

Pigments from HPLC analysis of bottle samples collected aboard Oceanus from R/V Oceanus OC404-01, OC404-04, OC415-01, OC415-03 in the Sargasso Sea from 2004-2005 (EDDIES project)

Website: <https://www.bco-dmo.org/dataset/3024>

Version: 01 November 2007

Version Date: 2007-11-01

Project

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

Program

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

Contributors	Affiliation	Role
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Dataset Description

This dataset includes pigments from HPLC analysis of bottle samples collected during EDDIES project R/V Oceanus cruises OC404-01, OC404-04, OC415-01 and OC415-03 from the Sargasso Sea, June 11, 2004 to August 24, 2005.

Methodology: [analytical protocols](#)

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Center for Hydro-Optics & Remote Sensing
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Change history: YYMMDD

070525: downloaded original data from EDDIES data Web site
(OC404-1: DM Pigs final 29Jul05.xls);
(OC404-4: 200412c_DM.xls, 200501a_DM.xls, 200504a_DM.xls);
(OC415-1: 200508b_DM-ori.xls, 200509c_DM.xls);
(OC415-3: 200603 DM Final.xls)

prepared for OCB database by Nancy Copley, BCO-DMO
071101: added to OCB database by Cyndy Chandler, BCO-DMO
event number is from cruise event log (added by DMO)

PI note:

080317: Recalibrated data are expected from NASA during the second half of 2008.

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Data Files

File

HPLC_OC.csv(Comma Separated Values (.csv), 657.53 KB)
 MD5:94472abc8ce4be3d5b65a9c9214e3033

Primary data file for dataset ID 3024

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Parameters

Parameter	Description	Units
Cruise_ID	cruise ID designation code	alphanumeric
event	unique sampling event number in YYYYMMDDhhmm format	unitless
date	date (GMT); start of sampling in YYYYMMDD format	unitless
time	time of measurement (GMT)	hhmm
lon	longitude at start of measurement; negative denotes West	decimal degrees
lat	latitude at start of measurement; negative denotes South	decimal degrees
sta	station number	dimensionless
depth_n	depth; nominal	meters
SID_HPLC	Sample ID, corresponds with bottle_SID	dimensionless
run_ID_HPLC	run ID assigned by HPLC lab	alphanumeric
run_PI	run ID for PI, various	alphanumeric
vol_filt_ml	volume water filtered for analysis	milliliters
chl_a_fluor	chlorophyll-a by Fluorometric methods	micrograms/liter
pheo_fluor	pheopigments by Fluorometric methods	micrograms/liter
chl_c3	HPLC Chlorophyll_c3	micrograms/liter
chl_c2	HPLC Chlorophyll_c2	micrograms/liter
chl_c1	HPLC Chlorophyll_c1	micrograms/liter
chlide_a	HPLC Chlorophyllide a	micrograms/liter
phide	HPLC Pheophorbide a	micrograms/liter
peridinin	HPLC Peridinin	micrograms/liter
fucox_but	HPLC 19' - Butanoyloxyfucoxanthin	micrograms/liter
fucox	HPLC fucoxanthin	micrograms/liter
neox	HPLC neoxanthin	micrograms/liter
prasincox	HPLC Prasincoxanthin	micrograms/liter
violax	HPLC violaxanthin	micrograms/liter
fucox_hex	HPLC 19' - Hexanoyloxyfucoxanthin	micrograms/liter
diadinox	HPLC Diadinoxanthin	micrograms/liter
allox	HPLC Alloxanthin	micrograms/liter
diatox	HPLC Diatoxanthin	micrograms/liter
zeax	HPLC Zeaxanthin	micrograms/liter
lutein	HPLC Lutein	micrograms/liter
gyro	HPLC Gyroxanthin-Diester	micrograms/liter

chl_b_dv	HPLC Divinyl_ChI_b	micrograms/liter
chl_b_mv	HPLC Monovinyl_ChI_b	micrograms/liter
chl_a_allomer	HPLC chlorophyll a allomer	micrograms/liter
chl_a_dv	Divinyl chlorophyll a; based on the C18 method regression between 436nm and 450nm	micrograms/liter
chl_a_mv_peak	HPLC Monovinyl_ChI_a, peak May contain some DVa	micrograms/liter
chl_a_epimer	HPLC chlorophyll a epimer	micrograms/liter
pheo	HPLC Pheophytin a	micrograms/liter
chl_b	HPLC Chlorophyll b	micrograms/liter
carotene_a	HPLC alpha Carotene	micrograms/liter
carotene_b	HPLC beta Carotene	micrograms/liter
carotene	HPLC Total Carotenes (alpha + beta)	micrograms/liter
chl_a_mv	Monovinyl chlorophyll a; based on the C18 method regression between 436nm and 450nm	micrograms/liter
chl_a_tot	Total Chlorophyll a =chl_a +allomer +epimer +MVa +Dva	micrograms/liter
comments	comments and notes	dimensionless

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Instruments

Dataset-specific Instrument Name	Fluorometer
Generic Instrument Name	Fluorometer
Dataset-specific Description	Turner Fluorometer
Generic Instrument Description	A fluorometer or fluorimeter is a device used to measure parameters of fluorescence: its intensity and wavelength distribution of emission spectrum after excitation by a certain spectrum of light. The instrument is designed to measure the amount of stimulated electromagnetic radiation produced by pulses of electromagnetic radiation emitted into a water sample or in situ.

Dataset-specific Instrument Name	High Performance Liquid Chromatograph
Generic Instrument Name	High-Performance Liquid Chromatograph
Generic Instrument Description	A High-performance liquid chromatograph (HPLC) is a type of liquid chromatography used to separate compounds that are dissolved in solution. HPLC instruments consist of a reservoir of the mobile phase, a pump, an injector, a separation column, and a detector. Compounds are separated by high pressure pumping of the sample mixture onto a column packed with microspheres coated with the stationary phase. The different components in the mixture pass through the column at different rates due to differences in their partitioning behavior between the mobile liquid phase and the stationary phase.

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	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)

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	EDDIES project 2004 Survey 2 cruise Funded by: NSF OCE-0241310 Original cruise data are available from the NSF R2R data catalog

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	EDDIES project 2005 Survey 1 cruise Funded by: NSF OCE-0241310 Original cruise data are available from the NSF R2R data catalog

OC415-03

Website	https://www.bco-dmo.org/deployment/57965
Platform	R/V Oceanus
Report	http://ocb.who.edu/EDDIES/CRUISES/2005/OC415-3_CrRptDraft_091405.pdf
Start Date	2005-08-07
End Date	2005-08-26
Description	EDDIES project 2005 Survey 2 cruise Funded by: NSF OCE-0241310 Original cruise data are available from the NSF R2R data catalog

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Project Information

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

Website: http://science.who.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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