

Niskin bottle salinity measurements from R/V Oceanus OC404-01, OC404-04, OC415-02, OC415-04 in the Sargasso Sea, 2004-2005 (EDDIES project)

Website: <https://www.bco-dmo.org/dataset/3039>

Version: 12 April 2007

Version Date: 2007-04-12

Project

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

Program

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

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Dataset Description

PI: Dennis McGillicuddy
of: Woods Hole Oceanographic Institution (WHOI)
dataset: Niskin bottle salinity measurements
platform: R/V Oceanus

Methodology: none provided with data

OCB DMO Note: use SID_salts to determine Niskin bottle numbers

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Parameters

Parameter	Description	Units
sta	station number	dimensionless
depth_n	depth, nominal	meters
SID_salts	sample ID	dimensionless
cond_bot	conductivity of bottle sample (ratio where 2.0 = 35 ppt)	dimensionless
sal_bot	salinity	PSU
Qflag	flag	dimensionless
box_num	box number	dimensionless
box_name	box name	dimensionless
Cruise_ID	cruise designation code	alphanumeric
event	unique sampling event number	YYYYMMDDhhmm
ev_type	event type abbreviation code CTD=Rosette cast Sampler=Sampling sled tow	dimensionless
cast	cast number for event	dimensionless
lon	longitude, negative denotes West	decimal degrees
lat	latitude, negative denotes South	decimal degrees
bot	Niskin bottle number	dimensionless
Nis	Niskin bottle order number	dimensionless
press	pressure, nominal for Sampler	decibars
temp	temperature; from CTD; ITS-90 (from primary T0 sensor)	degrees Celsius
sal_CTD	salinity; from CTD; PSS-78 (PSU) (from primary T0,C0 sensors)	dimensionless
salt_QF	quality flag for bottle salinity	dimensionless
Sdiff	salinity difference (CTD-bottle)	dimensionless

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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

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 McGillicuddy of: Woods Hole Oceanographic Institution (WHOI) dataset: Niskin bottle salinity measurements dates: 12 June 2004 to 29 June 2004 (20040612-20040629) location: N: 37.934 S: 29.780 W: -68.703 E: -59.182 project/cruise: EDDIES/OC404-1 2004 Survey 1 platform: R/V Oceanus Methodology: none provided with data Change history: YYYYMMDD 060314: downloaded oc404_1_salts_final.xls from EDDIES data web site; added to OCB database by Cyndy Chandler, OCB DMO; OCB DMO Note: use SID_salts to determine Niskin bottle numbers</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 McGillicuddy of: Woods Hole Oceanographic Institution (WHOI) dataset: Niskin bottle salinity measurements dates: 26 July 2004 to 11 August 2004 (20040726-20040811) location: N: 31.762 S: 29.958 W: -66.601 E: -60.296 project/cruise: EDDIES/OC404-4 2004 Survey 2 platform: R/V Oceanus Methodology: none provided with data Change history: YYYYMMDD 060314: downloaded oc404_4_salts_final.xls from EDDIES data web site; added to OCB database by Cyndy Chandler, OCB DMO; OCB DMO Note: insufficient data to determine Niskin bottle numbers</p>

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 PI: Jim Ledwell (Chief Scientist) of: Woods Hole Oceanographic Institution (WHOI) dataset: Niskin bottle salinity measurements dates: 19 July 2005 to 02 August 2005 (20050719-20050802) location: N: 30.785 S: 28.889 W: -67.721 E: -66.615 project/cruise: EDDIES/OC415-2 2005 Tracer 1 platform: R/V Oceanus Methodology: shipboard processing notes Change history: YMMDD 070302: received bottle salinity data files (salt_oc415_2) from L. Anderson; 070315: added to OCB database by Cyndy Chandler (OCB DMO) OCB DMO Note: used SID_salts to determine cast, Niskin bottle numbers, and depth_n. event number is from the event log and CTD data were contributed with the calibration data.</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: Jim Ledwell (Chief Scientist) of: Woods Hole Oceanographic Institution (WHOI) dataset: Niskin bottle salinity measurements dates: 31 August 2005 to 11 September 2005 (20050831-20050911) location: N: 29.918 S: 29.627 W: -69.792 E: -69.106 project/cruise: EDDIES/OC415-4 2005 Tracer 2 platform: R/V Oceanus Methodology: shipboard processing notes Change history: YMMDD 070302: received bottle salinity data files (salt_oc415_4) from L. Anderson; 070315: added to OCB database by Cyndy Chandler (OCB DMO) OCB DMO Note: used SID_salts to determine cast, Niskin bottle numbers, and depth_n. event number is from the event log and CTD data were contributed with the calibration 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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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-0241310

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