Inorganic nutrients (NO3, NO2, PO4, SiOH4) from the PICO time-series station (34.7181 deg N, 76.6707 deg W) from 2010-2012 (PICO project)

Website: https://www.bco-dmo.org/dataset/4033
Version: 03 Sept 2013
Version Date: 2013-09-03

Project
» Pivers Island Coastal Observatory (PICO)

Contributors	Affiliation	Role
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Dataset Description

Inorganic nutrients from the Pivers Island Coastal Observatory (PICO) from 2010 to 2012. Data include nitrate (NO3), nitrite (NO2), phosphate (PO4), and silicate (SiOH4) reported in micromolar units (uM).

Note: Nutrients were not all measured at all time points, thus, some dates have no data ('nd') in the 'NO3', 'NO2', 'PO4', and/or 'SiOH4' columns.

Methods & Sampling

Water was filtered through a 0.22 um Sterivex cartridge filter, Millipore #SVGPL10RC using a peristaltic pump input line at 1 m for later nutrient analysis (NO3, NO2, PO4, SiOH4). Water was sampled in duplicate into HCl-cleaned HDPE bottles (VWR#414004-110) and stored at -80 degrees C until later analysis using an Astoria-Pacific A2 autoanalyzer, following the manufacturer's recommended protocols by running each replicate sample in duplicate.

Certified reference materials were used to verify protocols (Inorganic Ventures: QCP-NT, QCP-NUT-1, CGSI1-1). The detection limits were: NO2 = 0.05 uM, NO3 = 0.1 uM, PO4 = 0.05 uM, SiOH4 = 0.2 uM. Values measured below these limits are reported as zero.

Data Processing Description

Samples that had a mean concentration (mean of replicated samples) below the nominal detection limit are

reported as zero.

Quality Scores (qflag) as follows:
1 = excellent (no known issues),
2 = suspect,
3 = poor (known reason to suspect data).

BCO-DMO Processing Notes:
- Created 'replicate' column and re-arranged data so that replicates are in rows, not columns.
- Modified parameter names to conform with BCO-DMO naming conventions.
- Replaced blanks with 'nd' to indicate 'no data'.
- Separated date into month, day, and year columns.

Data Files

File
inorg_nutrients.csv(Comma Separated Values (.csv), 98.18 KB) MD5:bacbaeca6c408a279f089e8f9f6be4b1 Primary data file for dataset ID 4033

Parameters

Parameter	Description	Units
deployment	Deployment name/id number.	text
lat	Latitude of sampling location. Positive = North.	decimal degrees
lon	Longitude of sampling location. Positive = East.	decimal degrees
year	Year (local time) of the sampling event.	YYYY
month_local	Month (local time) when the sampling event occurred.	mm (01 to 12)
PID_num	Unique, sequential "occupation" number for sampling. (The unique time/day when sampling occurred.)	dimensionless
day_local	Day of month (local time) when the sampling event occurred.	dd (01 to 31)
time_local	Time (local) when the sampling event occurred; 24-hour clock.	HHMM.mm

time_qflag	Quality score for time_local: 1 = excellent (no known issues); 2 = suspect; 3 = poor (known reason to suspect data).	dimensionless
depth	Depth of water sampling.	meters
replicate	Replicate identifier. (All of the "A" nutrient samples are from the same bottle, however "A" replicates for nutrients are unrelated to "A" replicates in the other PICO datasets.)	text
NO2	Nitrite concentration.	micromolar (uM)
NO2_qflag	Quality score for NO2: 1 = excellent (no known issues); 2 = suspect; 3 = poor (known reason to suspect data).	dimensionless
NO3	Nitrate concentration.	micromolar (uM)
NO3_qflag	Quality score for NO3: 1 = excellent (no known issues); 2 = suspect; 3 = poor (known reason to suspect data).	dimensionless
PO4	Phosphate concentration.	micromolar (uM)
PO4_qflag	Quality score for PO4: 1 = excellent (no known issues); 2 = suspect; 3 = poor (known reason to suspect data).	dimensionless
SiOH4	Silicate concentration.	micromolar (uM)

SiOH4_qflag	Quality score for SiOH4: 1 = excellent (no known issues); 2 = suspect; 3 = poor (known reason to suspect data).	dimensionless
yrday	Consecutive day of year for a specified year, as a decimal. The fraction of the value represents the time within the day (e.g. a value of 1.5 means January 1 at 1200 hours).	dimensionless
ISO_DateTime_Local	Date-time (local) formatted to ISO 8601 standard.	YYYY-MM-DDTHH:MM:SS.ss

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Instruments

Dataset-specific Instrument Name	Nutrient Autoanalyzer
Generic Instrument Name	Nutrient Autoanalyzer
Dataset-specific Description	Nutrient concentrations were determined using an Astoria-Pacific A2 Autoanalyzer.
Generic Instrument Description	Nutrient Autoanalyzer is a generic term used when specific type, make and model were not specified. In general, a Nutrient Autoanalyzer is an automated flow-thru system for doing nutrient analysis (nitrate, ammonium, orthophosphate, and silicate) on seawater samples.

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Deployments

PICO_1-301

Website	https://www.bco-dmo.org/deployment/59063
Platform	Duke University Marine Lab
Start Date	2010-06-28
End Date	2012-06-26
Description	The PICO time series is sampled weekly (or more frequently) to capture physical, chemical and biological variability in the coastal ocean. This time series enables the investigator to collaborate with a number of researchers and will serve as a long-term research focus. Project information: http://oceanography.ml.duke.edu/johnson/research/pico/

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Project Information

Pivers Island Coastal Observatory (PICO)

Website: http://oceanography.ml.duke.edu/johnson/research/pico/

Coverage: 34.7181 deg N, 76.6707 deg W

From the project website:
Carbon dioxide is rising at ~3% per year in the atmosphere and oceans leading to increases in dissolved inorganic carbon and a reduction in pH. This trend is expected to continue for the foreseeable future and ocean pH is predicted to decrease substantially making the ocean more acidic, potentially affecting the marine ecosystem. However, coastal estuaries are highly dynamic systems that often experience dramatic changes in environmental variables over short periods of times. In this study, the investigators are measuring key variables of the marine carbon system along with other potential forcing variables and characteristics of the ecosystem that may be affected by these pH changes. The goal of this project is to determine the time-scales and magnitude of natural variability that will be superimposed on any long term trends in ocean chemistry.

This project is associated with Ocean Acidification: microbes as sentinels of adaptive responses to multiple stressors: contrasting estuarine and open ocean environments.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1031064
NSF Ocean Sciences Research Initiation Grants (NSF OCE-RIG)	OCE-RIG-1322950

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