Event log from RVIB Nathaniel B. Palmer cruise NBP1801 in the Southern Ocean for the CICLOPS project

Website: https://www.bco-dmo.org/dataset/874099
Data Type: Cruise Results
Version: 1
Version Date: 2022-05-09

Project
» Collaborative Research: Cobalamin and Iron Co-Limitation Of Phytoplankton Species in Terra Nova Bay (CICLOPS)

Contributors	Affiliation	Role
Saito, Mak A.	Woods Hole Oceanographic Institution (WHOI)	Principal Investigator
DiTullio, Giacomo	College of Charleston - Hollings Marine Lab (CoC-HML)	Co-Principal Investigator
Chmiel, Rebecca J.	Woods Hole Oceanographic Institution (WHOI)	Contact
Gerlach, Dana Stuart	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager

Abstract
Event log of instrument deployments and significant events during the Nathaniel B. Palmer cruise (NBP1801) from December 16th, 2017 to March 3rd, 2018. The cruise sampling event log is a chronological record of scientific sampling events undertaken during the cruise to help integrate observations from the myriad of sampling devices and delineate the relative timing between events.

Table of Contents

Coverage

Spatial Extent: **N**:-64.7219 **E**:-87.2799 **S**:-78.6297 **W**:-179.995
Temporal Extent: 2017-12-26 - 2018-02-19

Dataset Description

Event log of instrument deployments and significant events from NBP1801 cruise from December 16th, 2017 to March 3rd, 2018.

Methods & Sampling

During the Nathaniel B. Palmer cruise (NBP1801) from December 16th, 2017 to March 3rd, 2018 various sampling devices were employed including CTDs, gliders, plankton tows, McLane pumps, IKM trawls, and net tows.

This event log provides a chronological record of scientific sampling events and deployments. It can help integrate observations from the myriad of instruments and delineate the relative timing between events.

Problem report:
Multiple users contributed information to the event log, so there are a few instances of incomplete data, typically on unusual deployments. For example, there are some blanks due to lack of log data during sediment trap recovery and trawl deployments.

Data Processing Description

BCO-DMO processing
- converted latitude and longitude to decimal degrees (from degrees, decimal mins)
- converted Date to YMD format
- added conventional header with dataset name, PI name, version date
- modified parameter names to conform with BCO-DMO naming conventions

[table of contents | back to top]

Data Files

File	
ciclops_event_log.csv	(Comma Separated Values (.csv), 15.37 KB) MD5:71650fa259929a54ad6b915055bd4ece
Primary data file for dataset ID 874099	

[table of contents | back to top]

Supplemental Files

File	
NBP1801 Science Data Report filename: NBP1801_Data_Report.pdf	(Portable Document Format (.pdf), 4.98 MB) MD5:b556331a57dcbd36698f0f01aedab884
Science data report from Nathaniel B. Palmer cruise NBP1801	

[table of contents | back to top]

Related Datasets

IsRelatedTo

Saito, M. A., DiTullio, G. (2022) **Dissolved nutrient data from RVIB Nathaniel B Palmer cruise (NBP18-01) in the Amundsen and Ross Seas from December 2017 to March 2018.** Biological and Chemical Oceanography Data Management Office (BCO-DMO). (Version 1) Version Date 2022-05-25 doi:10.26008/1912/bco-dmo.874841.1 [view at BCO-DMO]

Saito, M. A., DiTullio, G., Chmiel, R. J. (2024) **Hydrography sensor data from trace metal rosette (TMR) casts at 26 stations near coastal Antarctica during RVIB Nathaniel B. Palmer cruise NBP18-01 from Dec 2017 to Feb 2018.** Biological and Chemical Oceanography Data Management Office (BCO-DMO). (Version 1) Version Date 2024-04-01 doi:10.26008/1912/bco-dmo.874909.1 [view at BCO-DMO]

[table of contents | back to top]

Parameters

Parameter	Description	Units
Event_Num	Number of sampling event	unitless
Event_Name	Name of Sampling event	unitless
Event_Type	Type of sampling event	unitless
Station	Station	unitless
Operator	Operator	unitless
Start_Date_UTC	Start date of sampling event in UTC	unitless
Start_Time_UTC	Start time of sampling event	unitless
Latitude	Latitude of sampling	decimal degrees
Longitude	Longitude of sampling	decimal degrees
Notes	Notes	unitless

[table of contents | back to top]

Instruments

Dataset-specific Instrument Name	bucket sample
Generic Instrument Name	bucket
Generic Instrument Description	A bucket used to collect surface sea water samples.

Dataset-specific Instrument Name	
Generic Instrument Name	CTD Sea-Bird SBE 911plus
Generic Instrument Description	The Sea-Bird SBE 911 plus is a type of CTD instrument package for continuous measurement of conductivity, temperature and pressure. The SBE 911 plus includes the SBE 9plus Underwater Unit and the SBE 11plus Deck Unit (for real-time readout using conductive wire) for deployment from a vessel. The combination of the SBE 9 plus and SBE 11 plus is called a SBE 911 plus. The SBE 9 plus uses Sea-Bird's standard modular temperature and conductivity sensors (SBE 3 plus and SBE 4). The SBE 9 plus CTD can be configured with up to eight auxiliary sensors to measure other parameters including dissolved oxygen, pH, turbidity, fluorescence, light (PAR), light transmission, etc.). more information from Sea-Bird Electronics

Dataset-specific Instrument Name	Drifter
Generic Instrument Name	Drifter Buoy
Generic Instrument Description	Drifting buoys are free drifting platforms with a float or buoy that keep the drifter at the surface and underwater sails or socks that catch the current. These instruments sit at the surface of the ocean and are transported via near-surface ocean currents. They are not fixed to the ocean bottom, therefore they "drift" with the currents. For this reason, these instruments are referred to as drifters, or drifting buoys. The surface float contains sensors that measure different parameters, such as sea surface temperature, barometric pressure, salinity, wave height, etc. Data collected from these sensors are transmitted to satellites passing overhead, which are then relayed to land-based data centers. definition sources: https://mmisw.org/ont/ioos/platform/drifting_buoy and https://www.aoml.noaa.gov/phod/gdp/faq.php#drifter1

Dataset-specific Instrument Name	IKM Trawl
Generic Instrument Name	Isaacs-Kidd Midwater Trawl
Generic Instrument Description	A trawl with a pentagonal mouth opening and a dihedral depressor vane as part of the mouth opening. IKMTs come in various dimensions (refer to individual dataset documentation). The original IKMTs were 10 foot (304 cm) and 15 foot (457 cm) at the mouth. The 10 foot IKMT net was 31 feet (9.45 m) in length (Wiebe and Benfield 2003).

Dataset-specific Instrument Name	
Generic Instrument Name	McLane Pump
Generic Instrument Description	McLane pumps sample large volumes of seawater at depth. They are attached to a wire and lowered to different depths in the ocean. As the water is pumped through the filter, particles suspended in the ocean are collected on the filters. The pumps are then retrieved and the contents of the filters are analyzed in a lab.

Dataset-specific Instrument Name	Plankton Tow
Generic Instrument Name	Plankton Net
Generic Instrument Description	A Plankton Net is a generic term for a sampling net that is used to collect plankton. It is used only when detailed instrument documentation is not available.

Dataset-specific Instrument Name	PRR
Generic Instrument Name	Radiometer
Dataset-specific Description	PRR (Underwater): Biospherical Instruments PRR-800 PRR (Mast): Biospherical Instruments PRR-810
Generic Instrument Description	Radiometer is a generic term for a range of instruments used to measure electromagnetic radiation (radiance and irradiance) in the atmosphere or the water column. For example, this instrument category includes free-fall spectral radiometer (SPMR/SMSR System, Satlantic, Inc), profiling or deck cosine PAR units (PUV-500 and 510, Biospherical Instruments, Inc). This is a generic term used when specific type, make and model were not specified.

Dataset-specific Instrument Name	Sediment Trap
Generic Instrument Name	Sediment Trap
Generic Instrument Description	Sediment traps are specially designed containers deployed in the water column for periods of time to collect particles from the water column falling toward the sea floor. In general a sediment trap has a jar at the bottom to collect the sample and a broad funnel-shaped opening at the top with baffles to keep out very large objects and help prevent the funnel from clogging. This designation is used when the specific type of sediment trap was not specified by the contributing investigator.

Dataset-specific Instrument Name	TMR
Generic Instrument Name	Trace Metal Bottle
Generic Instrument Description	Trace metal (TM) clean rosette bottle used for collecting trace metal clean seawater samples.

[table of contents | back to top]

Deployments

NBP1801

Website	https://www.bco-dmo.org/deployment/778919
Platform	RVIB Nathaniel B. Palmer
Report	https://service.rvdata.us/data/cruise/NBP1801/doc/NBP1801DATA.pdf
Start Date	2017-12-16
End Date	2018-03-03
Description	Start Port: Punta Arenas, Chile End Port: Hobart, Australia

[table of contents | back to top]

Project Information

Collaborative Research: Cobalamin and Iron Co-Limitation Of Phytoplankton Species in Terra Nova Bay (CICLOPS)

Coverage: Amundsen Sea, Ross Sea, Terra Nova Bay

NSF abstract:
Phytoplankton blooms in the coastal waters of the Ross Sea, Antarctica are typically dominated by either diatoms or Phaeocystis Antarctica (a flagellated algae that often can form large colonies in a gelatinous matrix). The project seeks to determine if an association of bacterial populations with Phaeocystis antarctica colonies can directly supply Phaeocystis with Vitamin B12, which can be an important co-limiting micronutrient in the Ross Sea. The supply of an essential vitamin coupled with the ability to grow at lower iron concentrations may put Phaeocystis at a competitive advantage over diatoms. Because Phaeocystis cells can fix more carbon than diatoms and Phaeocystis are not grazed as efficiently as diatoms, the project will help in refining understanding of carbon dynamics in the region as well as the basis of the food web webs. Such understanding also has the potential to help refine predictive ecological models for the region. The project will conduct public outreach activities and will contribute to undergraduate and graduate research. Engagement of underrepresented students will occur during summer student internships. A collaboration with Italian Antarctic researchers, who have been studying the Terra Nova Bay ecosystem since the 1980s, aims to enhance the project and promote international scientific collaborations.

The study will test whether a mutualistic symbioses between attached bacteria and Phaeocystis provides colonial cells a mechanism for alleviating chronic Vitamin B12 co-limitation effects thereby conferring them with a competitive advantage over diatom communities. The use of drifters in a time series study will provide the opportunity to track in both space and time a developing algal bloom in Terra Nova Bay and to determine community structure and the physiological nutrient status of microbial populations. A combination of flow cytometry, proteomics, metatranscriptomics, radioisotopic and stable isotopic labeling experiments will determine carbon and nutrient uptake rates and the role of bacteria in mitigating potential vitamin B12 and iron limitation. Membrane inlet and proton transfer reaction mass spectrometry will also be used to estimate net community production and release of volatile organic carbon compounds that are climatically active. Understanding how environmental parameters can influence microbial community dynamics in Antarctic coastal waters will advance an understanding of how changes in ocean stratification and chemistry could impact the biogeochemistry and food web dynamics of Southern Ocean ecosystems.

[table of contents | back to top]

Funding

Funding Source	Award
NSF Office of Polar Programs (formerly NSF PLR) (NSF OPP)	OPP-1644073
NSF Office of Polar Programs (formerly NSF PLR) (NSF OPP)	OPP-1643684
NSF Office of Polar Programs (formerly NSF PLR) (NSF OPP)	OPP-1643845

[table of contents | back to top]