Pigments; chlorophyll and phaeophytin data collected during the R/V Weatherbird II WB0409, WB0413, WB0506, WB0508 cruises in the Sargasso Sea, 2004-2005 (EDDIES project)

Website: https://www.bco-dmo.org/dataset/3022
Version: 01 June 2007
Version Date: 2007-06-01

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

dates: 24 June 2004 to 24 August 2005 (20040624-20050824)
location: Sargasso Sea; N: 31.9278 S: 29.7799 W: -69.4429 E: -64.0818
project/cruise: EDDIES/WB0409 2004 Transect 1 (EDT1)
EDDIES/WB0413 2004 Transect 2 (EDT2)
EDDIES/WB0506 2005 Transect 1 (EDT3)
EDDIES/WB0508 2005 Transect 2 (EDT4)
platform: R/V Weatherbird II

Methodology: see Chapter 14: Determination of Chlorophyll & Phaeopigments 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
061213: downloaded original data from EDDIES data web site;
Excel file: WB_EDDIES_CHL_Data.xls
070116: put station_name, sta_ref, and comments in separate columns;
event and station number added from cruise event log
070117: added to OCB database by Nancy Copley & Cyndy Chandler, OCB DMO
070601: corrected station numbers for WB0506 and WB0506 data

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Data Files

File
pigments_WB.csv (Comma Separated Values (.csv), 14.85 KB) MD5:e10053b8bfade444a4cc53851b3d2142 Primary data file for dataset ID 3022

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Parameters

Parameter	Description	Units
Cruise_ID	cruise ID designation code	alphanumeric
event	unique sampling event number	YYYYMMDDhhmm
sta	station number	dimensionless
date	date (GMT), start of sampling	YYYYMMDD
time_start	time at start of measurement (GMT)	hhmm
time_end	time at start of measurement (GMT)	hhmm
lat	latitude at start of measurement, negative denotes South	decimal degrees
lon	longitude at start of measurement, negative denotes West	decimal degrees
lat_end	latitude at end of measurement, negative denotes South	decimal degrees
lon_end	longitude at end of measurement, negative denotes West	decimal degrees
staName	name of station	dimensionless
sta_ref	reference station indicator	dimensionless
comments	comments, station location descriptor	dimensionless
depth_n	depth; nominal	meters
chl_a_mg_m3	chlorophyll-a	milligrams/cubic meter
phaeo	phaeophytin	micrograms/liter
phaeo_mg_l	phaeophytin in original units	milligram/liter

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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

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: Fluorometric pigments; chlorophyll and phaeophytin dates: 24 June 2004 to 02 July 2004 (20040624-20040702) location: N: 31.9278 S: 29.7799 W: -65.5583 E: -64.0818 project/cruise: EDDIES/WB0409 2004 Transect 1 (EDT1) platform: R/V Weatherbird II Methodology: see Chapter 14: Determination of Chlorophyll & Phaeopigments 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 061213: downloaded original data from EDDIES data web site; Excel file: WB_EDDIES_CHL_Data.xls 070116: put station_name, sta_ref, and comments in separate columns; event and station number added from cruise event log 070117: added to OCB database by Nancy Copley & Cyndy Chandler, OCB DMO OCB DMO Note: These data are part of a multi-ship data set (see full data set).

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: Fluorometric pigments; chlorophyll and phaeophytin dates: 04 August 2004 to 10 August 2004 (20040804-20040810) location: N: 31.3037 S: 30.6786 W: -65.7843 E: -65.7341 project/cruise: EDDIES/WB0413 2004 Transect 2 (EDT2) platform: R/V Weatherbird II Methodology: see Chapter 14: Determination of Chlorophyll & Phaeopigments 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 061213: downloaded original data from EDDIES data web site; Excel file: WB_EDDIES_CHL_Data.xls 070116: put station_name, sta_ref, and comments in separate columns; event and station number added from cruise event log 070117: added to OCB database by Nancy Copley & Cyndy Chandler, OCB DMO OCB DMO Note: These data are part of a multi-ship data set (see full data set).

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: Fluorometric pigments; chlorophyll and phaeophytin dates: 07 July 2005 to 14 July 2005 (20050707-20050714) location: N: 31.0825 S: 30.5361 W: -66.7133 E: -65.8709 project/cruise: EDDIES/WB0506 2005 Transect 1 (EDT3) platform: R/V Weatherbird II Methodology: see Chapter 14: Determination of Chlorophyll & Phaeopigments 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 061213: downloaded original data from EDDIES data web site; Excel file: WB_EDDIES_CHL_Data.xls 070116: put station_name, sta_ref, and comments in separate columns; event and station number added from cruise event log 070117: added to OCB database by Nancy Copley & Cyndy Chandler, OCB DMO 070601: corrected station numbers for WB0506 data OCB DMO Note: These data are part of a multi-ship data set (see full data set).

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: Fluorometric pigments; chlorophyll and phaeophytin dates: 18 August 2005 to 24 August 2005 (20050818-20050824) location: N: 30.1864 S: 29.6154 W: -69.4429 E: -68.3775 project/cruise: EDDIES/WB0508 2005 Transect 2 (EDT4) platform: R/V Weatherbird II Methodology: see Chapter 14: Determination of Chlorophyll & Phaeopigments 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 061213: downloaded original data from EDDIES data web site; Excel file: WB_EDDIES_CHL_Data.xls 070116: put station_name, sta_ref, and comments in separate columns; event and station number added from cruise event log 070117: added to OCB database by Nancy Copley & Cyndy Chandler, OCB DMO 070601: corrected station numbers for WB0508 data OCB DMO Note: These data are part of a multi-ship data set (see full data set).

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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.

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Ledwell, J.R., McGillicuddy, D.J., and Anderson, L.A.. "Nutrient Flux into an Intense Deep Chlorophyll Layer in a Mode-water Eddy.," Deep Sea Research II, v.55, 2008, p. 1139.

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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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