Nutrient Analysis: Nitrate, Nitrite, Silicate, Phosphate and Ammonium 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/3722
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
Checkley, David M.	University of California-San Diego (UCSD-SIO)	Principal Investigator, Contact
Dagg, Michael	Louisiana Universities Marine Consortium (LUMCON)	Co-Principal Investigator
Jackson, George A.	Texas A&M University (TAMU)	Co-Principal Investigator
Gegg, Stephen R.	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager

Table of Contents

Dataset Description

The phytoplankton macro nutrients nitrate, nitrite, silicate, phosphate and ammonium were analyzed in seawater using a colorimetric assay in which light absorbance is measured versus known standards.

Methods & Sampling

Nutrient Methods

Data Processing Description

Nutrient Methods

ANAL 1008NH.ANL
RUN check1.RUN
DATE 7/29/2010
TIME 9:15:18
OPER dgs
COMM Checkley-New Horizon July2010

Dissolved oxygen samples
Collected July2010 New Horizon Checkley

Analyzed @ Isaacs Hall 28July2010
Flask Volume (mL) Draw Temp C Concentration (mL/L)
1071 149.1 10.7 3.38
1178 142.41 12 5.55

BCO-DMO Processing/Edits
- Generated from original file "checkley_july2010-1.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
Nuts_ODF_Nuts.csv (Comma Separated Values (.csv), 11.34 KB) MD5:a520ba58be34164d9b61a4d32ae5f47d Primary data file for dataset ID 3722

[table of contents | back to top]

Parameters

Parameter	Description	Units
CTD_Cast	CTD Cast Number/Id	Dimensionless
Our_Station	Station Number	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
Depth	Sample Depth	meters
Sample_Number	Sample Number	Dimensionless
NO3	Nitrate	umol/L
PO4	Phosphate	umol/L
SIL	Silicate	umol/L
NO2	Nitrite	umol/L
NH4	Ammonia	umol/L

[table of contents | back to top]

Instruments

Dataset-specific Instrument Name	CTD Sea-Bird SBE 911plus
Generic Instrument Name	CTD Sea-Bird SBE 911plus
Generic Instrument Description	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

Dataset-specific Instrument Name	Niskin bottle
Generic Instrument Name	Niskin bottle
Generic Instrument Description	A Niskin bottle (a next generation water sampler based on the Nansen bottle) is a cylindrical, non-metallic water collection device with stoppers at both ends. The bottles can be attached individually on a hydrowire or deployed in 12, 24, or 36 bottle Rosette systems mounted on a frame and combined with a CTD. Niskin bottles are used to collect discrete water samples for a range of measurements including pigments, nutrients, plankton, etc.

Dataset-specific Instrument Name	Nutrient Autoanalyzer
Generic Instrument Name	Nutrient Autoanalyzer
Dataset-specific Description	Seal Analytical continuous-flow AutoAnalyzer 3 (AA3)
Generic Instrument Description	Nutrient Autoanalyzer is a generic term used when specific type, make and model were not specified. In general, a Nutrient Autoanalyzer is an automated flow-thru system for doing nutrient analysis (nitrate, ammonium, orthophosphate, and silicate) on seawater samples.

[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

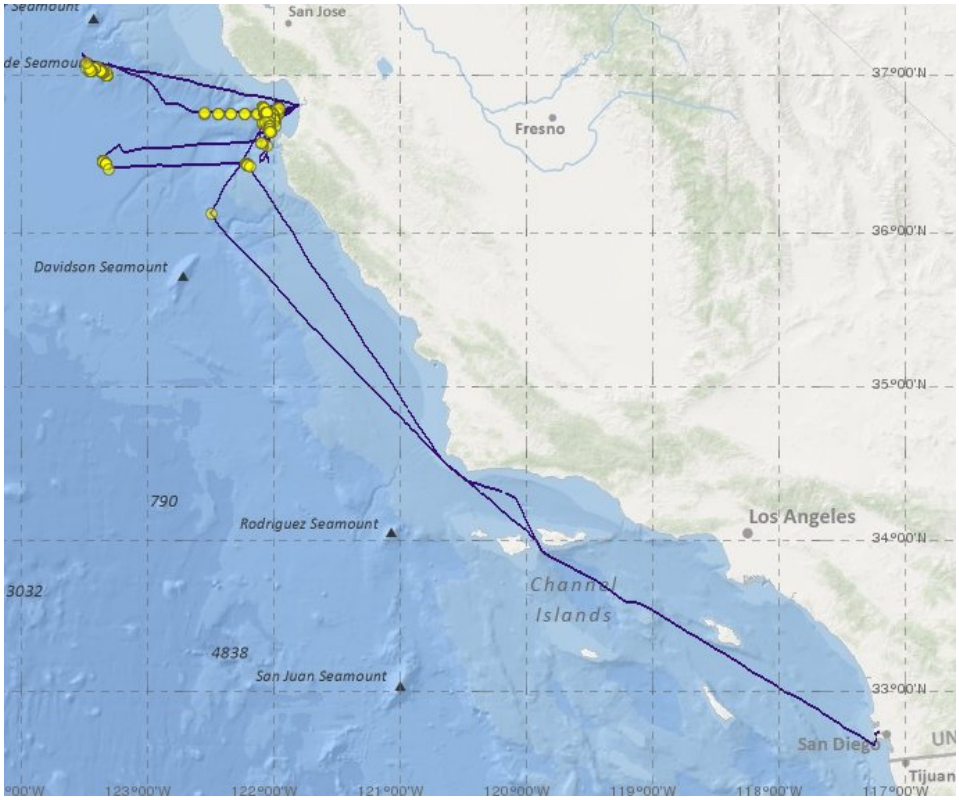
Zooplankton feeding at the base of the particle maximum: Gatekeepers of the Vertical Flux?

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]