

Temperature, depth, and salinity from a drill site on Kiritimati in the Northern Line Islands between from 2014 to 2016 (RAPID Kiritimati project)

Website: <https://www.bco-dmo.org/dataset/658667>

Data Type: Other Field Results

Version:

Version Date: 2016-09-13

Project

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

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Coverage

Spatial Extent: Lat:1.954383 Lon:-157.48835

Temporal Extent: 2014-09-03 - 2016-03-31

Dataset Description

These data include depth, temperature, and salinity from Kiritimati in the Northern Line Islands sampled with a CTD between 20 Oct 2014 and 31 Mar 2016.

Methods & Sampling

Sea-Bird SBE37-SM and SBE56 instruments were deployed 30 feet off the reef at Kiritimati Island from August 2014-November 2015 at the drill site location (1.954383 -157.488350).

Note: Sensor deployments overlap in time (SBE37-SM #2978, and SBE56 #05601845)

Data Processing Description

No processing was done on the data, it is the raw data processed using SeatermV2.

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, lon of sampling locaiton
- * sensor model and serial included for deployment disambiguation

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Data Files

File
CTD.csv (Comma Separated Values (.csv), 74.26 MB) MD5:5f579ecae5f02280e78c1718dbf85362 Primary data file for dataset ID 658667

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Parameters

Parameter	Description	Units
inst_model	CTD model	unitless
inst_serial	CTD serial numner	unitless
temp	Temperature	degrees Celsius
depth	Depth of sample	meters
sal	Salinity	parts per thousand (ppt)
time	Time (UTC) in format HH:MM	unitless
ISO_DateTime_UTC	ISO timestamp based on the ISO 8601:2004(E) standard in format YYYY-mm-ddTHH:MM:SS[.xx]Z (UTC)	unitless
lat	Latitude	decimal degrees
lon	Longitude	decimal degrees

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Instruments

Dataset-specific Instrument Name	Sea-Bird SBE37-SM
Generic Instrument Name	CTD Sea-Bird MicroCAT 37
Generic Instrument Description	The Sea-Bird MicroCAT CTD unit is a high-accuracy conductivity and temperature recorder based on the Sea-Bird SBE 37 MicroCAT series of products. It can be configured with optional pressure sensor, internal batteries, memory, built-in Inductive Modem, integral Pump, and/or SBE-43 Integrated Dissolved Oxygen sensor. Constructed of titanium and other non-corroding materials for long life with minimal maintenance, the MicroCAT is designed for long duration on moorings. In a typical mooring, a modem module housed in the buoy communicates with underwater instruments and is interfaced to a computer or data logger via serial port. The computer or data logger is programmed to poll each instrument on the mooring for its data, and send the data to a telemetry transmitter (satellite link, cell phone, RF modem, etc.). The MicroCAT saves data in memory for upload after recovery, providing a data backup if real-time telemetry is interrupted.

Dataset-specific Instrument Name	Sea-Bird SBE56
Generic Instrument Name	Temperature Logger
Generic Instrument Description	Records temperature data over a period of time.

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Deployments

RAPID_Kiritimati_2014-2016

Website	https://www.bco-dmo.org/deployment/660088
Platform	Kiritimati
Start Date	2014-09-03
End Date	2016-03-31
Description	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
NSF Division of Ocean Sciences (NSF OCE)	OCE-1446274

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