# ADCP water column data from a cruise inside Coos Bay in March 2014 on R/V Pluteus

**Website**: https://www.bco-dmo.org/dataset/686558
**Data Type**: Cruise Results
**Version**: 28 March 2017
**Version Date**: 2017-03-28

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

| Contributors | Affiliation | Role |
|---|---|---|
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## Coverage

**Spatial Extent**: **Lat**:43.3677 **Lon**:-124.3129
**Temporal Extent**: 2014-03-10

## Dataset Description

ADCP water column data from a cruise inside Coos Bay in March 2014.

There is 1 combined navigation and configuration file from each cruise date, along with three separate files containing each component of velocity (u,v,w) for a total of 4 files per cruise (in this case, just 1 cruise).

### Methods & Sampling

These data were obtained from ship-mounted 600 kHz RDI Workhorse ADCP (serial number is included in each config data file header). The times, locations, and other configuration data are saved within the config data file.

### Data Processing Description

The data were collected in real-time using VMDAS software, and then processed using standard MATLAB scripts. The data submitted here include all data recorded with minimal processing (i.e. no thresholding was done, or any attempt to remove surface/bottom effects).

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## Data Files

| File |
|---|
| **2014_ADCP.csv** (Comma Separated Values (.csv), 838 bytes)<br>MD5:bbcad6e4473af15d4ad8888c6f29bb08<br>Primary data file for dataset ID 686558 |

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## Parameters

| Parameter | Description | Units |
|---|---|---|
| description | Description of the file | unitless |
| date | Date of the cruise; formatted as yyyy-mm-dd. | unitless |
| mean_lon | Mean longitude; obtained from the file header. | decimal degrees |
| mean_lat | Mean latitude; obtained from the file header. | decimal degrees |
| file_size | File size; kb=kilobytes | unitless |
| file | File name and link | unitless |

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## Instruments

| | |
|---|---|
| **Dataset-specific Instrument Name** | 600 kHz RDI Workhorse ADCP |
| **Generic Instrument Name** | Acoustic Doppler Current Profiler |
| **Dataset-specific Description** | These data were obtained from ship-mounted 600 kHz RDI Workhorse ADCP (serial number is included in each config data file header). |
| **Generic Instrument Description** | The ADCP measures water currents with sound, using a principle of sound waves called the Doppler effect. A sound wave has a higher frequency, or pitch, when it moves to you than when it moves away. You hear the Doppler effect in action when a car speeds past with a characteristic building of sound that fades when the car passes. The ADCP works by transmitting "pings" of sound at a constant frequency into the water. (The pings are so highly pitched that humans and even dolphins can't hear them.) As the sound waves travel, they ricochet off particles suspended in the moving water, and reflect back to the instrument. Due to the Doppler effect, sound waves bounced back from a particle moving away from the profiler have a slightly lowered frequency when they return. Particles moving toward the instrument send back higher frequency waves. The difference in frequency between the waves the profiler sends out and the waves it receives is called the Doppler shift. The instrument uses this shift to calculate how fast the particle and the water around it are moving. Sound waves that hit particles far from the profiler take longer to come back than waves that strike close by. By measuring the time it takes for the waves to bounce back and the Doppler shift, the profiler can measure current speed at many different depths with each series of pings. (More from WHOI instruments listing). |

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## Deployments

**Pluteus2014**

| | |
|---|---|
| **Website** | https://www.bco-dmo.org/deployment/614689 |
| **Platform** | R/V Pluteus |
| **Start Date** | 2014-01-16 |
| **End Date** | 2014-02-24 |

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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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