Particulate Organic Carbon and Nitrogen (POC/N) 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/3725
Version: 20 September 2012
Version Date: 2012-09-20

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

Particulate organic carbon and nitrogen as measured by high-temperature combustion

Methods & Sampling

POCN Methods

Data Processing Description

POCN Methods

NH1008 - POC/N Analysis

	Nitrogen:				Carbon:				
Run	Blank a	Blank b	EA A N	Blank	Slope	Blank a	Blank b	EA A C	Blank	Slope
1	5.6353	5.1792	10.8145	2171	37.3	20.3	57.6199	5488.000		
2	6.3305	5.716	12.0465	2140	13.5539	16.076	29.6296	5429.000		
3	4.9739	5.1529	10.1268	2010	14.7173	15.540	30.2569	5113.000		
4	3.6848	3.7768	7.4616	2050	18.9707	15.983	34.9536	5135.000		

BCO-DMO Processing/Edits

- Generated from original file "NH1008_POM_JFB_13Dec2010_000.xls" contributed by Jessica Forrest-Baldini
- CTD UTC Date, UTC Time, Lat, Lon inserted from CTD station data (CTD headers)
- PDT Date reformatted to YYYYMMDD
- Parameter names modified to conform to BCO-DMO conventions (blanks to underscores, etc.)
- Parameter "Sample_Number" assigned to column of numbers associated with the samples
- "nd" (no data) inserted in black cells

[table of contents | back to top]

Data Files

File
POC_PON_Analysis.csv (Comma Separated Values (.csv), 13.82 KB) MD5:b7fa9a195c84b1a0fc2063a2c50c7d08 Primary data file for dataset ID 3725

[table of contents | back to top]

Parameters

Parameter	Description	Units
CTD_Cast	CTD Cast Number/Id	Dimensionless
ISO_DateTime_UTC	CTD Date/Time from Header File (UTC) ISO formatted	YYYY-MM-DDTHH:MM:SS.xxZ
Date	CTD Date from Header File (UTC)	YYYYMMDD
Time	CTD Time from Header File (UTC)	HHMMSS
Latitude	CTD Latitude from Header File (South is negative)	decimal degrees
Longitude	CTD Longitude from Header File (West is negative)	decimal degrees
CTD_Start_Date	CTD Start Date (PDT)	YYYYMMDD
CTD_Start_Time	CTD Start Time (PDT)	HHMM
CTD_Recorded_Time	CTD Recorded Time (PDT)	HHMM
Niskin_Bottle_Number	Niskin Bottle Number	Dimensionless
Target_Depth	Target Depth	Meters
Volume_Filtered	Volume Filtered	Liters
N_mg	mgN/L	mg/L
C_mg	mgC/L	mg/L
N_ug	ugN/L	ug/L
C_ug	ugC/L	ug/L
C_to_N_Ratio	C/N Ratio	Ratio

[table of contents | back to top]

Instruments

Dataset-specific Instrument Name	CHN Elemental Analyzer
Generic Instrument Name	CHN Elemental Analyzer
Dataset-specific Description	ECS 4010 CHNSO Analyzer
Generic Instrument Description	A CHN Elemental Analyzer is used for the determination of carbon, hydrogen, and nitrogen content in organic and other types of materials, including solids, liquids, volatile, and viscous samples.

Dataset-specific Instrument Name	Neutrally Buoyant Sediment Trap
Generic Instrument Name	Neutrally Buoyant Sediment Trap
Generic Instrument Description	In general, sediment traps are specially designed containers deployed in the water column for periods of time to collect particles from the water column falling toward the sea floor. The Neutrally Buoyant Sediment Trap (NBST) was designed by researchers at Woods Hole Oceanographic Institution. The central cylinder of the NBST controls buoyancy and houses a satellite transmitter. The other tubes collect sediment as the trap drifts in currents at a predetermined depth. The samples are collected when the tubes snap shut before the trap returns to the surface. (more: http://www.whoi.edu/instruments/viewInstrument.do?id=10286)

Dataset-specific Instrument Name	CTD Sea-Bird SBE 911plus
Generic Instrument Name	Sea-Bird SBE 911plus CTD
Generic Instrument Description	[tethered, real-time] The Sea-Bird SBE 911 plus is a type of CTD instrument package for continuous measurement of conductivity, temperature and pressure. The SBE 911 plus includes the SBE 9plus Underwater Unit and the SBE 11plus Deck Unit (for real-time readout using conductive wire) for deployment from a vessel. The combination of the SBE 9 plus and SBE 11 plus is called a SBE 911 plus. The SBE 9 plus uses Sea-Bird's standard modular temperature and conductivity sensors (SBE 3 plus and SBE 4). The SBE 9 plus CTD can be configured with up to eight auxiliary sensors to measure other parameters including dissolved oxygen, pH, turbidity, fluorescence, light (PAR), light transmission, etc.). more information from Sea-Bird Electronics

[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

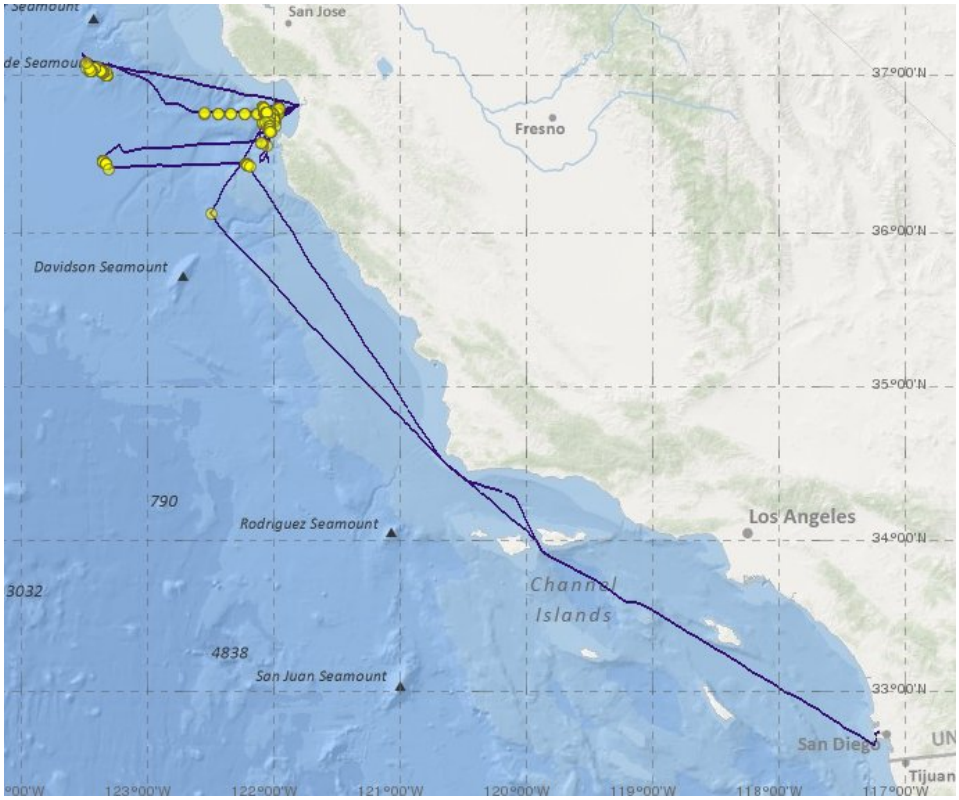
Zooplankton feeding at the base of the particle maximum: Gatekeepers of the Vertical Flux?

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
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[table of contents | back to top]