

Mooring locations from SeapHOx_Kelp_A, SeapHOx_Kelp_B, SeapHOx_Kelp_C, and SeapHOx_Kelp_D kelp moorings in the La Jolla Kelp Forest, San Diego CA, from 2010-2011 (SeapHOx project)

Website: <https://www.bco-dmo.org/dataset/3639>

Version: 05 April 2012

Version Date: 2012-04-20

Project

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

Program

» [Ocean Carbon and Biogeochemistry](#) (OCB)

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Dataset Description

SeapHOx Mooring Locations

Methods & Sampling

Generated by BCO-DMO staff from metadata contributed by Christina Frieder

Data Processing Description

Generated by BCO-DMO staff from metadata contributed by Christina Frieder

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Data Files

File
SeapHOx_Moorings.csv (Comma Separated Values (.csv), 311 bytes) MD5:0b584b3b51cbc22ef625e957e6fe1662
Primary data file for dataset ID 3639

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Parameters

Parameter	Description	Units
Mooring_Id	Mooring Id	text
Longitude	Mooring Longitude Position (West is negative)	decimal degrees
Latitude	Mooring Latitude Position (South is negative)	decimal degrees
Start_Date	Start Date of Data Collection	YYYYMMDD
End_Date	End Date of Data Collection	YYYYMMDD
Site_Description	Site description of mooring	text

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Deployments

SeapHOx_Kelp_A

Website	https://www.bco-dmo.org/deployment/58117
Platform	SeapHOx Kelp Mooring
Start Date	2010-07-29
End Date	2011-10-20
Description	The SeapHOx Kelp A Mooring is one of two moorings (mooring A is located inside the La Jolla kelp forest off San Diego, California, and B is offshore from the kelp forest) deployed in July 2010 for a project studying Macrophyte-induced variability in coastal ocean pH and consequences for invertebrate larvae. Two additional moorings were deployed at a later date. Funding is provided by NSF award OCE-0927445. Mooring locations: A 32.80861° N 117.28891° W (Mooring M1) B 32.80807° N 117.30521° W (Mooring M2) C 32.80917° N 117.28423° W (Mooring M3) D 32.85192° N 117.28456° W (Mooring M4) Mooring Locations

SeapHOx_Kelp_B

Website	https://www.bco-dmo.org/deployment/58118
Platform	SeapHOx Kelp Mooring
Start Date	2010-07-10
End Date	2010-11-10
Description	The SeapHOx Kelp B Mooring is one of two moorings (mooring A is located inside the La Jolla kelp forest off San Diego, California, and M2 is offshore from the kelp forest) deployed in July 2010 for a project studying Macrophyte-induced variability in coastal ocean pH and consequences for invertebrate larvae. Two additional moorings were deployed at a later date. Funding is provided by NSF award OCE-0927445. Mooring locations: A 32.80861° N 117.28891° W (Mooring M1) B 32.80807° N 117.30521° W (Mooring M2) C 32.80917° N 117.28423° W (Mooring M3) D 32.85192° N 117.28456° W (Mooring M4) Mooring Locations

SeapHOx_Kelp_C

Website	https://www.bco-dmo.org/deployment/58789
Platform	SeapHOx Kelp Mooring
Start Date	2011-09-16
End Date	2011-10-18
Description	The SeapHOx Kelp C Mooring is one of four moorings deployed in the vicinity of the La Jolla kelp forest off San Diego, California for a project studying Macrophyte-induced variability in coastal ocean pH and consequences for invertebrate larvae. Funding is provided by NSF award OCE-0927445. Mooring locations: A 32.80861° N 117.28891° W (Mooring M1) B 32.80807° N 117.30521° W (Mooring M2) C 32.80917° N 117.28423° W (Mooring M3) D 32.85192° N 117.28456° W (Mooring M4) Mooring Locations

SeapHOx_Kelp_D

Website	https://www.bco-dmo.org/deployment/58790
Platform	SeapHOx Kelp Mooring
Start Date	2011-04-18
End Date	2011-08-11
Description	The SeapHOx Kelp D Mooring is one of four moorings deployed in the vicinity of the La Jolla kelp forest off San Diego, California for a project studying Macrophyte-induced variability in coastal ocean pH and consequences for invertebrate larvae. Funding is provided by NSF award OCE-0927445. Mooring locations: A 32.80861° N 117.28891° W (Mooring M1) B 32.80807° N 117.30521° W (Mooring M2) C 32.80917° N 117.28423° W (Mooring M3) D 32.85192° N 117.28456° W (Mooring M4) Mooring Locations

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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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