Water temperature data from stable isotope labeling experiments conducted from 2012.

Website: https://www.bco-dmo.org/dataset/669630
Data Type: Other Field Results
Version: 1
Version Date: 2016-12-08

Project
» Eutrophication Effects on Sediment Metabolism and Benthic Algal-bacterial Coupling: An Application of Novel Techniques in a LTER Estuary (Benthic_PP_at_TIDE)

Contributors	Affiliation	Role
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Abstract
Water temperature data from stable isotope labeling experiments conducted from 2012.

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Coverage

Temporal Extent: 2013-06-23 - 2013-10-16

Dataset Description

Water temperature (deg C) was measured in a subset of cores with Onset HOBO pendant loggers (UA-002-64) during each of the stable isotope labeling experiments in June, August, and October.

Methods & Sampling

Water temperature (deg C) was measured in a subset of cores with Onset HOBO pendant loggers (UA-002-64).

Data Processing Description

The file includes raw and transformed water temperature data.

BCO-DMO Data Processing Notes:

-reformatted column names to comply with BCO-DMO standards.
-displayed months numerically

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Data Files

File
temperature.csv (Comma Separated Values (.csv), 408.99 KB) MD5:8296733844534c505b6a6b016e47da2a Primary data file for dataset ID 669630

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Parameters

Parameter	Description	Units
sampleID	ID refers to the unique combination of month; creek; core replicate number	unitless
bucket	Sampling bucket ID	unitless
month	Month of sampling; mm	unitless
date	Date of sampling; mm/dd/yy	unitless
time	Time of sampling; HH:MM	unitless
temp	Temperature was recorded in a subset of sediment cores during each stable isotope labeling experiment	celsius
lntemp	Natural log of temperature; temperature was recorded in a subset of sediment cores during each stable isotope labeling experiment	celsius
ISO_DateTime_UTC	Date/Time (UTC) ISO formatted	unitless

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Instruments

Dataset-specific Instrument Name	Core
Generic Instrument Name	Push Corer
Dataset-specific Description	Used to collect core samples
Generic Instrument Description	Capable of being performed in numerous environments, push coring is just as it sounds. Push coring is simply pushing the core barrel (often an aluminum or polycarbonate tube) into the sediment by hand. A push core is useful in that it causes very little disturbance to the more delicate upper layers of a sub-aqueous sediment. Description obtained from: http://web.whoi.edu/coastal-group/about/how-we-work/field-methods/coring/

Dataset-specific Instrument Name	Onset HOBO pendant loggers
Generic Instrument Name	Temperature Logger
Dataset-specific Description	Used to measure temperature in cores
Generic Instrument Description	Records temperature data over a period of time.

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Deployments

Spivak_2012

Website	https://www.bco-dmo.org/deployment/668449
Platform	shoreside Massachusetts
Start Date	2012-09-01
End Date	2015-08-15

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Project Information

Eutrophication Effects on Sediment Metabolism and Benthic Algal-bacterial Coupling: An Application of Novel Techniques in a LTER Estuary (Benthic_PP_at_TIDE)

Coverage: Plum Island Estuary, Rowley Massachusetts

Extracted from the NSF award abstract:
This project will address how rates of benthic microalgal production respond to eutrophication and geomorphological changes in human-impacted tidal creeks. Excess nutrient loading increases benthic algal biomass and likely stimulates production rates but the magnitude of nutrient and geomorphological effects on rates of production is unknown. Will changes in benthic algal productivity affect algal-bacterial coupling? Furthermore, how is algal-bacterial coupling affected by geomorphological changes, which may be exacerbated by excess nutrient loading but can also occur in pristine marshes?

This project will take advantage of the infrastructure of the TIDE project, a long-term saltmarsh eutrophication experiment at the Plum Island Ecosystem - Long Term Ecological Research site in Northeastern Massachusetts. Specifically, the PIs will measure benthic metabolism and examine algal- bacterial coupling in fertilized and ambient nutrient tidal creeks in the first field season. The following field season, they will compare sediment metabolism and carbon dynamics on slumped tidal creek walls (i.e. areas where low marsh has collapsed into the tidal creek) to that on the bottom of tidal creeks. In both years, gross and net production will be determined using an innovative triple oxygen isotope technique and traditional dissolved oxygen and inorganic carbon flux measurements. Comparisons between these methods will be useful in informing studies of sediment metabolism. Lipid biomarkers will be used to characterize the sources of organic matter to creek sediments, and stable isotope analysis of bacterial specific biomarkers to identify the sources of organic carbon utilized by sediment bacteria. The biomarkers will reveal whether sediment bacteria use organic matter substrates, such as benthic microalgal carbon, selectively or in proportion to availability. Overall, results from the proposed study will provide important information about how sediment carbon dynamics in shallow tidal creeks respond to long term eutrophication. Furthermore, findings will enhance understanding of the role of tidal creeks in coastal biogeochemistry.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1233678

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