

Deployment history of sensors recording dissolved oxygen from Massachusetts from 2012.

Website: <https://www.bco-dmo.org/dataset/669673>

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

Deployment history of sensors recording dissolved oxygen from Massachusetts from 2012.

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Coverage

Temporal Extent: 2014-05-07 - 2014-11-26

Dataset Description

Deployment history of sensors recording dissolved oxygen (DO), temperature, conductivity, and light levels in ponds 1, 2, and 3 during May - November 2014.

Acquisition Description

EXO2, YSI TIDE1, YSI PIE1, YSI PIE2, HOBODO1, and HOBODO2 recorded dissolved oxygen concentrations and temperature.

EXO2, YSI TIDE1, YSI PIE1, YSI PIE2, HOBO Cond848 and HOBO Cond2 recorded conductivity

HOBOpendant loggers recorded light (lumens) and temperature.

All instruments recorded data in 15 min intervals.

Processing Description

BCO-DMO Data Processing Notes:

- reformatted column names to comply with BCO-DMO standards.
- date range was separated into two columns, start and end dates.

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Parameters

Parameter	Description	Units
pond	Pond ID number	unitless
date_start	Sampling start date; mm/dd/yyyy	unitless
date_end	Sampling end date; mm/dd/yyyy	unitless
deployment	Deployment ID number	unitless
instrument1	Instrument used	unitless
instrument2	Instrument used	unitless
instrument3	Instrument used	unitless

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Instruments

Dataset-specific Instrument Name	EXO2, YSI TIDE1, YSI PIE1, YSI PIE2, HOBODO1, and HOBODO2
Generic Instrument Name	Water Temperature Sensor
Dataset-specific Description	Recorded dissolved oxygen concentrations and temperature.
Generic Instrument Description	General term for an instrument that measures the temperature of the water with which it is in contact (thermometer).

Dataset-specific Instrument Name	HOBOPendant loggers
Generic Instrument Name	Light Meter
Dataset-specific Description	Recorded light (lumens) and temperature.
Generic Instrument Description	Light meters are instruments that measure light intensity. Common units of measure for light intensity are $\mu\text{mol}/\text{m}^2/\text{s}$ or $\mu\text{E}/\text{m}^2/\text{s}$ (micromoles per meter squared per second or microEinsteins per meter squared per second). (example: LI-COR 250A)

Dataset-specific Instrument Name	EXO2, YSI TIDE1, YSI PIE1, YSI PIE2, HOBODO1, and HOBODO2
Generic Instrument Name	Dissolved Oxygen Sensor
Dataset-specific Description	Recorded dissolved oxygen concentrations and temperature.
Generic Instrument Description	An electronic device that measures the proportion of oxygen (O_2) in the gas or liquid being analyzed

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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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