

# CTD station locations 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/4080>

Version: 12 November 2013

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## 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 - Stations

Station Number, Station Id, Cast, Date, Time, Lat/Lon, Bottom Depth

## Methods & Sampling

[SDCE Cruise Report](#)

## Data Processing Description

[SDCE Cruise Report](#)

## BCO-DMO Processing/Edits

- Generated from file: "SDCE Station List.txt" contributed by Christina Frieder
- Parameter names modified to conform to BCO-DMO conventions (blanks to underscores, etc.)
- Date formatted to YYYYMMDD
- Time formatted to HHMMSS

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## Data Files

| File   |
|--|
| <b>SeapHOx_CTD_Stations.csv</b> (Comma Separated Values (.csv), 3.56 KB)<br>MD5:df5491948b2bc86284096de915d24530 |
| Primary data file for dataset ID 4080  |

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## Parameters

| Parameter    | Description                          | Units           |
|--------------|--------------------------------------|-----------------|
| CruiseId     | Cruise Id                            | text            |
| Station      | Station Number                       | dimensionless   |
| Station_Name | Station Name                         | text            |
| Cast         | Cast Number                          | dimensionless   |
| Date         | Date (UTC)                           | YYYYMMDD        |
| Time         | Time (UTC)                           | HHMMSS          |
| Latitude     | Station Latitude (South is negative) | decimal degrees |
| Longitude    | Station Longitude (West is negative) | decimal degrees |
| Bottom_Depth | Bottom Depth                         | meters          |

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## Instruments

|   |  |
|---|--|
| <b>Dataset-specific Instrument Name</b> | CTD Sea-Bird 9   |
| <b>Generic Instrument Name</b>          | CTD Sea-Bird 9   |
| <b>Generic Instrument Description</b>   | 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

**MV1209**

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

### MV1217

|                    |   |
|--------------------|---|
| <b>Website</b>     | <a href="https://www.bco-dmo.org/deployment/59110">https://www.bco-dmo.org/deployment/59110</a>   |
| <b>Platform</b>    | R/V Melville  |
| <b>Report</b>      | <a href="http://bcodata.whoi.edu/SeapHOx/SDCE_CRUISE_REPORT_FINAL.pdf">http://bcodata.whoi.edu/SeapHOx/SDCE_CRUISE_REPORT_FINAL.pdf</a> |
| <b>Start Date</b>  | 2012-12-08  |
| <b>End Date</b>    | 2012-12-15  |
| <b>Description</b> | 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](#)

## 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 CO<sub>2</sub> 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.

## Funding

| Funding Source   | Award                       |
|--|-----------------------------|
| <a href="#">NSF Division of Ocean Sciences (NSF OCE)</a> | <a href="#">OCE-0927445</a> |