbon	micromoles/liter
TON	total organic Nitrogen	micromoles/liter

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Deployments

OC404-01

Website	https://www.bco-dmo.org/deployment/57956
Platform	R/V Oceanus
Report	http://ocb.whoi.edu/EDDIES/CRUISES/2004/OC404-1_Draft_Cruise_Report.pdf
Start Date	2004-06-11
End Date	2004-07-03
Description	<p>EDDIES 2004 Survey 1 cruise Funded by: NSF OCE-0241310 Original cruise data are available from the NSF R2R data catalog (Cruise DOI: 10.7284/900337)</p> <p>Methods & Sampling PI: Dennis Hansell of: Rosenstiel School of Marine & Atmospheric Science (RSMAS), University of Miami dataset: Nutrients - low-level nitrite+nitrate and phosphate dates: 15 June 2004 to 01 July 2004 (20040615-20040701) location: N: 33.697 S: 29.778 W: -66.601 E: -63.166 project/cruise: EDDIES/OC404-1 2004 Survey 1 platform: R/V Oceanus Methodology: none provided with data Change history: YMMDD 050512: downloaded original data from EDDIES data web site; added to OCB database by Cyndy Chandler, OCB DMO</p>

OC404-04

Website	https://www.bco-dmo.org/deployment/57961
Platform	R/V Oceanus
Report	http://ocb.whoi.edu/EDDIES/CRUISES/2004/OC404-4_Draft_Cruise_Report.pdf
Start Date	2004-07-25
End Date	2004-08-12
Description	<p>EDDIES project 2004 Survey 2 cruise Funded by: NSF OCE-0241310 Original cruise data are available from the NSF R2R data catalog</p> <p>Methods & Sampling PI: Dennis Hansell of: Rosenstiel School of Marine & Atmospheric Science (RSMAS), University of Miami dataset: Low-level nutrients and CTD data dates: 26 July 2004 to 11 August 2004 (20040726-20040811) location: N: 31.942 S: 29.958 W: -66.603 E: -59.452 project/cruise: EDDIES/OC404-4 2004 Survey 2 platform: R/V Oceanus Methodology Change history: YMMDD 061211: downloaded original data from EDDIES data web site; Filename: OC404-4-RSMAS-LowLevel-nuts.xls 071102: added to OCB database by Nancy Copley (WHOI) and Cyndy Chandler (BCO-DMO, WHOI) 071113: units confirmed by Quian Li (RSMAS); E2 code in original data replaced by nd to represent 'no data' DMO note: depth_n added to enable merge with bottle data;</p>

OC415-01

Website	https://www.bco-dmo.org/deployment/57962
Platform	R/V Oceanus
Report	http://ocb.whoi.edu/EDDIES/CRUISES/2005/OC415_Draft_Cruise_Report_050722.pdf
Start Date	2005-06-20
End Date	2005-07-15
Description	<p>EDDIES project 2005 Survey 1 cruise Funded by: NSF OCE-0241310 Original cruise data are available from the NSF R2R data catalog</p> <p>Methods & Sampling PI: Dennis Hansell of: Rosenstiel School of Marine & Atmospheric Science (RSMAS), University of Miami dataset: Low-level nano-nutrients and CTD data dates: 23 June 2005 to 14 July 2005 (20050623-20050714) location: N: 33.4237 S: 28.7333 W: -67.3298 E: -61.9198 project/cruise: EDDIES/OC415-1 2005 Survey 1 platform: R/V Oceanus Methodology Change history: YYYYMMDD 071116: downloaded original data from EDDIES data web site; Filename: OC415-1 NanoNutirent Data RSMAS.xls 071117: added to OCB database by Cyndy Chandler (BCO-DMO, WHOI) units confirmed by Quian Li (RSMAS) DMO note: event, date and time are from cruise event log; depth_n estimated from depth to enable merge with bottle data;</p>

OC415-03

Website	https://www.bco-dmo.org/deployment/57965
Platform	R/V Oceanus
Report	http://ocb.whoi.edu/EDDIES/CRUISES/2005/OC415-3_CrRptDraft_091405.pdf
Start Date	2005-08-07
End Date	2005-08-26
Description	<p>EDDIES project 2005 Survey 2 cruise Funded by: NSF OCE-0241310 Original cruise data are available from the NSF R2R data catalog</p> <p>Methods & Sampling PI: Dennis Hansell of: Rosenstiel School of Marine & Atmospheric Science (RSMAS), University of Miami dataset: Low-level nano-nutrients and CTD data dates: 09 August 2005 to 25 August 2005 (20050809 - 20050825) location: N: 33.0636 S: 29.2789 W: -69.4091 E: -63.1659 project/cruise: EDDIES/OC415-3 2005 Survey 2 platform: R/V Oceanus Methodology Change history: YYYYMMDD 071116: downloaded original data from EDDIES data web site; Filename: BOTTLE-OC415-3.xls 071117: added to OCB database by Cyndy Chandler (BCO-DMO, WHOI) units confirmed by Quian Li (RSMAS) DMO note: event, date and time are from cruise event log; depth_n estimated from depth to enable merge with bottle data;</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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