

# Temperature logger data from Kiritimati in the Northern Line Islands collected between 2014 and 2016 (RAPID Kiritimati project)

**Website:** <https://www.bco-dmo.org/dataset/659999>

**Data Type:** Other Field Results

**Version:**

**Version Date:** 2016-09-28

## Project

» [RAPID: Tracking coral reef impacts of the 2014/2015 El Nino event](#) (RAPID Kiritimati)

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## Coverage

**Spatial Extent:** N:1.954383 E:-157.3338 S:1.93 W:-157.48835

## Dataset Description

This dataset includes date, time, and temperature from two sites at Kiritimati in the Northern Line Islands collected between 2014 to 2016.

## Methods & Sampling

The temperature data comes from a Sea-Bird temperature logger (SBE56). The logger was positioned 30 feet off the reef at Kiritimati, in the Line Islands from August 2014-March 2016 two locations:

Bay of Wrecks (1.9300,-157.3338)

Drill site (1.9544,-157.4884)

The serial number and calibration information for these loggers can be found in the [instrument section](#).

## Data Processing Description

These data are raw data from the temperature loggers.

BCO-DMO Data Manager Processing Notes:

- \* added a conventional header with dataset name, PI name, version date
- \* modified parameter names to conform with BCO-DMO naming conventions
- \* added lat and lon for drill site to data
- \* combined SBE56 data for Bay of Wrecks and Drill site

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## Data Files

| File  |
|---|
| <b>TEMP.csv</b> (Comma Separated Values (.csv), 108.00 MB)<br>MD5:20eba4ab886a165269e5e103b1f6e9ff<br>Primary data file for dataset ID 659999 |

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## Parameters

| Parameter        | Description   | Units           |
|------------------|---|-----------------|
| date             | Date (UTC)  | unitless        |
| time             | Time (UTC)  | unitless        |
| temp             | Temperature   | Degrees Celsius |
| ISO_DateTime_UTC | ISO Date/Time UTC in format YYYY-MM-DDTHH:MM:SS[.xx]Z | unitless        |
| site             | Sampling location                                     | unitless        |
| lat              | Latitude of site                                      | decimal degrees |
| lon              | Longitude of site                                     | decimal degrees |

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## Instruments

|   |  |
|---|--|
| <b>Dataset-specific Instrument Name</b> | SBE56  |
| <b>Generic Instrument Name</b>          | Temperature Logger   |
| <b>Dataset-specific Description</b>     | Sea-Bird SBE56 calibration information: Bay of Wrecks % Instrument type = SBE56 % Serial Number = 05601849 % Firmware Version = SBE56 V0.96 % Conversion Date = 2015-11-06 % Calibration Date = 2012-06-28 % Coefficients: % A0 = -1.218203E-3 % A1 = 3.420618E-4 % A2 = -6.366475E-6 % A3 = 1.979515E-7 DRILL site % Instrument type = SBE56 % Serial Number = 05601861 % Firmware Version = SBE56 V0.96 % Conversion Date = 2016-04-08 % Calibration Date = 2012-07-08 % Coefficients: % A0 = -1.240617E-3 % A1 = 3.441093E-4 % A2 = -6.469887E-6 % A3 = 2.007067E-7 |
| <b>Generic Instrument Description</b>   | Records temperature data over a period of time.  |

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## Deployments

### RAPID\_Kiritimati\_2014-2016

|                    |   |
|--------------------|---|
| <b>Website</b>     | <a href="https://www.bco-dmo.org/deployment/660088">https://www.bco-dmo.org/deployment/660088</a>   |
| <b>Platform</b>    | Kiritimati  |
| <b>Start Date</b>  | 2014-09-03  |
| <b>End Date</b>    | 2016-03-31  |
| <b>Description</b> | This deployment includes sampling sites on Kiritimati Island. Kiritimati Island, Drill Site, 01°57.263'N, -157°29.301'W Kiritimati Lagoon Site, 01°58.490'N, -157°27.149'W Kiritimati Island, Bay of Wrecks, 01°55.797'N, -157°20.029'W Cassidy Airport is a separate deployment. |

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## Project Information

### RAPID: Tracking coral reef impacts of the 2014/2015 El Nino event (RAPID Kiritimati)

**Coverage:** Christmas Island (2N, 157W)

*Extracted from the NSF award abstract:*

As anthropogenic climate change intensifies, coral reefs face growing threats from associated decreases in ocean pH and increases in ocean temperature. While such stressors increase steadily through time, coral reefs also experience natural climate extremes, such as El Niño events, that rapidly reshape reef structure and function over a period of months. The El Niño event forecast for 2014/2015 presents the opportunity to study how such events affect coral reef ecosystems. This research will identify which species are most resilient to high temperature stress, and determine whether the presence of specific types of algal endosymbionts in the corals is predictive of the capacity of their coral hosts to survive temperature stress. By studying the reefs at remote sites with documented gradients in human use and pollution, the investigators will be able to tease apart the influence of El-Niño induced temperature changes from local impacts on the reef. This information will ultimately help to identify which components of the coral reef ecosystem are most vulnerable and provide a

prognosis for the survival of different types of corals and endosymbionts in a warming world.

This project focuses on reefs at Christmas Island (2N, 157W) - a site that is predicted to be heavily affected by warming during El Niño. In September 2014, roughly 3 months prior to peak El Niño warming, the investigators will install an array of ocean monitoring equipment around Christmas Island. During that field trip, they will also conduct extensive ecological surveys of the reef, collect coral, water and sediment samples for the analysis of Symbiodinium communities that will be analyzed at the University of Hawaii using high throughput sequencing approaches, and characterize ocean geochemistry at both windward and leeward sites on Christmas Island. These activities will be repeated in subsequent trips during peak El Niño conditions, and post El Niño conditions, to allow the investigators to monitor the acute responses of the environment and ecosystem and their near-term recovery, respectively. During the last trip, they will drill several coral colonies to assess how the corals record such a large thermal stress in terms of skeletal morphological and skeletal geochemistry changes.

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## Funding

| Funding Source   | Award                       |
|--|-----------------------------|
| <a href="#">NSF Division of Ocean Sciences (NSF OCE)</a> | <a href="#">OCE-1446274</a> |

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