Temperature and salinity data from binned CTD data collected during R/V Hugh R. Sharp cruise HRS1414 in the Mid and South-Atlantic Bight from July to August of 2014 (DANCE project)

Website: https://www.bco-dmo.org/dataset/731502
Data Type: Cruise Results
Version: 1
Version Date: 2018-03-23

Project
» Collaborative Research: Impacts of atmospheric nitrogen deposition on the biogeochemistry of oligotrophic coastal waters (DANCE)

Contributors	Affiliation	Role
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Abstract
Temperature and salinity data from binned CTD data collected during R/V Hugh R. Sharp cruise HRS1414 in the Mid and South-Atlantic Bight from July to August of 2014 (DANCE project)

Table of Contents

Coverage

Spatial Extent: **N**:38.7953 **E**:-71.1622 **S**:33.6435 **W**:-74.4263
Temporal Extent: 2014-07-31 - 2014-08-14

Dataset Description

Temperature and salinity data from 29 CTD casts during DANCE cruise HRS1414 aboard the R/V Hugh R. Sharp binned into 0.5-m depth intervals.

Methods & Sampling

CTD casts were conducted using a Sea-Bird SBE-911+ during the R/V Hugh R. Sharp cruise HRS1414.

Data Processing Description

Raw CTD output was binned into 0.5-m intervals using Matlab. Raw CTD output used is available at

BCO-DMO Data Manager Processing Notes:
* added a conventional header with dataset name, PI name, version date
* modified parameter names to conform with BCO-DMO naming conventions
* Two tabular datasets from two separate files were joined to form this dataset (dance_DATASET_ctd_bin.xlsx and dance_deployment_CTD_cast_time_and_location.xlsx). One contained cast information, and one the ctd salinity and temperature data
* The data parameter format was changed to use the following number of decimal places
*   matlab_datenum (all 9 decimal places available, only two were displayed in the original Excel file)
*   lat/lon (4 decimal places)
*   depth (one decimal place)
*   temp and salin (two decimal places)

[table of contents | back to top]

Data Files

File
ctd_salin.csv (Comma Separated Values (.csv), 625.25 KB)   MD5:62041f4cbb1d450143b16ca97aac9b0e   Primary data file for dataset ID 731502

[table of contents | back to top]

Parameters

Parameter	Description	Units
CTD_cast	CTD cast number	unitless
date_string	CTD cast date and time in format "yyyy-mm-dd HH:MM"	unitless
depth_m	Binned depth	meters
lat	CTD cast latitude	decimal degrees
lon	CTD cast lontitude	decimal degrees
matlab_datenumber	CTD cast date and time in Matlab datenum format	unitless
sal	Salinity	parts per thousand
temp	Temperature	degrees Celsius

[table of contents | back to top]

Instruments

Dataset-specific Instrument Name	
Generic Instrument Name	CTD Sea-Bird SBE 911plus
Generic Instrument Description	The Sea-Bird SBE 911 plus is a type of CTD instrument package for continuous measurement of conductivity, temperature and pressure. The SBE 911 plus includes the SBE 9plus Underwater Unit and the SBE 11plus Deck Unit (for real-time readout using conductive wire) for deployment from a vessel. The combination of the SBE 9 plus and SBE 11 plus is called a SBE 911 plus. The SBE 9 plus uses Sea-Bird's standard modular temperature and conductivity sensors (SBE 3 plus and SBE 4). The SBE 9 plus CTD can be configured with up to eight auxiliary sensors to measure other parameters including dissolved oxygen, pH, turbidity, fluorescence, light (PAR), light transmission, etc.). more information from Sea-Bird Electronics

Deployments

HRS1414

Website	https://www.bco-dmo.org/deployment/731505
Platform	R/V Hugh R. Sharp
Start Date	2014-07-29
End Date	2014-08-16

Project Information

Collaborative Research: Impacts of atmospheric nitrogen deposition on the biogeochemistry of oligotrophic coastal waters (DANCE)

Coverage: Offshore Mid-Atlantic Bight and northern South-Atlantic Bight between latitudes 31.60°N and 38.89°N, and longitudes 71.09°W and 75.16°W

NSF abstract:

Deposition of atmospheric nitrogen provides reactive nitrogen species that influence primary production in nitrogen-limited regions. Although it is generally assumed that these species in precipitation contributes substantially to anthropogenic nitrogen loadings in many coastal marine systems, its biological impact remains poorly understood. Scientists from Pennsylvania State University, William & Mary College, and Old Dominion University will carry out a process-oriented field and modeling effort to test the hypothesis that deposits of wet atmospheric nitrogen (i.e., precipitation) stimulate primary productivity and accumulation of algal biomass in coastal waters following summer storms and this effect exceeds the associated biogeochemical responses to wind-induced mixing and increased stratification caused by surface freshening in oligotrophic coastal waters of the eastern United States. To attain their goal, the researchers would perform a Lagrangian field experiment during the summer months in coastal waters located between Delaware Bay and the coastal Carolinas to determine the response of surface-layer biogeochemistry and biology to precipitation events, which will be identified and intercepted using radar and satellite data. As regards the modeling effort, a 1-D upper ocean mixing model and a 1-D biogeochemical upper-ocean will be calibrated by assimilating the field data obtained a

part of the study using the adjoint method. The hypothesis will be tested using sensitivity studies with the calibrated model combined with in-situ data and results from the incubation experiments. Lastly, to provide regional and historical context for the field measurements and the associated 1-D modeling, linked regional atmospheric-oceanic biogeochemical modeling will be conducted.

Broader Impacts. Results from the study would be incorporated into class lectures for graduate courses on marine policy and marine biogeochemistry. One graduate student from Pennsylvania State University, one graduate student from the College of William and Mary, and one graduate and one undergraduate student from Old Dominion University would be supported and trained as part of this project.

Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1260574