

Underway MET data 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/3716>

Version: 11 September 2012

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Project

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

Contributors	Affiliation	Role
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Table of Contents

- [Dataset Description](#)
 - [Methods & Sampling](#)
 - [Data Processing Description](#)
- [Data Files](#)
- [Parameters](#)
- [Instruments](#)
- [Deployments](#)
- [Project Information](#)
- [Funding](#)

Dataset Description

Underway MET Data - Corrected

Methods & Sampling

[MET Acquisition](#)

[MET Specs](#)

Data Processing Description

[MET Acquisition](#)

[MET Specs](#)

BCO-DMO Processing/Edits

- Generated from .MET files contributed by Jessica Forrest-Baldini
- Awk routine "NewHorizon_MET_2_BCODMO.awk" generated
- Date generated from filename
- ISO DateTime format generated
- BCO-DMO compatible parameter header generated

Data Files

File
Underway_MET.csv (Comma Separated Values (.csv), 35.73 MB) MD5:95b7a775894af634456fb49468222168 Primary data file for dataset ID 3716

Parameters

Parameter	Description	Units
ISO_DateTime_UTC	Date/Time (UTC) ISO formatted	YYYY-MM-DDTHH:MM:SS.xxZ
Date	Date (UTC)	YYYYMMDD
Time	Time (UTC)	HHMMSS
WS	Rel Wind Speed	M/S
WD	Rel Wind Direction (Direction wind is coming from)	Deg
TW	True Wind Speed	M/S
TI	True Wind Direction (Direction wind is coming from)	Deg
WS_2	WS-2	(tbd)
WD_2	WD-2	(tbd)
TW_2	TW_2	(tbd)
TI_2	TI-2	(tbd)
AT	Air Temperature	Deg C
BP	Barometric Pressure	millibars (mb)
RH	Relative Humidity	percentage
RT	Air Temp (RH module)	Deg C
DP	Dew Point	Deg C
PR	Precipitation	millimeters (mm)
LD	LWR Dome Temperature	Deg K
LB	LWR Body Temperature	Deg K
LT	LWR Thermopile	Volts
LW	Long Wave Radiation (LWR)	W/M ² (Pyrgometer)
SW	Short Wave Radiation (SWR)	W/M ² (Pyranometer)
PA	Surface PAR	uE/Second/Meter ²
ST	Sea Surface Temperature	Deg C
TT	Thermosalinograph Temperature	Deg C
TC	Thermosalinograph Conductivity (with slope offset correction)	milliSiemens per centimeter (mS/cm)

SA	Salinity	PSU
SD	Sigma-t	Kg/m ³
SV	Sound Vel (Chen/Millero)	M/S
TG	Thermosalinograph Conductivity (no slope offset correction)	milliSiemens per centimeter (mS/cm)
FL	Fluorometer	ug/l
FL_2	FL-2	(tbd)
FI	USW Flow Meter	LPM
BT	Bottom Depth	Meters
LA	Latitude Decimal format (South is negative)	decimal degrees
LO	Longitude Decimal format (West is negative)	decimal degrees
GT	GPS Time of Day	GMT Secs 0-86400
CR	Ships Course (GPS COG)	Deg
SP	Ship's Speed (GPS SOG)	Knots
ZD	GPS DateTime	GMT Secs Since 00:00:00 01/01/1970
GA	GPS Altitude (above/below Mean Sealevel)	Meters
GS	GPS Status/Number Satellites 1st digit - Status (see below) Last two digits - Number satellites GPS status indicator **GPS status indicator** 0 = fix not available or invalid 1 = GPS SPS mode fix valid 2 = differential GPS SPS mode fix valid 3 = GPS PPS mode fix valid 4 = Real Time Kinematic. Satellite system used in RTK mode with fixed integers 5 = Float RTK. Satellite system used in RTK mode with floating integers 6 = Estimated (dead reckoning) mode 7 = Manual input mode 8 = Simulator mode	Dimensionless
GY	Ships Heading (Gyrocompass)	Deg
SL	Ship's Speed Log - Longitudinal	Knots
SX	Speed Log - Transverse	Knots
SH	Ashtech Heading	Deg
SM	Ashtech Pitch	Deg
SR	Ashtech Roll	Deg
ZO	Winch Wire Out	Meters
ZS	Winch Speed	MPM
ZT	Winch Tension	LBS
IP	CTD Depth	Meters
IV	CTD Velocity	Meters/Second
IA	CTD Altimeter	Meters

[[table of contents](#) | [back to top](#)]

Instruments

Dataset-specific Instrument Name	SIO Shipboard Meteorological System
Generic Instrument Name	Meteorological Station
Dataset-specific Description	MET Acquisition MET Specs
Generic Instrument Description	MET station systems are designed to record meteorological information on board ships or mounted on moorings. These are commonly referred to as EMET (Electronic Meteorological Packages) or IMET (Improved Meteorological Packages) systems. These sensor packages record measurements of sea surface temperature and salinity, air temperature, wind speed and direction, barometric pressure, solar and long-wave radiation, humidity and precipitation.

[[table of contents](#) | [back to top](#)]

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]

[[table of contents](#) | [back to top](#)]

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.

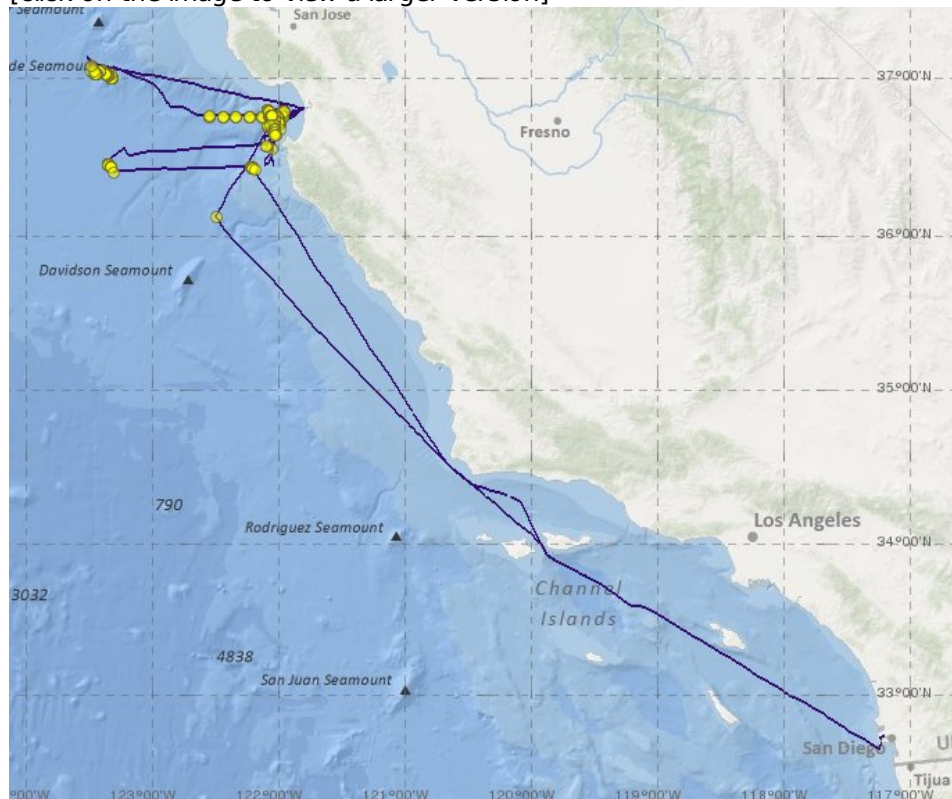
Collaborating institutions include SIO, TAMU, LUMCON, MBARI, BIO, and Université Paris VI. The SOLOPC, modified to measure flux as well as profile, and REFLICS are intended for acquisition and use by other researchers worldwide. The understanding we gain of role of the zooplankton as gatekeepers of the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



[[table of contents](#) | [back to top](#)]

Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-0927863
NSF Division of Ocean Sciences (NSF OCE)	OCE-0928139
NSF Division of Ocean Sciences (NSF OCE)	OCE-0928425

[[table of contents](#) | [back to top](#)]