

# YSI flowthrough data from fishing vessels in the Southern California Bight off Huntington Beach in 2012 (SoCalPlumeEx2012 project)

**Website:** <https://www.bco-dmo.org/dataset/537894>

**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
<a href="#">Kudela, Raphael M.</a>	University of California-Santa Cruz (UCSC)	Principal Investigator, Contact
<a href="#">Lucas, Andrew J.</a>	University of California-San Diego Scripps (UCSD-SIO)	Co-Principal Investigator
<a href="#">Gegg, Stephen R.</a>	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager

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## Dataset Description

YSI Flowthrough Data

### Data are described in the following manuscript:

Kudela, R.M., Lucas, A.J., Negrey, K.H., Howard, M. McLaughlin, K. Submitted to Estuaries, Coasts, Shelf Science (October 2014).. Death from below: Investigation of inhibitory factors in bloom development during a wastewater effluent diversion

## Methods & Sampling

### Sampling and Analytical Methodology:

Data collected from an underway mapping system using a YSI 6600v2 sonde (CTD) and Turner Designs PhytoFlash variable fluorescence meter. Data merged with GPS locations and binned to 1 minute intervals. The PhytoFlash data were blank-corrected with 0.2  $\mu$ m filtered seawater but were not corrected for ambient irradiance.

## Data Processing Description

### Data Processing:

Outliers removed

### BCO-DMO Processing Notes

- Generated from original file: "SoCalPlumeEx2012\_YSI\_flowthrough.txt" 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:SS to HHMMSS

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## Data Files

File
<b>YSI_flowthrough.csv</b> (Comma Separated Values (.csv), 45.36 KB) MD5:99cc81b625aa506903d717708480e795 Primary data file for dataset ID 537894

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## Parameters

Parameter	Description	Units
Date	Date (GMT)	YYYYMMDD
Time	Time (GMT)	HHMMSS
LATITUDE	Latitude Position (South is negative)	decimal degrees
LONGITUDE	Longitude Position (West is negative)	decimal degrees
Depth	Depth	meters
Temp	Temp	deg's Celsius
Salinity	Salinity	PSU
Fo	Fo - minimal level of fluorescence	RFU
Fm	Fm - maximum fluorescence	RFU
Fv	Fv (Fm-Fo) - variable fluorescence	RFU
FvFm	FvFm - the ratio of variable fluorescence to maximal fluorescence	unitless

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## Instruments

<b>Dataset-specific Instrument Name</b>	Turner Designs C3 fluorometer
<b>Generic Instrument Name</b>	Fluorometer
<b>Dataset-specific Description</b>	Data collected on a G5 WaveGlider. Data are essentially raw, no processing other than calibration applied. Turner Designs C3 fluorometer equipped to measure chlorophyll fluorescence (460 nm ex/696 nm em; reported in fluorescence units), turbidity (850 nm ex./850 nm.; units= NTU; Nephelometric Turbidity Units), and colored dissolved organic material (CDOM ; 325 nm ex/410-600 nm em.). Sensors were calibrated by Liquid Robotics (chl fluorescence = 1.0119 mg ml <sup>-1</sup> Basic Blue 3; turbidity= 3000 NTU turbidity standard) as per Turner Designs recommendation.
<b>Generic Instrument Description</b>	A fluorometer or fluorimeter is a device used to measure parameters of fluorescence: its intensity and wavelength distribution of emission spectrum after excitation by a certain spectrum of light. The instrument is designed to measure the amount of stimulated electromagnetic radiation produced by pulses of electromagnetic radiation emitted into a water sample or in situ.

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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 (OCS D) 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 OCS D 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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