Cruise track data from ship's underway data acquisition system from R/V Oceanus cruises OC455, OC461 South of Martha's Vineyard, MA, USA to 39 31.7N, 70 33.1W, 2009-2010 (Foram Dispersal project)

Website: https://www.bco-dmo.org/dataset/3608
Version: 25 January 2012
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Project
» Dispersal and Life History Dynamics in Benthic Foraminifera (Foram Dispersal)

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Dataset Description

Longitude, latitude, date and time (UTC) and seafloor depth (XYTZ) cruise track data were subsampled from the ship's underway sampling system (daily WHOI Athena 1 minute *.CSV files) using a BCO-DMO perl script. The vessel's underway data acquisition system records the best quality navigation data from the Furuno 1850 GPS receiver. The seafloor depth is from the Knudsen 12 kHz channel system and includes the 4 meter transducer depth correction.

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Data Files

File
cruise_track.csv (Comma Separated Values (.csv), 8.66 KB)   MD5:9d4c84bfc5783d52939a608d66228713   Primary data file for dataset ID 3608

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Parameters

Parameter	Description	Units
date	date (GMT)	YYYYMMDD
time	time (GMT)	HHMMSS
longitude	Station longitude (West is negative)	decimal degrees
latitude	Station latitude (South is negative)	decimal degrees
Cruise_ID	cruise_id	text
seafloor	depth of the seafloor; e.g. depth of the water	meters

Instruments

Dataset-specific Instrument Name	Global Positioning System Receivers
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.

Dataset-specific Instrument Name	Knudsen 320 BR deepwater echosounder
Generic Instrument Name	Knudsen 320 BR deepwater echosounder
Dataset-specific Description	Knudsen 320 B/R daat logger with a hull-mounted Edo 323 B 12 kHz High Frequency (HF) transducer
Generic Instrument Description	The Knudsen 320 B/R deepwater echosounder is a digital data logging system used to measure water depth (e.g. depth of the seafloor). The system is configured to work with different frequency transducers. For example, the Edo 323 B is a 12 kHz High Frequency (HF) transducer or it can be configured to work with an array of 3.5 kHz Low Frequency (LF) transducers mounted in the hull of a vessel.

Deployments

OC455

Website	https://www.bco-dmo.org/deployment/58770
Platform	R/V Oceanus
Report	http://bcodata.whoi.edu/PI-NOTES/Bernhard/OC455_synopsis.pdf
Start Date	2009-09-09
End Date	2009-09-13
Description	OC455 is the first cruise for the Dispersal and Life History Dynamics of Benthic Foraminifera project. The anticipated science activities included water collection at depth using the CTD/Rosette system and coring (Soutar Boxcore and MC800 multicore) for collection of live benthic foraminifera. The cruise was funded by NSF OCE ARRA award # 0850494. Cruise information and original data are available from the NSF R2R data catalog.

OC461

Website	https://www.bco-dmo.org/deployment/58771
Platform	R/V Oceanus
Start Date	2010-05-13
End Date	2010-05-17
Description	OC461 is the second cruise for the Dispersal and Life History Dynamics of Benthic Foraminifera project. The anticipated science activities included water collection at depth using the CTD/Rosette system and coring (Soutar Boxcore and MC800 multicore) for collection of live benthic foraminifera. The cruise was funded by NSF OCE ARRA award # 0850494. Cruise information and original data are available from the NSF R2R data catalog.

Project Information

Dispersal and Life History Dynamics in Benthic Foraminifera (Foram Dispersal)

Coverage: South of Martha's Vineyard, MA, USA to 39 31.7N, 70 33.1W

This Collaborative Research award was funded by NSF under the American Recovery and Reinvestment Act of 2009 (Public Law 111-5).

Project description from the NSF award abstract ...
Dispersal and connectivity are fundamental processes known to underpin the health and stability of marine populations and communities. Effective dispersal and recruitment facilitate recovery from a variety of environmental perturbations and allow populations and communities to respond to environmental change operating over a range of temporal scales. This project will study to examine key aspects of dispersal, connectivity, and life history dynamics in benthic foraminifera, a well-defined group of protists that are abundant and diverse in nearly all marine settings. Foraminifera are largely heterotrophic, important in carbon cycling, sensitive to environmental conditions, and their rich fossil record provides insight into processes functioning over the span of historical to deep time. Dispersal and connectivity patterns are not well understood, particularly in benthic representatives of this group. Recent studies, however, suggest very broad connectivity patterns in deep-sea settings yet different dispersal capabilities among closely related species of at least one coastal foraminiferal genus. The overarching goal of this project is to characterize the dispersal patterns and capabilities of coastal to bathyal benthic foraminifera and to relate these patterns to their life history dynamics, ability to respond to different environmental conditions, and the extent of population connectivity as reflected by the presence or absence of cryptic phylotypes in otherwise broadly distributed morphospecies. The PIs utilize coastal to bathyal study sites off the Northeastern US and coastal sites in Georgia (SE US) and will use interdisciplinary methodology for experimental manipulation of the foraminiferal propagule bank (juveniles present in sediments derived from both local and distant sources); morphological,

epifluorescence and fine structural techniques; and molecular genetics.

This project will: (1) Determine the extent of dispersal perpendicular to the coastal zone, both from onshore-to offshore sites, and in the opposite offshore-to-onshore direction; (2) Determine whether dispersal within the coastal zone (i.e., parallel to the coast) occurs over long distances (i.e., between adjacent coastal provinces), as implied by numerous reports of "cosmopolitan" intertidal species, or whether dispersal is generally limited by region. (3) Determine the relationship between dispersal in selected benthic foraminifera and their life history dynamics; and (4) Assess the diversity of adult foraminiferal assemblages that can be grown from a single propagule bank under different environmental conditions, thus providing insight into the environmental adaptability of the propagule bank at each of the sites and hence the ability to respond to environmental change.

Broader Impacts: This project will contribute to a more comprehensive understanding of the processes of dispersal, life history dynamics, and connectivity in marine systems. Results would further resolve the debate between the ubiquity and moderate endemicity models of microbial dispersal, provide additional comparisons of dispersal patterns between eukaryotic microbes and macro-organisms, and contribute to our understanding of community-level modifications that result from environmental perturbations and change.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-0850494

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