SOLOPC CTD profiles from cruises NH1008, NH1307 in Monterey Bay, tentatively near MBARI buoy M1 (36.747?N, 122.022?W), Southern California Bight 33?N 118?W; 2010 and 2013 (GATEKEEPERS project)

Website: https://www.bco-dmo.org/dataset/3736
Version: 26 November 2014
Version Date: 2014-11-26

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

SOLOPC - CTD Profile Data
SOLOPC File Number, Date, Time, Lat, Lon from data file header record
Depth, Temperature, Salinity Profile

SOLOPC Specs (.pdf)

Methods & Sampling

Data are from standard SOLO-I CTD on the SOLOPC. The SOLOPC is described in Checkley, D.M., R.E. Davis, A.W. Herman, G.A. Jackson, B. Beanlands and L.A. Regier (2008). Assessing plankton and other particles in situ with the SOLOPC. Limnology and Oceanography 53(5): 2123-2136.

Each original file contains three record types:
G 7 19 Apr 2013 1:50 +32 59.40 -117 53.22
Record type (GPS) – profile number – date – time – latitude – longitude

D 7 94 npts
Record type (data amount) – profile number – number of samples

p 7 4.7 16.006 33.541
Record type (CTD data) – profile number – depth (m) – temperature (°C) - salinity

SOLOPC Specs (.pdf)

Data Processing Description

The CTD data were archived on the SOLOPC in hex format. The only processing done was to convert the hex to ascii.

Each original file contains three record types:
G 7 19 Apr 2013 1:50 +32 59.40 -117 53.22
Record type (GPS) – profile number – date – time – latitude – longitude

D 7 94 npts
Record type (data amount) – profile number – number of samples

p 7 4.7 16.006 33.541
Record type (CTD data) – profile number – depth (m) – temperature (°C) - salinity

BCO-DMO Processing/Edits
- Generated from SOLOPC CTD data (GK*_txt/ctd_log_*.txt files) contributed by Jessica Forrest-Baldini and David Checkley
- Awk routine "NewHorizon_SOLOPC_CTDlog_2_BCODMO.awk" generated to convert .txt files to bco-dmo formatted files
- Spaces converted to tabs
- BCO-DMO compatible parameter header generated
- File number, Date, Time, Latitude, Longitude extracted from data file header record
- ISO Date/Time Generated
- Date formatted to YYYYMMDD
- Time formatted to HHMM
- Lat deg, decimal minutes converted to decimal degrees
- Lon deg, decimal minutes converted to decimal degrees
- A few (<10) spurious longitude values (signed positive) corrected to negative for West Longitude

[table of contents | back to top]

Data Files

File
SOLOPC_CTD.csv (Comma Separated Values (.csv), 18.89 MB) MD5:09a69c6433665a47fede33c4315c6320 Primary data file for dataset ID 3736

[table of contents | back to top]

Parameters

Parameter	Description	Units
CruiseId	Official UNOLS Cruise Id	text
SOLOPC_Deployment	SOLOPC Deployment Id	text
DataFile	Data File	text
FileNumber	DataFile/Header Record: File Number	Dimensionless
ISO_DateTime_UTC	DataFile/Header Record: Date/Time (UTC) ISO formatted	YYYY-MM-DDTHH:MM:SS.xx[+/-TZ]
Date	DataFile/Header Record: Date (UTC)	YYYYMMDD
Time	DataFile/Header Record: Time (UTC)	HHMM
Latitude	DataFile/Header Record: Latitude (South is negative)	decimal degrees
Longitude	DataFile/Header Record: Longitude (West is negative)	decimal degrees
depth	Depth	meters
temp	Temperature	degrees celsius
sal	Salinity	PSU

[table of contents | back to top]

Instruments

Dataset-specific Instrument Name	Laser Optical Plankton Counter
Generic Instrument Name	Laser Optical Plankton Counter
Dataset-specific Description	SOLOPC Specs (.pdf)
Generic Instrument Description	Laser Optical Plankton Counter (LOPC)

[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]

NH1307

Website	https://www.bco-dmo.org/deployment/540436
Platform	R/V New Horizon
Start Date	2013-04-18
End Date	2013-04-18
Description	Cruise information and original data are available from the NSF R2R data catalog. **Methods & Sampling** SOLOPC 2930 and 2931 were deployed during NH1307 and allowed to drift, profile, and sample, during which time CTD and LOPC data were acquired.

[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

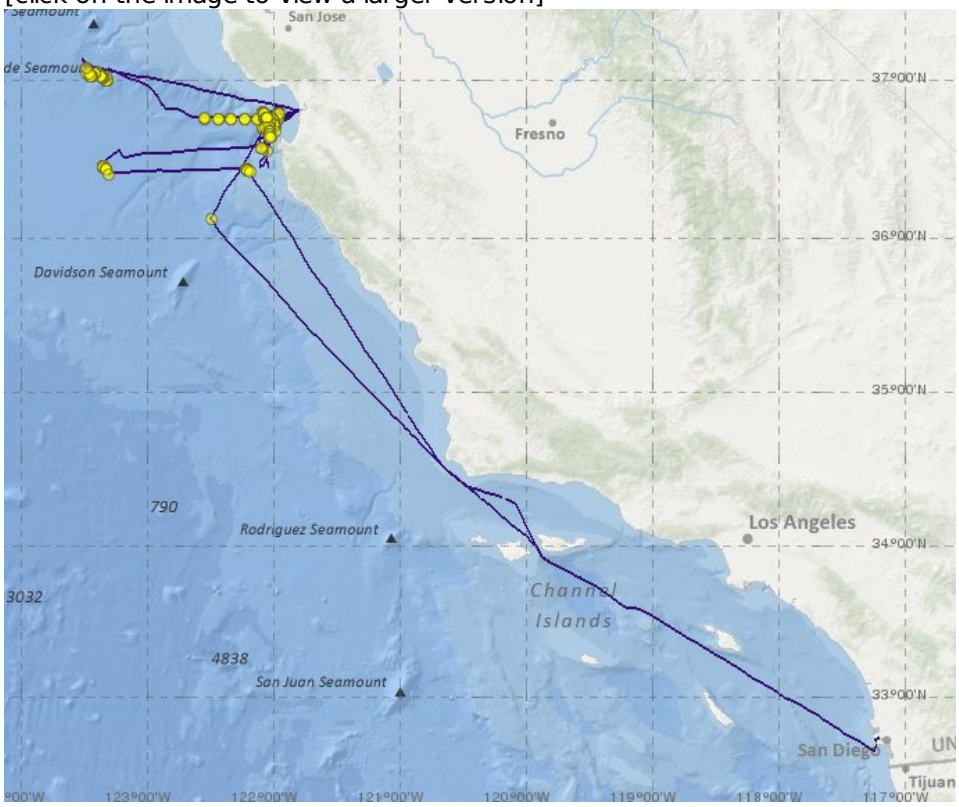
distribution of fecal pellets in water samples. Results will enhance the understanding of the role of the zooplankton as gatekeepers in the vertical flux of particles and, hence, the biological pump. The study will also provide new insight into factors that affect zooplankton behavior and ecology.

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]