Primary Production data from R/V Weatherbird II WB0409, WB0413, WB0506, WB0508 cruises in the Sargasso Sea, 2004-2005 (EDDIES project)

Website: https://www.bco-dmo.org/dataset/3053
Version: 19 October 2007
Version Date: 2007-10-19

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

Program
» Ocean Carbon and Biogeochemistry (OCB)

Contributors	Affiliation	Role
Bates, Nicholas	Bermuda Biological Station for Research (BBSR)	Principal Investigator
Chandler, Cynthia L.	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager

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Dataset Description

PI: Nick Bates
of: Bermuda Biological Station for Research (BBSR)
dataset: Primary Production data
platform: R/V Weatherbird II

Methodology: see Chapter 18: Primary Production in U.S. JGOFS BATS Method Manual Version 4 (1997). Bermuda Atlantic Time-Series Study April 1997. Anthony H. Knap, Anthony F. Michaels et al., 136 pp.
(link to BATS Method Manual version 4 local copy)

These data are considered final.

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Data Files

File	
prim_prod_WB0409.csv	(Comma Separated Values (.csv), 2.79 KB) MD5:c08ba77deabf619d644d7750d373577d
version 19 October 2007 PI: Nick Bates (BBSR) EDDIES 2004 EDT1 cruise WB0409 Primary production data from 3 array deployments during EDT1 cruise Event number, date, time and location are for GoFlo cast water collection	
prim_prod_WB0413.csv	(Comma Separated Values (.csv), 1001 bytes) MD5:8da65016f7e1d73e8bd662184bb95cd9
version 19 October 2007 PI: Nick Bates (BBSR) EDDIES 2004 EDT2 cruise WB0413 Primary production data from 1 array deployment on EDT2 cruise Event number, date, time and location are for GoFlo cast water collection	
prim_prod_WB0506.csv	(Comma Separated Values (.csv), 2.13 KB) MD5:3c1784a1e1b73527f6ee184c62b95185
version 09 October 2007 PI: Nick Bates (BBSR) EDDIES 2005 cruise WB0506 (EDT3) Primary production data from 3 array deployments during cruise Date, time and location are for GoFlo cast water collection	
prim_prod_WB0508.csv	(Comma Separated Values (.csv), 2.14 KB) MD5:2019cf01aa5505e0943b3e4896297a19
version 09 October 2007 PI: Nick Bates (BBSR) EDDIES 2005 cruise WB0508 (EDT4) Primary production data from 3 array deployments during cruise Date, time and location are for GoFlo cast water collection	

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Parameters

Parameter	Description	Units
event	unique sampling event number	YYYYMMDDhhmm
date	date of water collection	YYYYMMDD
time	time of collection (GMT)	hhmm
lon	longitude of water collection; negative denotes West	decimal degrees
lat	latitude of water collection; negative denotes South	decimal degrees
deploy_ID	deployment identifier	alphanumeric
depth_n	depth; nominal	meters
light1	light bottle 1 sample	mg C/m^3/day
light2	light bottle 2 sample	mg C/m^3/day
light3	light bottle 3 sample	mg C/m^3/day
dark	dark bottle sample	mg C/m^3/day
t0	time zero bottle sample	mg C/m^3/day

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Instruments

Dataset-specific Instrument Name	Go-flo Bottle
Generic Instrument Name	GO-FLO Bottle
Generic Instrument Description	GO-FLO bottle cast used to collect water samples for pigment, nutrient, plankton, etc. The GO-FLO sampling bottle is specially designed to avoid sample contamination at the surface, internal spring contamination, loss of sample on deck (internal seals), and exchange of water from different depths.

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Deployments

WB0409

Website	https://www.bco-dmo.org/deployment/57955
Platform	R/V Weatherbird II
Start Date	2004-06-23
End Date	2004-07-02
Description	EDT1 2004 Transect 1 cruise Funded by: NSF OCE-0241310 **Methods & Sampling** PI: Nick Bates of: Bermuda Biological Station for Research (BBSR) dataset: Primary Production data dates: 24 June 2004 to 30 June 2004 (20040624-20040630) location: N: 30.501 S: 29.960 W: -65.547 E: -64.919 project/cruise: EDDIES/WB0409 2004 Transect 1 (EDT1) platform: R/V Weatherbird II Methodology: see Chapter 18: Primary Production in U.S. JGOFS BATS Method Manual Version 4 (1997). Bermuda Atlantic Time-Series Study April 1997. Anthony H. Knap, Anthony F. Michaels et al., 136 pp. (link to BATS Method Manual version 4 local copy) Change history: YYMMDD 060307: downloaded original data file from EDDIES data web site; added to OCB database by Cyndy Chandler, OCB DMO; Date and location data were not contributed; 071019: date and location taken from cast sheet and event log entries for the GoFlo cast done to collect water for the array. These data are considered final.

WB0413

Website	https://www.bco-dmo.org/deployment/57960
Platform	R/V Weatherbird II
Start Date	2004-08-02
End Date	2004-08-11
Description	EDT2 2004 Transect 2 cruise Funded by: NSF OCE-0241310 **Methods & Sampling** PI: Nick Bates of: Bermuda Biological Station for Research (BBSR) dataset: Primary Production data dates: 03 August 2004 to 03 August 2004 (20040803-20040803) location: N: 30.6798 S: 30.6798 W: -65.5493 E: -65.5493 project/cruise: EDDIES/WB0413 2004 Transect 2 (EDT2) platform: R/V Weatherbird II Methodology: see Chapter 18: Primary Production in U.S. JGOFS BATS Method Manual Version 4 (1997). Bermuda Atlantic Time-Series Study April 1997. Anthony H. Knap, Anthony F. Michaels et al., 136 pp. (link to BATS Method Manual version 4 local copy) Change history: YYMMDD 060307: downloaded original data file from EDDIES data web site; added to OCB database by Cyndy Chandler, OCB DMO; Date and location data were not contributed; 071019: date and location taken from cast sheet and event log entries for the GoFlo cast done to collect water for the array. These data are considered final.

WB0506

Website	https://www.bco-dmo.org/deployment/57963
Platform	R/V Weatherbird II
Start Date	2005-07-06
End Date	2005-07-15
Description	EDT3 2005 Transect 1 cruise Funded by: NSF OCE-0241310 **Methods & Sampling** PI: Nick Bates of: Bermuda Biological Station for Research (BBSR) dataset: Primary Production data dates: 08 July 2005 to 14 July 2005 (20050708 - 20050714) location: N: 30.8978 S: 30.7193 W: -66.7040 E: -66.2852 project/cruise: EDDIES/WB0506 2005 Transect 1 (EDT3) platform: R/V Weatherbird II Methodology: see Chapter 18: Primary Production in U.S. JGOFS BATS Method Manual Version 4 (1997). Bermuda Atlantic Time-Series Study April 1997. Anthony H. Knap, Anthony F. Michaels et al., 136 pp. (link to BATS Method Manual version 4 local copy) Change history: YYMMDD 070604: downloaded original data file from EDDIES data web site; prepared for OCB database by Nancy Copley (OCB DMO) 071009: added to OCB database by Cyndy Chandler, OCB DMO; date and location are for the GoFlo cast done to collect water for the array. These data are considered final.

WB0508

Website	https://www.bco-dmo.org/deployment/57966
Platform	R/V Weatherbird II
Start Date	2005-08-17
End Date	2005-08-26
Description	EDT4 2005 Transect 2 Funded by: NSF OCE-0241310 **Methods & Sampling** PI: Nick Bates of: Bermuda Biological Station for Research (BBSR) dataset: Primary Production data dates: 19 August 2005 to 24 August 2005 (20050819-20050824) location: N: 30.1773 S: 29.8717 W: -69.1118 E: -68.5765 project/cruise: EDDIES/WB0508 2005 Transect 2 (EDT4) platform: R/V Weatherbird II Methodology: see Chapter 18: Primary Production in U.S. JGOFS BATS Method Manual Version 4 (1997). Bermuda Atlantic Time-Series Study April 1997. Anthony H. Knap, Anthony F. Michaels et al., 136 pp. (link to BATS Method Manual version 4 local copy) Change history: YYMMDD 070604: downloaded original data file from EDDIES data web site; prepared for OCB database by Nancy Copley (OCB DMO) 071009: added to OCB database by Cyndy Chandler, OCB DMO; date and location are for the GoFlo cast done to collect water for the array. These data are considered final.

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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

Andrews, J.E., Hartin, C., and Buesseler, K.O.. "7Be Analyses in Seawater by Low Background Gamma-Spectroscopy.," Journal of Radioanalytical and Nuclear Chemistry, v.277, 2008, p. 253.

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Li, Q.P., Hansell, D.A., Zhang, J.-Z.. "Underway monitoring of nanomolar nitrate plus nitrite and phosphate in oligotrophic seawater," Limnology and Oceanography: Methods, v.6, 2008, p. 319.

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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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