Cruise Track Navigation from R/V Oceanus OC476-01cruise from the Nova Scotian continental slope waters; Cape Hatteras margin slope waters (Carbon Export project)

Website: https://www.bco-dmo.org/dataset/551802
Version: 23 February 2015
Version Date: 2015-02-23

Project
» Particle Transport and Carbon Export over the Northwest Atlantic Margin (Carbon Export)

Program
» Ocean Carbon and Biogeochemistry (OCB)

Contributors	Affiliation	Role
Manganini, Steven	Woods Hole Oceanographic Institution (WHOI)	Chief Scientist, Contact
Eglinton, Timothy I.	Woods Hole Oceanographic Institution (WHOI)	Principal Investigator
Chandler, Cynthia L.	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager

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Dataset Description

Cruise track generated from R2R Archive file
Cruise Id, Date/Time UTC, Lat, Lon, SOG, COG
1 minute fixes

Methods & Sampling

Generated from R2R archive file OC476-01_1min.r2rnav by BCO-DMO staff

R2R File creation date: 2012-09-28T00:28:54Z

Data Processing Description

Generated from R2R archive file OC476-01_1min.r2rnav by BCO-DMO staff

R2R File creation date: 2012-09-28T00:28:54Z

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Data Files

File
OC476-01_cruisetrack.csv (Comma Separated Values (.csv), 1.01 MB) MD5:d526a569e30d399d2093d6a423e9fa41 Primary data file for dataset ID 551802

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Parameters

Parameter	Description	Units
CruiseId	Official UNOLS cruise id	text
ISO_DateTime_UTC	ISO formatted UTC Date and Time	YYYY-MM-DDTHH:MM:SSZ
Latitude	Latitude Position (South is negative)	decimal degrees
Longitude	Longitude Position (West is negative)	decimal degrees
SOG	Instantaneous Speed-over-ground	meters/sec
COG	Instantaneous Course-over-ground [deg. clockwise from North]	decimal degrees

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Instruments

Dataset-specific Instrument Name	GPS
Generic Instrument Name	Global Positioning System Receiver
Generic Instrument Description	The Global Positioning System (GPS) is a U.S. space-based radionavigation system that provides reliable positioning, navigation, and timing services to civilian users on a continuous worldwide basis. The U.S. Air Force develops, maintains, and operates the space and control segments of the NAVSTAR GPS transmitter system. Ships use a variety of receivers (e.g. Trimble and Ashtech) to interpret the GPS signal and determine accurate latitude and longitude.

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Deployments

OC476-01

Website	https://www.bco-dmo.org/deployment/58724
Platform	R/V Oceanus
Start Date	2011-10-01
End Date	2011-10-13
Description	The scientific objective of this cruise is to collect settling and suspended particles at 3 locations on the northwest Atlantic margin to determine carbon transport from the shelf/slope to the deep basin, coupled with physical oceanographic data from moorings at station W. Sampling activities during the cruise will include: deployment and recovery of bottom-tethered sediment trap moorings; hydrographic sampling of bottom and intermediate-depth nepheloid layers via CTD with transmissometer and turbidity sensors and 24x10Liter Niskin rosette; water sampling via McLane in situ large volume pumping systems; use of a McLane Moored Profiler (MMP information) and multicoring of seafloor surface sediments. The cruise will also sample at the Line W station location in the North Atlantic Deep Western Boundary Current and Gulf Stream at 39 degrees North. Line W is a sustained measurement program. The researchers plan to recover 3 moorings and redeploy 1 mooring at station W. Cruise information and original data are available from the NSF R2R data catalog. Supporting documentation: pre-cruise station location plan Station W mooring schematic Cruise track image

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Project Information

Particle Transport and Carbon Export over the Northwest Atlantic Margin (Carbon Export)

Coverage: Nova Scotian continental slope waters; Cape Hatteras margin slope waters

This award is funded under the American Recovery and Reinvestment Act of 2009 (Public Law 111-5).

In this project researchers at the Woods Hole Oceanographic Institution (WHOI) seek to address two primary questions regarding the transport of organic carbon over the New England continental margin. Their first question addresses the relative importance of intermediate nepheloid layers versus benthic nepheloid layers for organic carbon transport. Their second question focuses on assessing the importance of interannual variability on particle transport. The researchers will collect both settling and suspended particles along the NW Atlantic ocean margin, and they will utilize both novel and established tracers of material transport to address their primary research questions. Their assessments of particle dynamics will be coupled to an existing hydrographic observation program along an ocean section between Cape Cod and Bermuda (Line W). This program is focused on the physical characteristics of the region, and provides an accompanying framework for the study of carbon dynamics.

The importance of the work to global carbon cycling lies in the fact that continental margins generally maintain high biological production and are physically dynamic environments. One potential fate of the biologically produced carbon is that it may be exported to the deep ocean, yet the magnitude of that exported carbon is generally not well defined. Over the Northwest Atlantic margin, large-scale currents have the potential to be an important dispersal mechanism for organic carbon to the ocean interior. In a prior research project, the investigators hypothesized that the lateral transport of particulate organic carbon occurs via a bottom nepheloid layer (BNL) maintained by the Deep Western Boundary Current (DWBC). Although their research supports the notion that the DWBC transports a significant amount of organic carbon, their observations also indicate that intermediate nepheloid layers (INLs) emanating from the shelf-slope break and upper slope of the Mid Atlantic Bight may also be important vectors for carbon export.

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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-0851350
NSF Division of Ocean Sciences (NSF OCE)	OCE-0726720

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