

# Station locations from fishing vessels in the Southern California Bight off Huntington Beach in 2012 (SoCalPlumeEx2012 project)

**Website:** <https://www.bco-dmo.org/dataset/537519>

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## Project

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

Contributors	Affiliation	Role
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## Dataset Description

Bottle data gathered during YellowFin CTD casts

### 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\_Bottle.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

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## Data Files

File
<b>Bottle.csv</b> (Comma Separated Values (.csv), 5.17 KB) MD5:55182a878a36d1a4c8ed2b312f919936 Primary data file for dataset ID 537519

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## Parameters

Parameter	Description	Units
Date	Date (GMT)	YYYYMMDD
Station_ID	Station Id	text
Depth	Depth	meters
Latitude	Latitude Position (South is negative)	decimal degrees
Longitude	Longitude Position (West is negative)	decimal degrees
Chlorophyll	Chlorophyll	ug/L
NH4	NH4	uM
urea	urea	uM
NO3	NO3	uM
P	P	uM
Si	Si	uM
TOTAL_PICO	TOTAL Pico (cells/mL) - flow cytometric analysis of picoplankton	cells per mL
SYN	SYN (cells/mL) - flow cytometric analysis of Synechococcus	cells per mL
HBAC	HBAC (cells/mL) - flow cytometric analysis of heterotrophic bacteria	cells per mL

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## Instruments

<b>Dataset-specific Instrument Name</b>	CTD SBE 911plus
<b>Generic Instrument Name</b>	CTD Sea-Bird SBE 911plus
<b>Dataset-specific Description</b>	Data collected from an instrumented rosette using a SeaBird 9/11+
<b>Generic Instrument Description</b>	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

<b>Dataset-specific Instrument Name</b>	Niskin bottle
<b>Generic Instrument Name</b>	Niskin bottle
<b>Generic Instrument Description</b>	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.

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## Deployments

### SoCalPlumeEx2012

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

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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

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## Funding

Funding Source	Award
<a href="#">NSF Division of Ocean Sciences (NSF OCE)</a>	<a href="#">OCE-1251573</a>
<a href="#">NSF Division of Ocean Sciences (NSF OCE)</a>	<a href="#">OCE-1251547</a>

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