Physical data (sal, temp, wind, wave height) collected from January-March of 2014, 2015, and 2016 at the OIMB pier located in the Coos Bay entrance of the Oregon Coast

Website: https://www.bco-dmo.org/dataset/682521
Data Type: Other Field Results
Version: 1
Version Date: 2017-04-25

Project
» Spawning During Storms and the Subsequent Dispersal and Settlement of Coastal Invertebrate Larvae (Storm larvae)

Contributors	Affiliation	Role
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Abstract
Physical data (sal, temp, wind, wave height) measured at the Oregon Institute of Marine Biology (OIMB) pier during 2014-2016.

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Coverage

Spatial Extent: **Lat**:43.3496333 **Lon**:-124.3299167
Temporal Extent: 2014-01-01 - 2016-03-18

Dataset Description

Physical data (sal, temp, wind, wave height) measured at the Oregon Institute of Marine Biology (OIMB) pier during 2014-2016.

Methods & Sampling

The OIMB pier is located on the Oregon Coast, Coos Bay entrance (43 20.978'N, 124 19.795'W).

Methodology:

Daily samples of oceanic water were collected approx. 30 minutes before high tide (early morning to late afternoon) with an electric (220V) diaphragm pump (American Machine Self Priming Pump, Model 335E-K6, 3" diameter with a 2hp motor). Salinity, water temperature, and fluorescence were measured for water in the daily pier samples. Tide height was assumed from predictions of Mr Tides (url: http://www.mrtides.com/; site: Coos Bay entrance, Oregon); Wind stress and wave height were calculated from NOAA buoy Station 46015 (off Port Orford, Oregon).

Sampling dates:
2016: Data are reported from 1/4/2016 to 3/18/2016 (75 days).
2015: Data are reported from 1/6/2015 to 3/19/2015 (73 days).
2014: Data are reported from 1/1/2014 to 3/20/2014 (79 days).

Note: The 2014 and 2015 data report chlorophyll-a in milligrams per cubic meter (mg/m3). The 2016 data reports fluorescence in amps (AC current output).

Data Processing Description

BCO-DMO Processing:
-modified parameter names to conform with BCO-DMO naming conventions;
-re-formatted date to yyyy-mm-dd;
-added lat/lon columns containing pier location (from metadata form);
-replaced blanks (missing data) with 'nd';
-25 April 2017: updated dataset to include data from 2014 and 2015.

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Data Files

File
2014-2016_pier_physical.csv (Comma Separated Values (.csv), 25.78 KB) MD5:2ebce029ba119275ea89b5c6bdb3568c Primary data file for dataset ID 682521

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Parameters

Parameter	Description	Units
location	Name of sampling location	unitless
lat	Latitude of sampling location	decimal degrees
lon	Longitude of sampling location	decimal degrees
date	Date sampled in yyyy-mm-dd format	unitless
tidal_ht	Height of high tide sampled (from Mr Tides, url: http://www.mrtides.com/; site: Coos Bay entrance, Oregon)	meters (m)
rainfall	Rain fall in inches (rain gauge at the OIMB pier)	inches
sal	Salinity (refractometer)	PSU
temp	temperature, C (measured with a probe at sampling)	degrees Celsius
temp_tidbit	Temperature, C from tidbit thermistor in the sample tank. Temp is from high tide.	degrees Celsius
wind_stress_alongshore	Alongshore wind stress, dynes (calculated from wind speed from the NOAA Port Orford Buoy, Station 46015)	dynes
wind_stress_cross_shore	Cross-shore wind stress, dynes (calculated from wind speed from the NOAA Port Orford Buoy, Station 46015)	dynes
wave_ht_daily_avg	Daily avg wave ht (determined from hourly significant wave height reported from NOAA Port Orford Buoy, Station 46015)	meters (m)
fluor	Fluorescence as AC current output, amps (Turner Design inline model). Reported in 2016 data.	amps
chl_a	Chlorophyll-a (gaps in the data are missing data, "nd"). Reported in 2014 and 2015 data.	milligrams per cubic meter (mg/m3)
year	4-digit year; format: yyyy	unitless

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Instruments

Dataset-specific Instrument Name	Turner Design inline model
Generic Instrument Name	Fluorometer
Generic Instrument Description	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.

Dataset-specific Instrument Name	rain gauge
Generic Instrument Name	Precipitation Gauge
Generic Instrument Description	measures rain or snow precipitation

Dataset-specific Instrument Name	diaphragm pump
Generic Instrument Name	Pump
Dataset-specific Description	Daily samples of oceanic water were collected approx. 30 min before high tide (early morning to late afternoon) with an electric (220V) diaphragm pump (American Machine Self Priming Pump, Model 335E-K6, 3" diameter with a 2hp motor).
Generic Instrument Description	A pump is a device that moves fluids (liquids or gases), or sometimes slurries, by mechanical action. Pumps can be classified into three major groups according to the method they use to move the fluid: direct lift, displacement, and gravity pumps

Dataset-specific Instrument Name	refractometer
Generic Instrument Name	Refractometer
Generic Instrument Description	A refractometer is a laboratory or field device for the measurement of an index of refraction (refractometry). The index of refraction is calculated from Snell's law and can be calculated from the composition of the material using the Gladstone-Dale relation. In optics the refractive index (or index of refraction) n of a substance (optical medium) is a dimensionless number that describes how light, or any other radiation, propagates through that medium.

Dataset-specific Instrument Name	thermistor
Generic Instrument Name	Thermistor
Generic Instrument Description	A thermistor is a type of resistor whose resistance varies significantly with temperature, more so than in standard resistors. The word is a portmanteau of thermal and resistor. Thermistors are widely used as inrush current limiters, temperature sensors, self-resetting overcurrent protectors, and self-regulating heating elements. Thermistors differ from resistance temperature detectors (RTD) in that the material used in a thermistor is generally a ceramic or polymer, while RTDs use pure metals. The temperature response is also different; RTDs are useful over larger temperature ranges, while thermistors typically achieve a higher precision within a limited temperature range, typically 90C to 130C.

Dataset-specific Instrument Name	
Generic Instrument Name	Water Temperature Sensor
Generic Instrument Description	General term for an instrument that measures the temperature of the water with which it is in contact (thermometer).

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Deployments

Emlet_2014-16

Website	https://www.bco-dmo.org/deployment/682744
Platform	OIMB Pier
Start Date	2016-01-04
End Date	2016-03-18

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Project Information

Spawning During Storms and the Subsequent Dispersal and Settlement of Coastal Invertebrate Larvae (Storm larvae)

Coverage: Coastal waters of Coos Bay, OR

The study will address four questions concerning invertebrate spawning on the US West Coast: 1) Which nearshore benthic invertebrates spawn during winter? 2) What conditions are associated with spawning events? (Preliminary data lead the PIs to predict that most spawning will occur during periods of large waves and coastal downwelling.) 3) What is the pattern of dispersal of these winter-spawned larvae in the coastal ocean? 4) How do variations in ocean conditions during pelagic development affect delivery of larvae to the shore?

Water will be sampled daily from the seawater intake for the Oregon Institute of Marine Biology marine laboratory in Coos Bay, OR. Water is pumped at high tide when the intake samples coastal ocean water. Early larval stages will be identified by genetic barcoding and a visual ID key will be developed from individuals raised in the lab. Time series analysis will be used to test for the effects of oceanographic parameters (e.g., temperature, salinity, Chl-a, wind stress, and wave data) on spawning events indicated by the sudden appearance of zygotes or embryos. Following a spawning event, oceanographic cruises in the coastal ocean will follow the dispersal and pelagic development of the larvae and relate their distribution to coastal hydrodynamics. Using daily samples from the seawater system and settlement collectors at intertidal sample sites, the PIs will monitor the abundance of late stage larvae in the near-shore and settlement in the intertidal zone. These time series will be compared to hydrographic parameters to identify conditions favoring the maintenance of larvae in the waters adjacent to the coast and the delivery of larvae to the shore.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1259603

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