pH Data from shoreside Santa Cruz Municipal Wharf (SCW-2013) in 2013 (SoCalPlumeEx2012 project)

Website: https://www.bco-dmo.org/dataset/537712
Version: 04 November 2014
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Project
» Assessing the Ecophysiological and Biogeochemical Response to Deliberate Nutrient Loading in the Southern California Bight (SoCalPlumeEx2012)

Contributors	Affiliation	Role
Kudela, Raphael M.	University of California-Santa Cruz (UCSC)	Principal Investigator, Contact
Lucas, Andrew J	University of California-San Diego (UCSD-SIO)	Co-Principal Investigator
Gegg, Stephen R.	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager

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Dataset Description

Santa Cruz Municipal Wharf Shore Station
36deg 57'38.3""N 122deg01'13.1""W
YSI 6600v2 Sonde: Temperature, Salinity
Satlantic SeaFET: Internal pH, External pH, Temperature
Fixed intake depth, approx. 1 m

Methods & Sampling

Sampling and Analytical Methodology:
Fixed shore station with pumped seawater from ~1 m depth; YSI 6600v2 sonde and Satlantic SeaFET in the flow through, sampling at 5 minute intervals. Instruments configured/deployed as per manufacturer recommendations. pH from the SeaFET was compared to discrete measurements analyzed by Andrew Dickson's laboratory (SIO). Calibration curve applied to the data.

Data Processing Description

Data Processing:
Obvious outliers were removed; missing data replaced with -999. Pre- and post-deployment calibration applied to salinity and pH data.

Discrete samples (used for calibration) and continuous data submitted to the SWAMP and CEDEN databases: http://www.ceden.org

BCO-DMO Processing Notes

- Generated from original file: "SoCalPlumeEx2012_SCW_pH.csv" contributed by Raphael Kudela
- Parameter names edited to conform to BCO-DMO naming convention found at Choosing Parameter Name
- Date reformatted from MM/DD/YY to YYYYMMDD
- Time reformatted from HH:MM to HHMM
- Latitude/Longitude and depth appended from original file

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Data Files

File
SCW_pH.csv(Comma Separated Values (.csv), 2.02 MB) MD5:f64062e7451cd76c5fcce770ab9085ef Primary data file for dataset ID 537712

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Parameters

Parameter	Description	Units
Station_ID	Station Id	text
Lat	Latitude Position (South is negative)	decimal degrees
Lon	Longitude Position (West is negative)	decimal degrees
Depth	Fixed intake depth; approx. 1 m	meters
Date	Date (GMT)	YYYYMMDD
Time	Time (GMT)	HHMM
SeaFET_Temp	Satlantic SeaFET: Temperature	deg Celsius
SeaFET_Internal_pH	Satlantic SeaFET: Internal pH	pH Scale
SeaFET_External_pH	Satlantic SeaFET: External pH	pH Scale
YSI_Temp	YSI 6600v2 Sonde: Temperature	deg Celsius
YSI_Salinity	YSI 6600v2 Sonde: Salinity	ppt

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Instruments

Dataset-specific Instrument Name	SeapHOx/SeaFET
Generic Instrument Name	SeapHOx/SeaFET
Dataset-specific Description	Satlantic SeaFET: Internal pH, External pH, Temperature
Generic Instrument Description	The SeapHOx and SeaFET are autonomous sensors originally designed and developed by the Todd Martz Lab at Scripps Institution of Oceanography. The SeaFET was designed to measure pH and temperature. The SeapHOx, designed later, combined the SeaFET with additional integrated sensors for dissolved oxygen and conductivity. Refer to Martz et al. 2010 (doi:10.4319/lom.2010.8.172). The SeapHOx package is now produced by Sea-Bird Scientific and allows for integrated data collection of pH, temperature, salinity, and oxygen. Refer to Sea-Bird for specific model information.

Dataset-specific Instrument Name	YSI Sonde 6-Series
Generic Instrument Name	YSI Sonde 6-Series
Dataset-specific Description	YSI 6600v2 Sonde: Temperature, Salinity
Generic Instrument Description	YSI 6-Series water quality sondes and sensors are instruments for environmental monitoring and long-term deployments. YSI datasondes accept multiple water quality sensors (i.e., they are multiparameter sondes). Sondes can measure temperature, conductivity, dissolved oxygen, depth, turbidity, and other water quality parameters. The 6-Series includes several models. More from YSI.

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Deployments

SCW-2013

Website	https://www.bco-dmo.org/deployment/537389
Platform	shoreside Santa Cruz Municipal Wharf
Start Date	2013-02-05
End Date	2013-06-10
Description	Santa Cruz Municipal Wharf Shore Station 36deg 57'38.3""N, 122deg 01'13.1""W YSI 6600v2 Sonde: Temperature, Salinity Satlantic SeaFET: Internal pH, External pH, Temperature Fixed intake depth, approx. 1 m

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Project Information

Assessing the Ecophysiological and Biogeochemical Response to Deliberate Nutrient Loading in the Southern California Bight (SoCalPlumeEx2012)

Website: http://oceandatacenter.ucsc.edu/MBHAB/hotspots/

Coverage: Southern California Bight [33-33.75° N, 117.25-118.5° W]

In autumn 2012, Orange County Sanitation District (OCSD) will divert ~150 million gallons/day of secondarily-treated effluent to a nearshore (1 mile offshore) outfall pipe over a period of ~4 weeks. No discharges of this magnitude have been conducted in decades. The planned diversion is expected to create a buoyant surface plume that will spread over much of the coastal region. Because OCSD plans to "super-chlorinate" and then dechlorinate the discharge, the effect of the plume should be predominantly a nutrient addition rather than direct addition of intact microbial populations. The PIs propose to address two broad questions through a study of the plume:

First, what happens ecologically and physiologically to the phytoplankton assemblage when nutrients are discharged in the surface ocean for extended periods of time?
Second, can this dynamic and shifting environment be sampled by deploying multiple technologies to identify the physical/chemical drivers of the biological response at ecologically relevant space and time scales?

They will test two hypotheses:
H1: Continual discharge of nutrients to the surface ocean results in a dinoflagellate-dominated bloom which leads to dampening or cessation of vertical migration of the dinoflagellates and drives a shift to net heterotrophy.
H2: The bloom will initially result in a strong local sink for carbon dioxide which gradually develops into a strong source as heterotrophy develops.

The study is expected to provide a time-evolving picture of interactions within and between autotrophic and heterotrophic communities and will illustrate the short-term biogeochemical and ecological consequences of sustained nutrient discharge to a shallow coastal site. The planned diversion provides an unprecedented opportunity to study the ecophysiological response in a natural setting over a period of weeks, including the interaction of biology, chemistry, and physics, and it will contribute to basic understanding of anthropogenic nutrient loading to the coastal ocean. Undergraduate and graduate education and training will be furthered through active participation in lab, field, and data synthesis activities involving academic, government, and industry partners.

Affiliated Programs or Projects:
- NOAA ECOHAB Project (NA11NOS4780030): A Regional Comparison of Upwelling and Coastal Land Use Patterns on the Development of HAB Hotspots Along the California Coast
- Southern California Coastal Ocean Observing System
- Central and Northern California Coastal Ocean Observing System

Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1251573
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