

Dissolved O2 and percent O2 saturation, measured optically in situ, and barometric pressure, measured by YSI handheld meter, 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/4034>

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Project

» [Pivers Island Coastal Observatory](#) (PICO)

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Dataset Description

Dissolved oxygen concentration, percent oxygen saturation, and atmospheric (barometric) pressure measured at the Pivers Island Coastal Observatory (PICO) from 2010 to 2012.

Note: Not all parameters were not measured at all time points, thus, some dates have no data ('nd') in the 'O2', 'O2sat', and/or 'bar_press' columns.

Methods & Sampling

Oxygen was measured optically *in situ* and atmospheric pressure was measured near the sea surface using a calibrated probe (YSI ProODO handheld meter) using the manufacturer's recommendations.

Data Processing Description

Quality Scores (qflag) as follows:

1 = excellent (no known issues),

2 = suspect,

3 = poor (known reason to suspect data).

BCO-DMO Processing Notes:

- 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.

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Data Files

File
oxygen_press.csv (Comma Separated Values (.csv), 32.46 KB) MD5:0a398f35a6bb629e4f3a06552c9eb67c
Primary data file for dataset ID 4034

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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

O2	Oxygen concentration measured optically in situ.	milligrams O2 per liter (mg/L)
O2_qflag	Quality score for O2: 1 = excellent (no known issues); 2 = suspect; 3 = poor (known reason to suspect data).	dimensionless
O2sat	Percent oxygen saturation; percent of theoretical saturation value for a given temperature, salinity and pressure.	%
O2sat_qflag	Quality score for O2sat: 1 = excellent (no known issues); 2 = suspect; 3 = poor (known reason to suspect data).	dimensionless
press_bar	Atmospheric (barometric) pressure measured near the sea surface using a calibrated probe.	hectopascals (hPa)
press_bar_qflag	Quality score for press_bar: 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	Dissolved Oxygen Sensor
Generic Instrument Name	Oxygen Sensor
Dataset-specific Description	A YSI ProODO (Optical Dissolved Oxygen) handheld meter was used. The YSI ProODO meter measures dissolved oxygen (% and mg/L), temperature, and barometric pressure. See more information from the manufacturer.
Generic Instrument Description	An electronic device that measures the proportion of oxygen (O ₂) in the gas or liquid being analyzed

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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.

Other PICO-related projects in BCO-DMO:

[Ocean Acidification: microbes as sentinels of adaptive responses to multiple stressors: contrasting estuarine and open ocean environments](#)

[Collaborative Research: BoCP-Design: A multidomain microbial consortium to interrogate organic matter](#)

[decomposition in a changing ocean](#)

[NSF2026: EAGER: Identifying microbes' population-level environmental responses using Bayesian modeling](#)

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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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