

# Ship Track XYT data from R/V Oceanus OC404-01, OC404-04, OC415-01, OC415-02, OC415-03, OC415-04 cruises in the Sargasso Sea, 2004-2005 (EDDIES project)

Website: <https://www.bco-dmo.org/dataset/3057>

Version: final

Version Date: 2007-11-21

## Project

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

## Program

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

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## Table of Contents

- [Dataset Description](#)
- [Parameters](#)
- [Deployments](#)
- [Project Information](#)
- [Program Information](#)

## Dataset Description

Ship Track XYT data from EDDIES R/V Oceanus cruises.

Methodology: all data were acquired from the shipboard Athena data system and taken from the primary GPS receiver's NMEA formatted output.

[ [table of contents](#) | [back to top](#) ]

## Parameters

Parameter	Description	Units
lon	longitude, negative denotes West	decimal degrees
lat	latitude, negative denotes South	decimal degrees
time_ss	start time of measurement (GMT) 24 hour clock including seconds	HHmmss
time	start time of measurement (GMT)	HHmm
date	start date of measurement (GMT)	YYYYMMDD

[ [table of contents](#) | [back to top](#) ]

## Deployments

### OC404-01

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57956">https://www.bco-dmo.org/deployment/57956</a>
<b>Platform</b>	R/V Oceanus
<b>Report</b>	<a href="http://ocb.whoi.edu/EDDIES/CRUISES/2004/OC404-1_Draft_Cruise_Report.pdf">http://ocb.whoi.edu/EDDIES/CRUISES/2004/OC404-1_Draft_Cruise_Report.pdf</a>
<b>Start Date</b>	2004-06-11
<b>End Date</b>	2004-07-03
<b>Description</b>	<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><b>Methods &amp; Sampling</b>  PI: Dennis McGillicuddy of: Woods Hole Oceanographic Institution (WHOI) dataset: Ship Track XYT data dates: 08 June 2004 to 06 July 2004 (20040608-20040706) location: N: 41.58667 S: 28.63887 W: -71.40890 E: -58.74813 project/cruise: EDDIES/OC404-1 2004 Survey 1 platform: R/V Oceanus Methodology: all data were acquired from the shipboard Athena data system and taken from the primary GPS receiver's NMEA formatted output. Change history: YYYYMMDD 071121: downloaded original data (oc404-1_gmt.xy) from EDDIES data web site; added to OCB database by Cyndy Chandler, BCO-DMO;</p>

#### OC404-04

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57961">https://www.bco-dmo.org/deployment/57961</a>
<b>Platform</b>	R/V Oceanus
<b>Report</b>	<a href="http://ocb.whoi.edu/EDDIES/CRUISES/2004/OC404-4_Draft_Cruise_Report.pdf">http://ocb.whoi.edu/EDDIES/CRUISES/2004/OC404-4_Draft_Cruise_Report.pdf</a>
<b>Start Date</b>	2004-07-25
<b>End Date</b>	2004-08-12
<b>Description</b>	<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><b>Methods &amp; Sampling</b>  PI: Dennis McGillicuddy of: Woods Hole Oceanographic Institution (WHOI) dataset: Ship Track XYT data dates: 17 July 2004 to 19 August 2004 (20040717-20040819) location: N: 41.58650 S: 29.86533 W: -71.41467 E: -59.44005 project/cruise: EDDIES/OC404-4 2004 Survey 2 platform: R/V Oceanus Methodology: all data were acquired from the shipboard Athena data system and taken from the primary GPS receiver's NMEA formatted output. Change history: YYYYMMDD 071121: downloaded original data (oc404_4_gmt.xy) from EDDIES data web site; added to OCB database by Cyndy Chandler, BCO-DMO;</p>

#### OC415-01

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57962">https://www.bco-dmo.org/deployment/57962</a>
<b>Platform</b>	R/V Oceanus
<b>Report</b>	<a href="http://ocb.whoi.edu/EDDIES/CRUISES/2005/OC415_Draft_Cruise_Report_050722.pdf">http://ocb.whoi.edu/EDDIES/CRUISES/2005/OC415_Draft_Cruise_Report_050722.pdf</a>
<b>Start Date</b>	2005-06-20
<b>End Date</b>	2005-07-15
<b>Description</b>	<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><b>Methods &amp; Sampling</b>  PI: Dennis McGillicuddy (Chief Scientist) of: Woods Hole Oceanographic Institution (WHOI) dataset: Ship Track XYT data dates: 20 June 2005 to 16 July 2005 (20050620-20050716) location: N: 41.52400 S: 28.55373 W: -70.88548 E: -61.92083 project/cruise: EDDIES/OC415-1 2005 Survey 1 platform: R/V Oceanus Methodology: all data were acquired from the shipboard Athena data system and taken from the primary GPS receiver's NMEA formatted output. Change history: YYMMDD 071119: downloaded original data (oc415_1_gmt.xy) from EDDIES data web site; added to OCB database by Cyndy Chandler, BCO-DMO;</p>

#### OC415-02

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57964">https://www.bco-dmo.org/deployment/57964</a>
<b>Platform</b>	R/V Oceanus
<b>Start Date</b>	2005-07-18
<b>End Date</b>	2005-08-04
<b>Description</b>	<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><b>Methods &amp; Sampling</b>  PI: Jim Ledwell (Chief Scientist) of: Woods Hole Oceanographic Institution (WHOI) dataset: Ship Track XYT data dates: 16 July 2005 to 05 August 2005 (20050716-20050805) location: N: 32.37925 S: 27.17678 W: -67.97178 E: -64.61242 project/cruise: EDDIES/OC415-2 2005 Tracer 1 platform: R/V Oceanus Methodology: all data were acquired from the shipboard Athena data system and taken from the primary GPS receiver's NMEA formatted output. Change history: YYMMDD 071119: downloaded original data (oc415_3_gmt.xy) from EDDIES data web site; added to OCB database by Cyndy Chandler, BCO-DMO;</p>

#### OC415-03

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57965">https://www.bco-dmo.org/deployment/57965</a>
<b>Platform</b>	R/V Oceanus
<b>Report</b>	<a href="http://ocb.whoi.edu/EDDIES/CRUISES/2005/OC415-3_CrRptDraft_091405.pdf">http://ocb.whoi.edu/EDDIES/CRUISES/2005/OC415-3_CrRptDraft_091405.pdf</a>
<b>Start Date</b>	2005-08-07
<b>End Date</b>	2005-08-26
<b>Description</b>	<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><b>Methods &amp; Sampling</b>  PI: Dennis McGillicuddy (Chief Scientist) of: Woods Hole Oceanographic Institution (WHOI) dataset: Ship Track XYT data dates: 06 August 2005 to 26 August 2005 (20050806 - 20050826) location: N: 33.24755 S: 29.27888 W: -69.41392 E: -63.14452 project/cruise: EDDIES/OC415-3 2005 Survey 2 platform: R/V Oceanus Methodology: all data were acquired from the shipboard Athena data system and taken from the primary GPS receiver's NMEA formatted output. Change history: YYMMDD 071119: downloaded original data (oc415_2_gmt.xy) from EDDIES data web site; added to OCB database by Cyndy Chandler, BCO-DMO;</p>

#### OC415-04

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57967">https://www.bco-dmo.org/deployment/57967</a>
<b>Platform</b>	R/V Oceanus
<b>Report</b>	<a href="http://ocb.whoi.edu/EDDIES/CRUISES/2005/OC415-4_cruise_report.pdf">http://ocb.whoi.edu/EDDIES/CRUISES/2005/OC415-4_cruise_report.pdf</a>
<b>Start Date</b>	2005-08-29
<b>End Date</b>	2005-09-15
<b>Description</b>	<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><b>Methods &amp; Sampling</b>  PI: Jim Ledwell (Chief Scientist) of: Woods Hole Oceanographic Institution (WHOI) dataset: Ship Track XYT data dates: 26 August 2005 to 15 September 2005 (20050826-20050915) location: N: 41.52392 S: 29.09438 W: -70.95747 E: -64.61240 project/cruise: EDDIES/OC415-4 2005 Tracer 2 platform: R/V Oceanus Methodology: all data were acquired from the shipboard Athena data system and taken from the primary GPS receiver's NMEA formatted output. Change history: YYMMDD 071119: downloaded original data (oc415_4_gmt.xy) from EDDIES data web site; added to OCB database by Cyndy Chandler, BCO-DMO;</p>

[ [table of contents](#) | [back to top](#) ]

## Project Information

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

**Website:** [http://science.whoi.edu/users/olga/eddies/EDDIES\\_Project.html](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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Nitrate in Eddies," Deep Sea Research II, v.55, 2008, p. 1389.

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[ [table of contents](#) | [back to top](#) ]

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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 CO<sub>2</sub> 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.

[ [table of contents](#) | [back to top](#) ]