Tilt Current Meter deployed in Visca, Bay Bay City, Leyte, the Philippines, in June 2017

Website: https://www.bco-dmo.org/dataset/862420
Data Type: Other Field Results
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Project
» RAPID: Mega-typhoon impacts on the metapopulation resilience of coral reef fishes (Reef Fish Resilience)

Contributors	Affiliation	Role
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Abstract
Tilt Current Meter deployed in Visca, Bay Bay City, Leyte, the Philippines, in June 2017.

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Coverage

Spatial Extent: **Lat**:10.74345 **Lon**:124.78662
Temporal Extent: 2017-06 - 2017-06

Methods & Sampling

Field seasons (SCUBA) in Leyte, Philippines to study coral reef fish resilience.

The tilt current meter was tied to a concrete block and set at 5m depth in the marine protected area at Visayas State University (10.74345 °N, 124.78662 °W).

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Data Files

File
tiltmeter.csv (Comma Separated Values (.csv), 68.62 MB) MD5:4eecc0859be255173ad36735252af0cf Primary data file for dataset ID 862420

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Parameters

Parameter	Description	Units
ISO_8601_Time	Time at reading (yyyy-mm-ddThh:mm:ss.ms). Time zone: UTC.	unitless
Ax_g	Accelerometer x-axiz	standard gravity
Ay_g	Accelerometer y-axis	standard gravity
Az_g	Accelerometer z-axis	standard gravity
Mx_mG	Magnetometer x-axis	milli-Gauss
My_mG	Magnetometer y-axis	milli-Gauss
Mz_mG	Magnetometer z-axis	milli-Gauss

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Instruments

Dataset-specific Instrument Name	Lowell Instruments TCM-1 Tilt Current Meter
Generic Instrument Name	Tilt Current Meter
Generic Instrument Description	Tilt current meters are based upon the property that a tethered object will experience drag inside a current flow. If a restoring force perpendicular to the drag is introduced, the tethered object will tilt until the system of forces is balanced. Therefore, measuring the tilt allows calculation of drag force, from which current speed can be obtained. Measuring the direction of tilt gives current heading. Tilt current meters operate under the drag-tilt principle and are designed to either float or sink depending on the type. A floating tilt current meter typically consists of a sub-surface buoyant housing that is anchored to the sea floor with a flexible line or tether. A sinking tilt current is similar, but the housing is designed such that the meter hangs from the attachment point. In either case, the housing tilts as a function of its shape, buoyancy (negative or positive) and the water velocity. Once the characteristics of a housing is known, the velocity can be determined by measuring the angle of the housing and direction of tilt.

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Project Information

RAPID: Mega-typhoon impacts on the metapopulation resilience of coral reef fishes (Reef Fish Resilience)

Coverage: West coast of Leyte Island, Visayas, Philippines

Description from NSF award abstract:
When Typhoon Haiyan hit the Philippines it had sustained winds of 305 to 315 kph and was the strongest storm ever to make landfall. Storms are one of the most important disturbances to coral reef ecosystems. Previous research has primarily emphasized that habitat recovery is important for the recovery of reef fish communities after disturbance. We understand little, however, about the role of larval dispersal in mediating species responses to disturbance. Reef fish function as metapopulations connected by larval dispersal among reefs, and larval connectivity is therefore a critical process for their dynamics. A field site directly in Typhoon Haiyan's path provides an ideal opportunity to address the role of larval dispersal during recovery. Over the course of four field seasons (2008 to 2013), nearly two thousand clownfish were surveyed along 20km of

coastline. Clownfish possess the same basic life history as most reef fish (sedentary adults and pelagic larvae), but are sufficiently rare and visible that genetic parentage methods can be used to follow larval dispersal. This study site is therefore a unique location in which to understand the metapopulation impacts of a massive storm. This project will focus on three hypotheses: 1) Habitat destruction determines the short-term impacts of storms disturbance, 2) Metapopulation processes shape recolonization after disturbance, and 3) Disturbance allows rare competitors to increase in abundance. The project will address these questions with a combination of fixed and random transects to assess reef habitat and reef fish abundance and diversity, as well as detailed, spatially explicit surveys of anemones and clownfish. Genetic mark-recapture and parentage methods with yellowtail clownfish will pinpoint the origin of new recruits that recolonize the reef post-typhoon.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1430218

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