# Water temperature from Niskin bottle samples measured at 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/4037
**Version**: 03 Sept 2013
**Version Date**: 2013-09-03

**Project**
» Pivers Island Coastal Observatory (PICO)

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## Dataset Description

Water temperature measured at the Pivers Island Coastal Observatory (PICO) from 2010 to 2012.

Note: Temperature was not measured at all time points, thus, some dates have no data ('nd') in the 'temp_bot' column.

### Methods & Sampling

Water was sampled using a 5 L niskin bottle centered at 1 m with a bottle length of 0.7 m. Temperature was measured in duplicate using NIST traceable thermocouples (VWR#23609-232).

### 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:
- 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.

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## Data Files

| File |
|---|
| **temperature.csv** (Comma Separated Values (.csv), 55.16 KB)<br>MD5:cbab3227c13297fb403a9703c62808ef<br>Primary data file for dataset ID 4037 |

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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:<br>1 = excellent (no known issues);<br>2 = suspect;<br>3 = poor (known reason to suspect data). | dimensionless |
| depth | Depth of water sampling. | meters |

| | | |
|---|---|---|
| replicate | Replicate identifier. (All of the "A" temperatue samples are from the same bottle, however "A" replicates for temperature are unrelated<br><br>to "A" replicates in the other PICO datasets.) | text |
| temp_bot | Temperature from Niskin bottle samples. | degrees Celsius |
| temp_bot_qflag | Quality score for temp_bot:<br><br>1 = excellent (no known issues);<br><br>2 = suspect;<br><br>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** | Niskin bottle |
| **Generic Instrument Name** | Niskin bottle |
| **Generic Instrument Description** | A Niskin bottle (a next generation water sampler based on the Nansen bottle) is a cylindrical, non-metallic water collection device with stoppers at both ends. The bottles can be attached individually on a hydrowire or deployed in 12, 24, or 36 bottle Rosette systems mounted on a frame and combined with a CTD. Niskin bottles are used to collect discrete water samples for a range of measurements including pigments, nutrients, plankton, etc. |

| | |
|---|---|
| **Dataset-specific Instrument Name** | Water Temperature Sensor |
| **Generic Instrument Name** | Water Temperature Sensor |
| **Dataset-specific Description** | Temperature was measured in duplicate using NIST traceable thermocouples (VWR#23609-232) |
| **Generic Instrument Description** | General term for an instrument that measures the temperature of the water with which it is in contact (thermometer). |

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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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