SOLOPC station locations from R/V New Horizon cruise NH1008 in Monterey Bay, near MBARI buoy M1 (36.747?N, 122.022?W); 2010 (GATEKEEPERS project)

Website: https://www.bco-dmo.org/dataset/3734
Version: 24 September 2012
Version Date: 2012-09-24

Project
» Zooplankton feeding at the base of the particle maximum: Gatekeepers of the Vertical Flux? (GATEKEEPERS)

Contributors	Affiliation	Role
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Dataset Description

SOLOPC - Stations
SOLOPC Number, Date, Time, Lat, Lon of deployment and recovery

SOLOPC Specs (.pdf)

Methods & Sampling

Generated from Event Log by BCO_DMO staff

Data Processing Description

Generated from Event Log by BCO_DMO staff

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Data Files

File
SOLOPC_Stations.csv (Comma Separated Values (.csv), 1.08 KB) MD5:29c4a282ae6798336608340589b18443 Primary data file for dataset ID 3734

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Parameters

Parameter	Description	Units
MN_Tow	MOCNESS Tow Number	Dimensionless
Event	Event Number	Dimensionless
Station	Station Number/Id	Dimensionless
ISO_DateTime_Local_Deployed	Deployment Date/Time (PDT) ISO formatted	YYYY-MM-DDTHH:MM:SS.xx[+/-TZ]
Date_Deployed	Deployment Date (PDT)	YYYYMMDD
Time_Deployed	Deployment Time (PDT)	HHMMSS
Latitude_Deployed	Deployment Latitude (South is negative)	decimal degrees
Longitude_Deployed	Deployment Longitude (West is negative)	decimal degrees
ISO_DateTime_Local_Recovered	Recovery Date/Time (PDT) ISO formatted	YYYY-MM-DDTHH:MM:SS.xx[+/-TZ]
Date_Recovered	Recovery Date (PDT)	YYYYMMDD
Time_Recovered	Recovery Time (PDT)	HHMMSS
Latitude_Recovered	Recovery Latitude (South is negative)	decimal degrees
Longitude_Recovered	Recovery Longitude (West is negative)	decimal degrees

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Deployments

NH1008

Website	https://www.bco-dmo.org/deployment/58852
Platform	R/V New Horizon
Report	http://bcodata.whoi.edu/GATEKEEPERS/cruise_plan_checkley_nh_8_25_jul_10_v3.pdf
Start Date	2010-07-08
End Date	2010-07-25
Description	Collaborative Research: Zooplankton at the Base of the Particle Maximum: Gatekeepers of the Vertical Flux?: Deployment and recovery of SOLOPCs in Monterey Bay, plus CTD and MOCNESS deployments in Monterey Bay Cruise information and original data are available from the NSF R2R data catalog. Figure 1. R/V New Horizon Cruise NH1008 GATEKEEPERS [click on the image to view a larger version]

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Project Information

Zooplankton feeding at the base of the particle maximum: Gatekeepers of the Vertical Flux? (GATEKEEPERS)

Website: http://iod.ucsd.edu/gatekeeper/

Coverage: Monterey Bay, CA and waters offshore

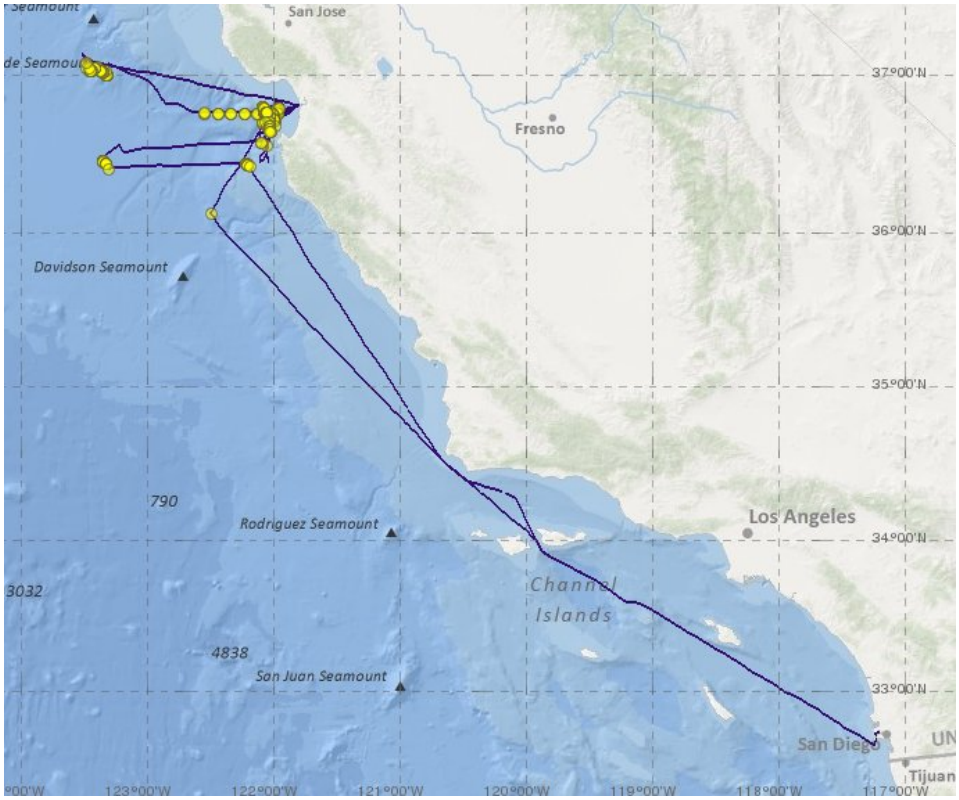
Zooplankton feeding at the base of the particle maximum: Gatekeepers of the Vertical Flux?

A range of observations suggest that zooplankton act as gatekeepers for material leaving the euphotic zone. This study will investigate the interactions of zooplankton with other particles using a suite of autonomous and tethered instruments in conjunction with finescale water sampling. The SOLOPC (Sounding Oceanographic Observer with Laser Optical Plankton Counter) will be the autonomous instrument and provide hourly profiles of zooplankton and other particles. Previous sampling with the SOLOPC indicated a diel cycle of production and abundance of particles in the euphotic zone and their sinking and consumption, presumably by zooplankton observed at the base of the particle abundance maximum. The SOLOPC senses particles, including zooplankton and aggregates, and measures their equivalent spherical diameters which can be used to compute particle size spectra. However, it is difficult to use the SOLOPC to distinguish among particle types, such as copepods, larvaceans, and aggregates, particularly if they are small. The research will include an intensive field study that will take place in Monterey Bay and use adaptive sampling to observe near SOLOPCs with a new, AUV-borne imaging system, ship-based CTD and MOCNESS sampling, and MBARI's ROV Ventana. The investigators will alter a SOLOPC to be stationary relative to an isopycnal and use the particle counts that it accumulates to calculate a flux spectrum. They will combine the flux and concentration spectra to estimate particle sinking velocities as a function of particle diameter. Zooplankton feeding in the water column will be estimated by analyzing the gut fluorescence of animals caught in zooplankton nets and by counting the distribution of fecal pellets in water samples. Results will enhance the understanding of the role of the zooplankton as gatekeepers in the vertical flux of particles and, hence, the biological pump. The study will also provide new insight into factors that affect zooplankton behavior and ecology.

Collaborating institutions include SIO, TAMU, LUMCON, MBARI, BIO, and Université Paris VI. The SOLOPC, modified to measure flux as well as profile, and REFLICS are intended for acquisition and use by other researchers worldwide. The understanding we gain of role of the zooplankton as gatekeepers of the vertical flux will contribute valuably to understanding of the biological pump and the carbon cycle.

PUBLICATIONS PRODUCED AS A RESULT OF THIS RESEARCH
Jackson, GA and DM Checkley Jr. "Particle size distributions in the upper 100 m water column and their implications for animal feeding in the plankton," *Deep-Sea Research*, 2011.

Figure 1. R/V New Horizon Cruise NH1008 GATEKEEPERS
[click on the image to view a larger version]



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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-0927863
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