

Underway data from cruise R/V Endeavor EN531 in the Blake Ridge, Cape Fear Diapir from Aug. 2013 (SEEPc project)

Website: <https://www.bco-dmo.org/dataset/537062>

Version: 2014-08-15

Project

» [Connectivity in western Atlantic seep populations: Oceanographic and life-history processes underlying genetic structure](#) (SEEPc)

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Dataset Description

This alongtrack data set contains information on environmental conditions for each day of the RV/Endeavor cruise EN531.

Start: Depart Morehead City, NC 08/15/2013

End: Arrive Morehead City, NC 08/18/2013

Further information on the instruments is available at: <http://www.rvdata.us/catalog/EN531>

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Data Files

File
EN531_underway.csv (Comma Separated Values (.csv), 1.43 MB) MD5:03a7b4aa53133bce299c71fdb624fba2
Primary data file for dataset ID 537062

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Parameters

Parameter	Description	Units
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date	date (UTC)	yyyy-mm-dd
month	month	1:12
day	day of month	1:31
year	year	YYYY
yday_gmt	GMT day and decimal time; as 326.5 for the 326th day of the year or November 22 at 1200 hours (noon)	unitless
ISO_DateTime.UTC	Date/Time (UTC) ISO formatted	YYYY-MM-DDTHH:MM:SS[.xx]Z
time	time of day (UTC)	HH:MM:SS
lat	Latitude; south is negative	decimal degrees
lon	Longitude; west is negative	decimal degrees
temp_air	Air temperature	degrees Celsius
humidity	Relative humidity	percent
press_bar	Barometric pressure	millibars
sst_5m	Sea surface temperature at 5 meters	degrees Celsius
sst_1m	Sea surface temperature at 1 meter	degrees Celsius
radiation_l_2	Longwave radiation	Watts/m ²
radiation_s_2	IMET shortwave radiation	Watts/m ²
precip_curr_hr	Precipitation accumulation	mm
precip_last24	Precipitation accumulation last 24 hours	mm
precip_rate	Precipitation rate	mm/hr

wind_speed_r_p	wind speed raw; from port	knots
wind_dir_r_p	wind direction raw; from port	degrees
wind_speed_c_p	wind speed corrected; from port	knots
wind_dir_c_p	wind direction corrected; from port	degrees
wind_speed_r_s	wind speed raw; from starboard	knots
wind_dir_r_s	wind direction raw; from starboard	degrees
wind_speed_c_s	wind speed corrected; from starboard	knots
wind_dir_c_s	wind direction corrected; from starboard	degrees
head1	heading	degrees
sog	GPS speed over ground	knots
flvolt	fluorometer from Turner inst.	volts
sal_sbe21	salinity from SBE21	PSU
temp_ss_tsal	sea surface temperature used in salinity calculation	degrees Celsius
temp_ss	sea surface temperature	degrees Celsius
cond_ss	sea surface conductivity	Siemens/meter
sal_ss	sea surface salinity	PSU

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Instruments

Dataset-specific Instrument Name	GPS
Generic Instrument Name	Global Positioning System Receiver
Dataset-specific Description	Trimble differential GPS
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	Gyro
Generic Instrument Name	Gyro
Generic Instrument Description	Compass with a motorized gyroscope that tracks true north (heading).

Dataset-specific Instrument Name	SeaBird SBE-21
Generic Instrument Name	Sea-Bird SeaCAT Thermosalinograph SBE 21
Generic Instrument Description	A platinum-electrode conductivity sensor and a thermistor mounted in a corrosion-resistant plastic and titanium housing designed to be continuously plumbed into a vessel's pumped seawater supply. The instrument may be interfaced to a remote SBE 38 temperature sensor mounted either on the hull or in the seawater inlet. Data are both stored in internal memory and output to a serial port for external logging. Conductivity is measured in the range 0-7 S/m with an accuracy of 0.001 S/m and a resolution of 0.0001 S/m. Housing temperature is measured in the range -5-35C with an accuracy of 0.01 C and a resolution of 0.001 C. Remote temperature is measured in the range -5-35C with an accuracy of 0.001 C and a resolution of 0.0003 C. More information at http://www.seabird.com/products/spec_sheets/21data.htm .

Dataset-specific Instrument Name	
Generic Instrument Name	Weather Transmitter
Generic Instrument Description	The ship-mounted Vaisala Weather Transmitter WXT520 measures: Wind speed and direction; Liquid precipitation: rainfall, duration, intensity; Barometric pressure; Air temperature and Relative humidity. (for more information see http://www.vaisala.com/en/products/multiweathersensors/Pages/WXT520.aspx)

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Deployments

EN531

Website	https://www.bco-dmo.org/deployment/521426
Platform	R/V Endeavor
Report	http://dmoserv3.who.edu/data_docs/SEEPC/Cruise.Report.EN531-08-14.2013.pdf
Start Date	2013-08-15
End Date	2013-08-18
Description	SEEPC project cruise. Cruise information and original data are available from the NSF R2R data catalog.

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Project Information

Connectivity in western Atlantic seep populations: Oceanographic and life-history processes underlying genetic structure (SEEPC)

Coverage: Western Atlantic, Gulf of Mexico, Intra-American Sea

This project will evaluate connectivity on spatial scales that match those at which vent systems are being studied (3500 km), with a set of nested seeps (within the Barbados system) within which connectivity can be explored at more local spatial scales (30 to 130 km), and with species that span depth (600 m to 3600 m) and geographic ranges (30 km to 3500 km) and that have diverse life-history characteristics. Five deep-sea seep systems in the Intra- American Sea (IAS) are targeted: Blake Ridge, Florida Escarpment, Alaminos Canyon, Brine Pool, Barbados (El Pilar, Orenoque A, Orenoque B). The primary objective is to advance our general knowledge of connectivity in the deep sea. The focus is on species and processes occurring in the IAS, with attention to oceanographic circulation, life histories, and genetics. Questions that apply in shallow-water systems motivate this study:

1. What phylogeographic breaks occur in the system? It is important to distinguish between phylogeographic history and connectivity. A phylogeographic break with no shared alleles between populations implies a long history of isolation or possibly cryptic speciation.
2. Are populations connected by ongoing migration? This is the fundamental question about connectivity and the scale of genetic variation in marine species with planktonic larvae.
3. What biophysical processes underlie observed connectivities? Biological processes (e.g., larval distributions in the water column, timing of reproduction, and planktonic larval duration) and physical processes of transport and dispersion interact to determine connectivity.

The oceanographic model for the IAS will be improved and coupled to a Lagrangian larval transport model. The field program includes time-series sampling of larvae at seeps with records of current velocities, water column sampling to determine larval distribution potential, shipboard studies of larval biology and behavior, and sampling of benthic target species. Phylogenetic and population genetic tools will be used to explore historical and contemporary gene flow. Iterative interactions among the science teams will advance our understanding of connectivity in the deep sea and to develop effective and best methods for hypothesis testing under the constraints of working in a relatively inaccessible environment. Since their discovery, deep-sea chemosynthetic ecosystems have been novel systems within which to test the generality of paradigms developed for shallow-water species. This study will explore scale-dependent biodiversity and recruitment dynamics in deep-sea seep communities, and will identify key factors underlying population persistence and maintenance of biodiversity in these patchy systems.

[Google Earth map](#) showing positions of stations, CTD, XBT, multibeam locations (KMZ file download)

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1031050

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