

Hydrographic Profiles - BAR5 in the Arctic Ocean, nearshore, Barrow, Alaska from 2010-2012 (ArcticNITRO project)

Website: <https://www.bco-dmo.org/dataset/558061>

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Project

» [Does competition for nitrogen between autotrophs and heterotrophs control carbon fluxes in the western coastal Arctic?](#) (ArcticNITRO)

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Dataset Description

Hydrographic Profiles - BAR5 Data 2011/08

Methods & Sampling

(tbd)

Data Processing Description

BCO-DMO Processing Notes

- Generated from original file "ArcticNITRO_CTD_data.xlsx, sheets: "081511, 081711, 081811" contributed by Patricia Yager
- Parameter names edited to conform to BCO-DMO naming convention found at [Choosing Parameter Name](#)
- "nd" (no data) inserted into blank cells

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Data Files

| File |
|--|
| HydroProfiles_BAR5.csv (Comma Separated Values (.csv), 6.39 KB) MD5:56ab2aae3ad789eca98704785c287858 |
| Primary data file for dataset ID 558061 |

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Parameters

| Parameter | Description | Units |
|--------------------|----------------------------------|-----------------|
| Sampling_Event | Sampling Event Id | text |
| ArcticNITRO_Alias | Sampling Event Id Alias | text |
| Date | Date Sampled (local Alaska time) | YYYYMMDD |
| Station | Station Id | text |
| Time_Sampled | Time Sampled (local Alaska time) | HH:MM |
| Latitude | Latitude | decimal degrees |
| Longitude | Longitude | decimal degrees |
| Water_Depth | Water Depth | meters |
| Ice_Thickness | Ice Thickness | meters |
| Snow_Thickness | Snow Thickness | centimeters |
| Surface_Water_Temp | Surface Water Temp | degrees Celsius |
| Depth | Depth | meters |
| Temp | Temperature | degrees Celsius |
| DO_Sat | Oxygen Saturation | percentage |
| pH | pH | pH Units |
| Turb | Turbidity | NTU |
| Chla | Chl a | (tbd) |
| DO | Dissolved Oxygen | mg/l |
| Salinity | Salinity | PSU |

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Deployments

ArcticNitro_Barrow

| | |
|--------------------|--|
| Website | https://www.bco-dmo.org/deployment/535682 |
| Platform | ArcticNitro |
| Start Date | 2010-08-30 |
| End Date | 2012-01-19 |
| Description | <p>Extracted from the NSF proposal Study sites: Because of its unique combination of year-round access to the coastal Arctic Ocean and strong scientific support system (Barrow Arctic Science Consortium we propose to make our primary winter and summer measurements from Barrow, Alaska. At 71°N, Barrow receives 24- hour sunlight between May 10 and August 2, and is in 24-h darkness between November 18 and January 24. Less than 1 km from shore, shelf depths exceed 10m, and significantly deeper waters (>100 m) are not far away. Twice each year (January and July) for two years, working from Barrow, we will use either small boat or skidoo to travel offshore to sample seawater. We anticipate having access to surface waters of 10-20 m depth within a mile of the town of Barrow. We plan to sample biological and biogeochemical inventories along three offshore transects, with 3-5 depths that sample through the surface mixed layer and into the subsurface layer, accessing both the eastward coastal and the offshore westward currents (Weingartner 2006). More extensive rate measurements and incubation studies will be made at selected sites and depths The rationale for the transects is to sample the microbial community response to the cross-shelf and depth gradients DIN availability. Nearshore stations will be N-limited throughout the water column in the summer. Offshore stations may have significant NO₃ below summer stratification. As part of SNACS (Study of the Northern Alaska Coastal) C. Ashjian and colleagues have recently completed summer research near Barrow, using small (43') boats to investigate environmental controls on zooplankton populations. They will have nutrient profiles offshore, which will help guide our study. During the summer, we will coordinate with native Inupiat subsistence whalers (Barrow Whaling Captain Association. In the winter, safe travel over the ice by foot or snow machine, as far out as the nearshore lead, will offer access to the ocean using an ice auger. We will not be able to sample far offshore during winter, but gradients will be weaker due to mixing.</p> |

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Project Information

Does competition for nitrogen between autotrophs and heterotrophs control carbon fluxes in the western coastal Arctic? (ArcticNITRO)

Website: <http://arcticnitro.org>

Coverage: Nearshore Arctic Ocean; Barrow, Alaska; 71.25-71.50N, 156-157W

The Arctic is changing. Warm air is melting the sea ice at an accelerating pace, impacting the marine ecosystem. Further changes on land mean higher river discharge, rising seas, thawing of permafrost, and coastal erosion.

For the Arctic continental shelf, these physical changes impact the creatures that live there in major ways, ultimately altering the pathways and magnitude of energy transfer to fish, sea birds and marine mammals, and impacting the people dependant on those resources. Our challenge today is to understand what is happening in specific Arctic ecosystems to assess future change.

Understanding the microorganisms in Arctic coastal ecosystems is important because microbes dominate the biological biomass, production, and remineralization in marine systems. They are the "composters." Microbes are also the major producers and consumers of carbon dioxide and other greenhouse gases.

This study is focused on the climate-sensitive relationship between these microbes -- particularly the competition for nitrogen between phytoplankton/algae and bacteria -- and the productivity of the food web that depends on these organisms.

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Funding

| Funding Source | Award |
|---|-----------------------------|
| NSF Arctic Sciences (NSF ARC) | PLR-0909839 |
| NSF Arctic Sciences (NSF ARC) | PLR-0910252 |
| NSF Arctic Sciences (NSF ARC) | PLR-0909647 |

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