CTD station profile data from R/V Atlantis AT15-44 in the Pacific, off Costa Rica from February to March 2009 (Seep Carbonate Ecology CROCKS II project)

Website: https://www.bco-dmo.org/dataset/3777
Version:
Version Date: 2012-11-14

Project
» Short-term colonization processes at Costa Rica methane seeps (Seep Carbonate Ecology CROCKS II)

Contributors	Affiliation	Role
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Dataset Description

CTD station profile data

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Data Files

File
ctd.csv (Comma Separated Values (.csv), 2.09 MB) MD5:3a22d824755c1b0da20470f5ba3086d0 Primary data file for dataset ID 3777

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Parameters

Parameter	Description	Units
date	start date of cast (GMT)	YYYYMMDD
lon	longitude, negative denotes West	decimal degrees
lat	latitude, negative denotes South	decimal degrees
time	start time of cast (GMT)	HHMM
cast	CTD cast number	integer
temp	CTD Temperature (ITS-90)	degrees celsius
sal	CTD Salinity (PSS-78)	dimensionless
depth_n	nominal CTD depth (derived parameter)	meters
fluor	Fluorescence from SBE 43	mg/m^3
cruise_id	cruise identification	text
year	year of cast	YYYY
time_ISO	Date/Time (UTC) ISO formatted	YYYY-MM-DDTHH:MM:SStimezone
yrday_gmt	GMT day and decimal time, as 326.5 for the 326th day of the year, or November 22 at 1200 hours (noon). In the case of drifter data, year day may be continuous over a multi year period.	
temp2	temperature from secondary sensor	degrees Celsius
sal2	salinity from secondary sensor	Practical Salinity Scale, dimensionless
O2	CTD oxygen	ml/l

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Instruments

Dataset-specific Instrument Name	CTD Sea-Bird 9
Generic Instrument Name	CTD Sea-Bird 9
Dataset-specific Description	Oxygen, SBE 43 [ml/l] Fluorescence, Wetlab ECO-AFL/FL [mg/m^3] Software Version Seasave V 7.18
Generic Instrument Description	The Sea-Bird SBE 9 is a type of CTD instrument package. The SBE 9 is the Underwater Unit and is most often combined with the SBE 11 Deck Unit (for real-time readout using conductive wire) when deployed from a research vessel. The combination of the SBE 9 and SBE 11 is called a SBE 911. The SBE 9 uses Sea-Bird's standard modular temperature and conductivity sensors (SBE 3 and SBE 4). The SBE 9 CTD can be configured with auxiliary sensors to measure other parameters including dissolved oxygen, pH, turbidity, fluorometer, altimeter, etc.). Note that in most cases, it is more accurate to specify SBE 911 than SBE 9 since it is likely a SBE 11 deck unit was used. more information from Sea-Bird Electronics

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Deployments

AT15-44

Website	https://www.bco-dmo.org/deployment/58869
Platform	R/V Atlantis
Start Date	2009-02-21
End Date	2009-03-08
Description	Cruise Objective: We will conduct research in exposed carbonate ecosystems on the Costa Rica margin (700-1,400 m), to test hypotheses about the influence of active seepage on carbonate rock animal communities and their successional phases, on microbial activity including anerobic methane oxidation and sulfide oxidation, on carbon isotopic composition of shelled organisms, and on phylogenetic affinities of animals. To test hypotheses we will sample existing authigenic carbonates from 3 levels of seepage activity: highly active, weak and inactive. Activity level will be defined by presence of /or proximity to bubbles/shimmering water, microbial mat development and megafauna, as well as previous fluid flow and composition measurements made at the Costa Rica study sites. We will sample 5 to 8 locations with each activity level in each study region, controlling for rock size and carbonate configuration when possible. ALVIN: During 3 dives at each of 4 study sites we will conduct bottom surveys and video transects, measure S, T, O2, select 4 to 8 highly active, weakly active and inactive sites, photograph organisms and classify rocks in situ, collect rocks of varying sizes with organisms, and sample nearby sediments and biotic substrata (mussels, tube worms) for taxonomic comparisons. The remaining 2 dives at Costa Rica seeps will be used to conduct follow-up survey and sampling of the most promising locations, based on shipboard sample observations. Nighttime operations will consist of CTD casts (a minimum of one each at Mound 11, Mound 13, Jaco Scarp and Mound Quepos), multicoring (adjacent to mounds and at 400 m and 600 m sites in the OMZ), and pre-dive seabeam surveys. Cruise information and original data are available from the NSF R2R data catalog.

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Project Information

Short-term colonization processes at Costa Rica methane seeps (Seep Carbonate Ecology CROCKS II)

Coverage: Costa Rica seafloor methane seeps 8 deg 55 N 84 deg 18 W depth 990m

This RAPID project will conduct 5 submersible or ROV dives to collect a series of colonization experiments deployed in March 2009 on Mound 12 off Costa Rica (997 m). These experiments were deployed opportunistically, and to optimize the information that could be obtained, the PIs needed to recover them within a 12 month time frame. Early colonization of rock, wood, shell and tube substrates will be studied. The microbes, foraminiferans and metazoans present after 6-12 mo will be compared to those colonizing similar experiments to be deployed at Hydrate Ridge, where seeps occur within an oxygen minimum zone. The overall project goal is to integrate physical, geological, chemical and biological data to develop a holistic view of the influence of seep-generated carbonate hard-ground ecosystems on margins.

The objectives of the research are to (a) Compare colonizers at seeps off Costa Rica and Hydrate Ridge to assess the importance of different oxygen regimes in the development of anaerobic methane oxidation, sulfide oxiders and other microbial metabolisms on hard substrates, and to evaluate their roles in driving protozoan and metazoan succession at methane seeps. (b) Deploy a suite of biotic and abiotic substrates to distinguish the specific roles of carbonate substrate from those of other hard substrates (wood, clam and mussel shells, worm tubes) available. (c) Explore the similarity of vent and seep colonization processes by comparing colonization at the Costa Rica seeps, where vent species are common, to the Hydrate Ridge seeps, where they are not. (d) Determine whether there are diagnosable biogeographic isotope or other biomarker signatures from newly recruited Costa Rica microbial, foraminiferal and animal populations at active vs. inactive seeps, and whether these differ from those at Hydrate Ridge.

This research will involve international participation from Costa Rican scientists at the Univ. of Costa Rica.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-0825791
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NSF Division of Ocean Sciences (NSF OCE)	OCE-0939557

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