Long-term mean daily seawater temperature data from USVI starting in 2003.

Website: https://www.bco-dmo.org/dataset/736809
Data Type: Other Field Results
Version: 1
Version Date: 2018-05-17

Project
» LTREB Long-term coral reef community dynamics in St. John, USVI: 1987-2019 (St. John LTREB)

Contributors	Affiliation	Role
Edmunds, Peter J.	California State University Northridge (CSUN)	Principal Investigator
Kelley, Thomas	National Park Service (NPS)	Contact
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Coverage

Spatial Extent: **N**:18.317 **E**:-64.72 **S**:18.307 **W**:-64.73
Temporal Extent: 2003-08-07 - 2015-07-25

Dataset Description

These data have been utilized for several publications analyzing different aspects of seawater temperature, including Edmunds: Royal Society 2006, Green et al: Journal of Experimental Marine Biology and Ecology 2010, Green and Edmunds: Journal of Experimental Marine Biology and Ecology 2011, and Edmunds: Marine Ecology Project Series 2013. Temperatures were averaged by day and month and used to calculate annual mean and range using monthly mean temperatures. Daily temperatures were used to categorize days as hot (> 29.3°C) or cold (≤ 26.0°C), with hot days exceeding the coral bleaching threshold for St. John (http://coralreefwatch.noaa.gov/satellite), and 'cold days' less than or equal to the lower 12th percentile of daily seawater temperatures in Great Lameshur Bay between 1989-2005 (Edmunds 2006).This dataset cotains data annually updated data ongoing since July 1999.

Methods & Sampling

Measurement of Seawater Temperature

Seawater temperature was recorded every 15-30 min using a Ryan Industries thermistor (± 0.3°C accuracy) at 11-m depth from January 1989 to April 1997, and from November 1997 to August 1999; an Optic Stowaway logger (± 0.2°C accuracy) at 9-m depth from May 1997 to October 1997, and from August 1999 to August 2001; and a Hobo Aquapro logger (± 0.2°C accuracy) at 9-m depth from August 2001 to August 2011. Temperatures were averaged by day and month and used to calculate annual mean and range using monthly mean temperatures. Daily temperatures were used to categorize days as hot (> 29.3°C) or cold (≤ 26.0°C), with hot days exceeding the coral bleaching threshold for St. John

(http://coralreefwatch.noaa.gov/satellite), and 'cold days' less than or equal to the lower 12th percentile of daily seawater temperatures in Great Lameshur Bay between 1989-2005 (Edmunds 2006). This dataset includes data starting in July 1999.

Data Processing Description

BCO-DMO Processing Notes:

-Reformatted column names to comply with BCO-DMO standards.
-Added latitude and longitude

Data Files

File
seawatertemp.csv(Comma Separated Values (.csv), 535.33 KB) MD5:ebc61c33214a3ebf6ef3f19e62a1ec71 Primary data file for dataset ID 736809

Parameters

Parameter	Description	Units
Date	Data recorded in situ by a variety of sensors; most recently Hobo Temp logges with a resoluton of 0.2 deg C; YYYY/MM/DD	unitless
Owner	Origin of data; NPS Data from VINP; PJE Data = from Peter J. Edmunds	unitless
Site	Location where data collected; Yawzi NPS = NPS site at 11 m; Yawzi 9 m = off Yawzi Point; Tektite 14 m = deeper site on western side of the bay (data from this site used when looger at Yawzi failed)	unitless
lat	Latitude	decimal degrees
lon	Longitude	decimal degrees
Temperature	Mean daily temperature. Data averaged within a day with records collected approximately every 15 minutes.	Celsius

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Instruments

Dataset-specific Instrument Name	Temperature logger
Generic Instrument Name	Temperature Logger
Dataset-specific Description	Measured seawater temperature
Generic Instrument Description	Records temperature data over a period of time.

Deployments

Edmunds_VINP

Website	https://www.bco-dmo.org/deployment/523357
Platform	Virgin Islands National Park
Start Date	1987-01-01
End Date	2016-09-01
Description	Studies of corals and hermit crabs

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Project Information

LTREB Long-term coral reef community dynamics in St. John, USVI: 1987-2019 (St. John LTREB)

Website: http://coralreefs.csun.edu/

Coverage: St. John, U.S. Virgin Islands; California State University Northridge

Long Term Research in Environmental Biology (LTREB) in US Virgin Islands:

From the NSF award abstract:
In an era of growing human pressures on natural resources, there is a critical need to understand how major ecosystems will respond, the extent to which resource management can lessen the implications of these responses, and the likely state of these ecosystems in the future. Time-series analyses of community structure provide a vital tool in meeting these needs and promise a profound understanding of community change. This study focuses on coral reef ecosystems; an existing time-series analysis of the coral community structure on the reefs of St. John, US Virgin Islands, will be expanded to 27 years of continuous data in annual increments. Expansion of the core time-series data will be used to address five questions: (1) To what extent is the ecology at a small spatial scale (1-2 km) representative of regional scale events (10's of km)? (2) What are the effects of declining coral cover in modifying the genetic population structure of the coral host and its algal symbionts? (3) What are the roles of pre- versus post-settlement events in determining the population dynamics of small corals? (4) What role do physical forcing agents (other than temperature) play in driving the population dynamics of juvenile corals? and (5) How are populations of other, non-coral invertebrates responding to decadal-scale declines in coral cover? Ecological methods identical to those used over the last two decades will be supplemented by molecular genetic tools to understand the extent to which declining coral cover is affecting the genetic diversity of the corals remaining. An information management program will be implemented to create broad access by the scientific community to the entire data set.

The importance of this study lies in the extreme longevity of the data describing coral reefs in a unique ecological context, and the immense potential that these data possess for understanding both the patterns of comprehensive community change (i.e., involving corals, other invertebrates, and genetic diversity), and the processes driving them. Importantly, as this project is closely integrated with resource management within the VI National Park, as well as larger efforts to study coral reefs in the US through the NSF Moorea Coral Reef LTER, it has a strong potential to have scientific and management implications that extend further than the location of the study.

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Funding

Funding Source	Award
NSF Division of Environmental Biology (NSF DEB)	DEB-0841441

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