Chlorophyll data from daily sampling at the Santa Monica Pier, CA from April to May of 2019

Website: https://www.bco-dmo.org/dataset/778653
Data Type: Other Field Results
Version: 1
Version Date: 2019-10-03

Project
» Protistan, prokaryotic, and viral processes at the San Pedro Ocean Time-series (SPOT)

Contributors	Affiliation	Role
Caron, David	University of Southern California (USC)	Principal Investigator
Beatty, Jennifer	University of Southern California (USC)	Co-Principal Investigator
Hopper, Julie V.	University of Southern California (USC)	Co-Principal Investigator
Ollison, Gerid A.	University of Southern California (USC)	Co-Principal Investigator
Stewart, Brittany P.	University of Southern California (USC)	Co-Principal Investigator
York, Amber D.	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager

Abstract
Daily Chlorophylla (ug/L) data from surface waters off of the Santa Monica Pier, California from April 13th to May 5th 2019 as part of the San Pedro Ocean Time-series (SPOT).

Table of Contents

Coverage

Spatial Extent: **Lat**:34.00765 **Lon**:-118.50015
Temporal Extent: 2019-04-13 - 2019-05-05

Dataset Description

Daily Chlorophylla (ug/L) data from surface waters off of the Santa Monica Pier, California from April 13th to May 5th 2019 as part of the San Pedro Ocean Time-series (SPOT).

Methods & Sampling

Chlorophyll Extraction by Non-Acidification Method
Whole seawater collected from Santa Monica Pier, CA by bucket off pier. Portion of whole seawater placed in dark for chlorophyll processing. Bottle shaken, then filtered on to GFF filter (Glass Microfiber Filter, 0.7um, 25mm,Whatman) using tower rig and gast pump vacuum. Triplicates taken for each day. Wrapped in foil and flash frozen in liquid nitrogen to preserve. Stored in lab in -80C freezer till processed.

In Lab processing: using glass cuvette (Disposable Culture Tubes, Borosilicate Glass, 12x75mm, VWR), place individual filter inside, add 4ml 100% Acetone, and cap. Ensure filter is submerged in acetone. Wrap all samples in foil and place in -20C freezer for 18-24hr. Between 18-24hrs remove samples and thaw for 30 minutes, keep in dark. Using Turner Design Fluorometer, calibrate using stored standard. For samples, invert sample multiple times, uncap, using metal spatula remove filter, use Kimwipe to clean off outside of cuvette, place in fluorometer and record both raw fluoresce and direct concentration. Dilution may be necessary if raw fluoresce is above 250 RFU.

Data Processing Description

Chlorophyll data was processed in Microsoft Word Excel 2011, for calibration correction on samples and averaging triplicate values.

BCO-DMO data manager processing notes:
* column names modified to remove spaces, units, and parentheses. Column names, descriptions and units can be found in the "Parameter Description" section.

[table of contents | back to top]

Data Files

File
chl.csv (Comma Separated Values (.csv), 2.90 KB) MD5:89aef94cd48c6e64ca0098c5c4927ce9 Primary data file for dataset ID 778653

[table of contents | back to top]

Parameters

Parameter	Description	Units
Date	Date (local,UTC-7) in format m/d/yyyy	unitless
SAMPLE	Sample name	unitless
Chl_Concentration	Chlorophyll a concentration	micrograms per liter (µg/l)
Lat	Latitude (south is negative)	decimal degrees
Lon	Longitude (west is negative)	nd

[table of contents | back to top]

Instruments

Dataset-specific Instrument Name	Turner Design Instruments Model# 7200-000
Generic Instrument Name	Turner Designs 700 Laboratory Fluorometer
Generic Instrument Description	The TD-700 Laboratory Fluorometer is a benchtop fluorometer designed to detect fluorescence over the UV to red range. The instrument can measure concentrations of a variety of compounds, including chlorophyll-a and fluorescent dyes, and is thus suitable for a range of applications, including chlorophyll, water quality monitoring and fluorescent tracer studies. Data can be output as concentrations or raw fluorescence measurements.

[table of contents | back to top]

Deployments

SPOT_SMP

Website	https://www.bco-dmo.org/deployment/746419
Platform	shoreside Santa Monica Pier
Start Date	2018-01-01
End Date	2019-12-31

[table of contents | back to top]

Project Information

Protistan, prokaryotic, and viral processes at the San Pedro Ocean Time-series (SPOT)

Coverage: San Pedro Channel off the coast of Los Angeles

Planktonic marine microbial communities consist of a diverse collection of bacteria, archaea, viruses, protists (phytoplankton and protozoa) and small animals (metazoan). Collectively, these species are responsible for virtually all marine pelagic primary production where they form the basis of food webs and carry out a large fraction of respiratory processes. Microbial interactions include the traditional role of predation, but recent research recognizes the importance of parasitism, symbiosis and viral infection. Characterizing the response of pelagic microbial communities and processes to environmental influences is fundamental to understanding and modeling carbon flow and energy utilization in the ocean, but very few studies have attempted to study all of these assemblages in the same study. This project is comprised of long-term (monthly) and short-term (daily) sampling at the San Pedro Ocean Time-series (SPOT) site. Analysis of the resulting datasets investigates co-occurrence patterns of microbial taxa (e.g. protist-virus and protist-prokaryote interactions, both positive and negative) indicating which species consistently co-occur and potentially interact, followed by examination gene expression to help define the underlying mechanisms. This study augments 20 years of baseline studies of microbial abundance, diversity, rates at the site, and will enable detection of low-frequency changes in composition and potential ecological interactions among microbes, and their responses to changing environmental forcing factors. These responses have important consequences for higher trophic levels and ocean-atmosphere feedbacks. The broader impacts of this project include training graduate and undergraduate students, providing local high school student with summer lab experiences, and PI presentations at local K-12 schools, museums, aquaria and informal learning centers in the region. Additionally, the PIs advise at the local, county and state level regarding coastal marine water quality.

This research project is unique in that it is a holistic study (including all microbes from viruses to small metazoa) of microbial species diversity and ecological activities, carried out at the SPOT site off the coast of southern California. In studying all microbes simultaneously, this work aims to identify important ecological

interactions among microbial species, and identify the basis(es) for those interactions. This research involves (1) extensive analyses of prokaryote (archaean and bacterial) and eukaryote (protistan and micro-metazoan) diversity via the sequencing of marker genes, (2) studies of whole-community gene expression by eukaryotes and prokaryotes in order to identify key functional characteristics of microorganismal groups and the detection of active viral infections, and (3) metagenomic analysis of viruses and bacteria to aid interpretation of transcriptomic analyses using genome-encoded information. The project includes exploratory metatranscriptomic analysis of poorly-understood aphotic and hypoxic-zone protists, to examine their stratification, functions and hypothesized prokaryotic symbioses.

[table of contents | back to top]

Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1737409

[table of contents | back to top]