Discrete samples from CTD casts from R/V Melville cruises MV1209 and MV1217 from Coastal California San Diego Margin in 2012 (SeapHOx project)

Website: https://www.bco-dmo.org/dataset/4078
Version: 11 July 2013
Version Date: 2013-07-11

Project
» Macrophyte-induced variability in coastal ocean pH and consequences for invertebrate larvae (SeapHOx)

Program
» Ocean Carbon and Biogeochemistry (OCB)

Contributors	Affiliation	Role
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Dataset Description

CTD - Discrete Samples

Methods & Sampling

SDCE Cruise Report

Data Processing Description

SDCE Cruise Report

BCO-DMO Processing/Edits
- Generated from files: "MV1209_CTD_discrete_samples_final.txt" and "MV1217_CTD_discrete_samples_final.txt" contributed by Christina Frieder
- Parameter names modified to conform to BCO-DMO conventions (blanks to underscores, etc.)

- Unique parameter names generated for quality flag parameters

- "SECT_ID" in MV1209 changed to "CruiseId" for compatibility with other data

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Data Files

File
SeapHOx_CTD_Discrete.csv(Comma Separated Values (.csv), 219.43 KB) MD5:afd769d853440b6c14ae6cf23ef8a7eb Primary data file for dataset ID 4078

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Parameters

Parameter	Description	Units
CruiseId	Cruise Id	text
Line	Line	text
Station_Number	Station Number	dimensionless
Station_Name	Station Name	text
Cast_No	Cast Number	dimensionless
Type	Type	text
ISO_DateTime_UTC	Date/Time UTC	yyyy-mm-ddThh:mm:ss.sss
Latitude	Station Latitude (South is negative)	decimal degrees
Longitude	Station Longitude (West is negative)	decimal degrees
Bot_Depth	Bottom Depth	meters
Pressure	Pressure	decibars
QV_GTSPP	QV GTSPP Flag numbers represent: 1= good data 2= probably good 3 = probably bad 4 = bad 6 = averaged data 8 = lost sample 9 = not sampled	dimensionless

Bottle	Bottle	dimensionless
CTD_Salinity	CTD Salinity	psu
QV_MV1209_CTD_Salinity	QV MV1209 CTD Salinity Flag numbers represent: 1= good data 2= probably good 3 = probably bad 4 = bad 6 = averaged data 8 = lost sample 9 = not sampled	dimensionless
CTD_T	CTD T	degrees Celsius
QV_MV1209_CTD_T	QV MV1209 CTD T Flag numbers represent: 1= good data 2= probably good 3 = probably bad 4 = bad 6 = averaged data 8 = lost sample 9 = not sampled	dimensionless
CTD_Oxygen	CTD Oxygen	micromol/kg
QF_CTD_Oxygen	QF CTD Oxygen Flag numbers represent: 1= good data 2= probably good 3 = probably bad 4 = bad 6 = averaged data 8 = lost sample 9 = not sampled	dimensionless
pH	pH	total scale
QF_pH	QF pH Flag numbers represent: 1= good data 2= probably good 3 = probably bad 4 = bad 6 = averaged data 8 = lost sample 9 = not sampled	dimensionless

T_pH	T pH	degrees Celsius
QF_T_pH	QF T pH Flag numbers represent: 1= good data 2= probably good 3 = probably bad 4 = bad 6 = averaged data 8 = lost sample 9 = not sampled	dimensionless
DIC	DIC	umol/kg
QF_DIC	QF DIC Flag numbers represent: 1= good data 2= probably good 3 = probably bad 4 = bad 6 = averaged data 8 = lost sample 9 = not sampled	dimensionless
Bottle_Oxygen	Bottle Oxygen	umol/kg
QF_Bottle_Oxygen	QF Bottle Oxygen Flag numbers represent: 1= good data 2= probably good 3 = probably bad 4 = bad 6 = averaged data 8 = lost sample 9 = not sampled	dimensionless
Salinity	Salinity	PSU
QF_Salinity	QF Salinity Flag numbers represent: 1= good data 2= probably good 3 = probably bad 4 = bad 6 = averaged data 8 = lost sample 9 = not sampled	dimensionless

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Instruments

Dataset-specific Instrument Name	CTD Sea-Bird 9
Generic Instrument Name	CTD Sea-Bird 9
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

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	SBE 43 Dissolved Oxygen Sensor
Generic Instrument Name	Sea-Bird SBE 43 Dissolved Oxygen Sensor
Generic Instrument Description	The Sea-Bird SBE 43 dissolved oxygen sensor is a redesign of the Clark polarographic membrane type of dissolved oxygen sensors. more information from Sea-Bird Electronics

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Deployments

MV1209

Website	https://www.bco-dmo.org/deployment/59109
Platform	R/V Melville
Report	http://bcodata.whoi.edu/SeapHOx/SDCE_CRUISE_REPORT_FINAL.pdf
Start Date	2012-06-30
End Date	2012-07-10
Description	Original data are available from the NSF R2R data catalog

MV1217

Website	https://www.bco-dmo.org/deployment/59110
Platform	R/V Melville
Report	http://bcodata.whoi.edu/SeapHOx/SDCE_CRUISE_REPORT_FINAL.pdf
Start Date	2012-12-08
End Date	2012-12-15
Description	Original data are available from the NSF R2R data catalog

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Project Information

Macrophyte-induced variability in coastal ocean pH and consequences for invertebrate larvae (SeapHOx)

Coverage: Coastal CA; San Diego La Jolla Kelp Forest; 32.8 N; 117.3 W

Increased concentrations of atmospheric carbon dioxide are acidifying the marine environment at unprecedented rates. However, relative to the open ocean, predictions of ocean acidification for the coastal ocean are confounded by the greater inherent variability of carbonate chemistry which includes macrophyte photosynthesis and respiration. This proposal addresses the interplay between anthropogenically driven pH changes and the inherently variable coastal ocean carbonate chemistry, and will directly test the implications for a potentially sensitive life form, invertebrate larvae.

The objectives of this study are to measure the impact of key coastal habitats on natural pH variance, and to evaluate the implications these pH regimes have for developing invertebrate larvae. To achieve these objectives the investigators will characterize temporal and spatial carbonate chemistry variability inside and outside kelp forests in San Diego, California. With discrete water samples for the determination of total alkalinity and dissolved inorganic carbon, and continuous autonomous instruments which measure pH, dissolved oxygen, salinity, and temperature, a statistical characterization of carbonate chemistry variability will identify diurnal, seasonal and spatial trends as well as frequencies of maximum variation, rates of change, lowest potential pH (extreme statistics), and biologically-significant thresholds. Subsequently, prominent macrophyte-induced pH regimes will be mimicked in laboratory experiments and incorporated with ocean acidification predictions to test effects of (a) decreased pH, (b) varying pH about the mean, (c) changing variance about mean pH, and (c) pulsed exposure to extreme low pH, on larval survivorship, growth, and calcification responses of multiple species. Together, these laboratory and field studies will offer a mechanistic understanding of the effects of natural variance of carbonate chemistry in the context of ocean acidification for marine invertebrate larvae.

Four moorings identified as SeapHOx Moorings have been deployed in the San Diego La Jolla Kelp Forest in the vicinity of 32.8 N 117.3 W.

Mooring Locations

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Program Information

Ocean Carbon and Biogeochemistry (OCB)

Website: http://us-ocb.org/

Coverage: Global

The Ocean Carbon and Biogeochemistry (OCB) program focuses on the ocean's role as a component of the global Earth system, bringing together research in geochemistry, ocean physics, and ecology that inform on and advance our understanding of ocean biogeochemistry. The overall program goals are to promote, plan, and coordinate collaborative, multidisciplinary research opportunities within the U.S. research community and with international partners. Important OCB-related activities currently include: the Ocean Carbon and Climate Change (OCCC) and the North American Carbon Program (NACP); U.S. contributions to IMBER, SOLAS, CARBOOCEAN; and numerous U.S. single-investigator and medium-size research projects funded by U.S. federal agencies including NASA, NOAA, and NSF.

The scientific mission of OCB is to study the evolving role of the ocean in the global carbon cycle, in the face of environmental variability and change through studies of marine biogeochemical cycles and associated ecosystems.

The overarching OCB science themes include improved understanding and prediction of: 1) oceanic uptake and release of atmospheric CO2 and other greenhouse gases and 2) environmental sensitivities of biogeochemical cycles, marine ecosystems, and interactions between the two.

The OCB Research Priorities (updated January 2012) include: ocean acidification; terrestrial/coastal carbon fluxes and exchanges; climate sensitivities of and change in ecosystem structure and associated impacts on biogeochemical cycles; mesopelagic ecological and biogeochemical interactions; benthic-pelagic feedbacks on biogeochemical cycles; ocean carbon uptake and storage; and expanding low-oxygen conditions in the coastal and open oceans.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-0927445

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