

CTD casts from R/V Nerissa in the Southern California Bight off Huntington Beach in 2012 (SoCalPlumeEx2012 project)

Website: <https://www.bco-dmo.org/dataset/537627>

Version: 04 November 2014

Version Date: 2014-11-04

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

Table of Contents

- [Dataset Description](#)
 - [Methods & Sampling](#)
 - [Data Processing Description](#)
- [Data Files](#)
- [Parameters](#)
- [Instruments](#)
- [Deployments](#)
- [Project Information](#)
- [Funding](#)

Dataset Description

CTD casts from R/V Nerissa

Data are described in the following manuscript:

Caron, D.A., Gellene, A.G., Smith, J., Seubert, E.L., Campbell, V. Sukhatme, G.S., Seegers, B., Jones, B.H., Howard, M.D.A., Kudela, R.M., Hayashi, K., Ryan, J., Birch, J., Demir-Hilton, E., Yamahara, K., Scholin, C., Mengel, M., Robertson, G., Submitted. Response of the phytoplankton and bacterial communities during a wastewater effluent diversion into nearshore coastal waters. Estuar. Coast. Shelf Sci.

Methods & Sampling

Data collected from an instrumented rosette using a SeaBird 9/11+

Data Processing Description

Processed using SeaBird software, downcast only.

BCO-DMO Processing Notes

- Generated from original file: "SoCalPlumeEx2012_Nerissa_CTD.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/YYYY to YYYYMMDD
- Time reformatted from HH:MM to HHMM
- Latitude/Longitude for stations appended from Stations dataset

Data Files

File
Nerissa_CTD.csv (Comma Separated Values (.csv), 47.35 KB) MD5:a0187b4a79ecce88ae7758ddd1144edb
Primary data file for dataset ID 537627

Parameters

Parameter	Description	Units
Date	Date (GMT)	YYYYMMDD
Time	Time (GMT)	HHMM
Station_ID	Station Id	text
Latitude	Latitude Position (South is negative)	decimal degrees
Longitude	Longitude Position (West is negative)	decimal degrees
Depth	Depth (m)	meters
Temperature	Temperature (deg C)	degs Celsius
Conductivity	Conductivity	Siemens/meter
pH	pH	pH Scale
Oxygen	Oxygen (mg/l)	mg/l
Percent_T	% T	percentage
Salinity	Salinity (psu)	psu
Density	Density	kilograms/meter ³
DO_sat	DO sat (mg/L)	mg/l
DO_sat_percentage	DO sat (%)	percentage
Beam_C	Beam C	1/m
Chl_a	Chl-a (ug/L)	ug/L
CDOM	CDOM (ug/L)	ug/L
Irradiance	Irradiance	uE m ⁻² sec ⁻¹
Surface_Irradiance	Surface Irradiance	microEinsteins/meter ² /second
Irradiance_Percent_Normal	Irradiance (% Normal)	percentage
Delta_T	Delta T	degs Celsius

Instruments

Dataset-specific Instrument Name	CTD SBE 911plus
Generic Instrument Name	CTD Sea-Bird SBE 911plus
Dataset-specific Description	Data collected from an instrumented rosette using a SeaBird 9/11+
Generic Instrument Description	The Sea-Bird SBE 911 plus is a type of CTD instrument package for continuous measurement of conductivity, temperature and pressure. The SBE 911 plus includes the SBE 9plus Underwater Unit and the SBE 11plus Deck Unit (for real-time readout using conductive wire) for deployment from a vessel. The combination of the SBE 9 plus and SBE 11 plus is called a SBE 911 plus. The SBE 9 plus uses Sea-Bird's standard modular temperature and conductivity sensors (SBE 3 plus and SBE 4). The SBE 9 plus CTD can be configured with up to eight auxiliary sensors to measure other parameters including dissolved oxygen, pH, turbidity, fluorescence, light (PAR), light transmission, etc.). 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.

[[table of contents](#) | [back to top](#)]

Deployments

SoCalPlumeEx2012

Website	https://www.bco-dmo.org/deployment/537425
Platform	Fishing Vessels
Start Date	2012-09-06
End Date	2012-10-17
Description	Multiple vessels used for this effort. R/V Yellowfin R/V Nerissa

[[table of contents](#) | [back to top](#)]

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

[[table of contents](#) | [back to top](#)]

Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1251573
NSF Division of Ocean Sciences (NSF OCE)	OCE-1251547

[[table of contents](#) | [back to top](#)]