Sediment radioisotope (234Th) and carbon from sampling conducted at the Compass Station in Bedford Basin, Nova Scotia, Canada from 2021 to 2024

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Project
» Ocean Frontier Institute Seed Fund Grant: Bedford Basin 2019 (Bedford Basin 2019)

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Abstract
This dataset includes sediment radioisotope (234Th) and total organic carbon (TOC) data collected at the Compass Station in Bedford Basin, Nova Scotia, Canada at five time periods between 2021 and 2024. Sediment cores were sliced into 0.5 - 1 centimeter (cm) intervals and analyzed for excess 234Th by gamma counting and TOC at Dartmouth College and Dalhousie University, respectively. This research is done to better understand carbon cycling and particle dynamics in a coastal region of the North Atlantic.

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Coverage

Location: Bedford Basin, Halifax, Nova Scotia, Canada
Temporal Extent: 2021-04-01 - 2024-01-29

BCO-DMO Processing Description

This dataset has been accepted by BCO-DMO and is currently awaiting processing.

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Parameters

Parameters for this dataset have not yet been identified

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Project Information

Ocean Frontier Institute Seed Fund Grant: Bedford Basin 2019 (Bedford Basin 2019)

Coverage: Compass Station in Bedford Basin, Nova Scotia, Canada

In coastal regions, the transport of carbon from surface waters to the seafloor is a key mechanism of carbon burial and it has been suggested that one-fifth of the carbon entering coastal areas off of eastern North America (from the atmosphere and through rivers) is subsequently buried in these coastal areas (Najjar et al., 2018). However, direct measurements coupling carbon fluxes in coastal waters to accumulation in sediment remains a challenge.

Bedford Basin is a well-studied coastal system in Nova Scotia, Canada (Bedford Basin Monitoring Program) that can provide unique insight into carbon cycling in these shallow marine regions. To quantify sinking particulate carbon and benthic-pelagic carbon cycling, and to examine the potential factors influencing coastal carbon budgets, carbon content and radioisotope (i.e., Thorium-234) measurements were collected at the Compass Station in Bedford Basin at four time periods (February to August 2019). Sediment cores and seawater samples were analyzed. Size fractionated filtration was performed to examine differences in 'sinking' (>51 micrometers) and 'suspended' (1-51 micrometers) particulate organic carbon and Thorium-234.

References Cited:
Najjar, R. G., et al. (2018). Carbon Budget of Tidal Wetlands, Estuaries, and Shelf Waters of Eastern North America. In Global Biogeochemical Cycles (Vol. 32, Issue 3, pp. 389–416). American Geophysical Union (AGU). https://doi.org/10.1002/2017gb005790

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