Water and sediment microbial sequence accession and collection information from R/V Blackbeard and R/V Neil Armstrong cruises in coastal North Carolina in 2018 and 2019

Website: https://www.bco-dmo.org/dataset/880479
Version: 1
Version Date: 2022-09-13

Project
» 2018 Hurricane Season: RAPID: Associated Priming of Carbon in the Albemarle-Pamlico Estuarine System (APES), the Mid-Atlantic Bight and Gulf Stream (GSPS Hurricane)

Contributors	Affiliation	Role
Mitra, Siddhartha	East Carolina University (ECU)	Principal Investigator
Corbett, David Reide	East Carolina University (ECU)	Co-Principal Investigator
Field, Erin	East Carolina University (ECU)	Co-Principal Investigator
York, Amber D.	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager

Abstract
Collection information and genetic sequence identifiers for microbes in surface water and sediment samples from coastal North Carolina to investigate the impacts of the 2018 hurricane season. Cruises were conducted in the Albemarle-Pamlico Estuarine System, Coastal North Carolina, at the Western Edge of Gulf Stream in 2018 and 2019. Raw sequence reads can be found at the National Center for Biotechnology Information (NCBI) under bioproject PRJNA779973.

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Coverage

Spatial Extent: **N**:35.9033 **E**:-74.8322 **S**:35.3767 **W**:-75.8613
Temporal Extent: 2018-10-25 - 2019-07-03

Methods & Sampling

Bulk surface water collection, boatside, using nitrile gloves. Water collected in HDPE bottles.

Issue report:
Time of Collection was not noted for two sample collections.

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Related Datasets

IsRelatedTo

East Carolina University (2021). Impacts of hurricane season in NC on microbial communities. In: BioProject [Internet]. Bethesda, MD: National Library of Medicine (US), National Center for Biotechnology Information; Available from: http://www.ncbi.nlm.nih.gov/bioproject/PRJNA779973. NCBI:BioProject: PRJNA779973. https://www.ncbi.nlm.nih.gov/bioproject/PRJNA779973

Mitra, S., Field, E., Corbett, D. R. (2022) **Water column properties and carbon geochemistry from R/V Blackbeard and R/V Neil Armstrong cruises in coastal North Carolina in 2018 and 2019.** Biological and Chemical Oceanography Data Management Office (BCO-DMO). (Version 1) Version Date 2022-09-13 http://lod.bco-dmo.org/id/dataset/880442 [view at BCO-DMO]
Relationship Description: These datasets were generated from samples and measurements collected concurrently during the same cruises.

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Parameters

Parameters for this dataset have not yet been identified

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Instruments

Dataset-specific Instrument Name	YSI Salinometer
Generic Instrument Name	Salinometer
Generic Instrument Description	A salinometer is a device designed to measure the salinity, or dissolved salt content, of a solution.

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Deployments

AR33

Website	https://www.bco-dmo.org/deployment/880475
Platform	R/V Neil Armstrong
Start Date	2018-11-17
End Date	2018-11-28

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Project Information

2018 Hurricane Season: RAPID: Associated Priming of Carbon in the Albemarle-Pamlico Estuarine System (APES), the Mid-Atlantic Bight and Gulf Stream (GSPS Hurricane)

Coverage: Albemarle-Pamlico Estuarine System and Gulf Stream

NSF Award Abstract:

In the early fall of 2018, two Atlantic hurricanes (Florence and Michael) deposited substantial amounts of rainfall in North Carolina. The Albemarle-Pamlico Estuarine System (APES), which was impacted by these storms, is the second largest estuary in the United States, receiving freshwater from the Coastal Plain region of North Carolina and bounded on its seaward side by the Outer Banks (OBX). The exchange of water and suspended materials between the APES and the Atlantic Ocean occurs through three inlets (Oregon, Hatteras, and Ocracoke Inlets). This proposed research explores the overarching hypothesis that extreme precipitation from the 2018 Hurricane Season flushed land-derived organic material and microbes into the APES and that material will be exported into the North Atlantic through the OBX inlets, and impact coastal ocean ecosystems. The project will support a graduate student and two undergraduates. The investigators will present a summary of this research and synopsis of the impacts from the 2018 Hurricane Season to the OBX coastal community through the "Science on the Sound" presentation series at the Coastal Studies Institute.

The investigators propose two research questions to address their hypothesis: 1) will the pulse of the terrigenous dissolved organic matter and microbes from Florence and Michael change the regional Gulf Stream from a net sink to a net source of carbon dioxide to the atmosphere, and 2) will deposition of this elevated organic material and nutrients to the seabed seaward of the inlets, promote anaerobic and fermentation processes that will lead to algal blooms in surface waters adjacent to the Gulf Stream? Because marine dissolved organic matter is a highly complex and polydisperse mixture of different compounds, its priming and biodegradation resulting from the storms, even at rudimentary levels, may significantly affect coastal carbon cycling.

Large uncertainties exist in the regional carbon budgets of North America. Intense rain events (as defined by the upper 0.3% of daily rain events) and Category 4 and 5 Atlantic hurricanes are predicted to increase in frequency in extratropical regions, globally. Also, the erosion and entrainment of the substantial amounts of land-derived organic matter, nutrients, and microbes, collectively contribute to broad spatial and temporal uncertainties in regional carbon budgets. This study will provide data reducing these uncertainties in the Atlantic seaboard, in an area adjacent to the Gulf Stream.

This award reflects NSF's statutory mission and has been deemed worthy of support through evaluation using the Foundation's intellectual merit and broader impacts review criteria.

Acronym:
Gulf Stream Pamlico Sound (GSPS)

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1902496

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