Scientific sampling event log from R/V Oceanus, R/V New Horizon OC473, NH1208 in in the western N. Atlantic and eastern Pacific, 2011-2012 (OAPS project)

Website: https://www.bco-dmo.org/dataset/3528
Version: 23 September 2011
Version Date: 2011-09-23

Project
» Horizontal and Vertical Distribution of Thecosome Pteropods in Relation to Carbonate Chemistry in the Northwest Atlantic and Northeast Pacific (OAPS)

Programs
» Science, Engineering and Education for Sustainability NSF-Wide Investment (SEES): Ocean Acidification (formerly CRI-OA) (SEES-OA)
» Ocean Carbon and Biogeochemistry (OCB)

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Dataset Description

This scientific sampling event log was created using an early implementation of the Rolling Deck to Repository (R2R) event log application (ELOG with cruise-specific custom configuration files). The log includes a record of all scientific sampling events from the cruise. In addition to event identification numbers unique for the cruise, the scientific sampling event log includes date and time (GMT), position (latittude and longitude), station and cast identifier as appropriate to the sampling event, sampling instrument name (e.g. CTD, TM, MOC10), name of person responsible for the sampling event, and a comment field to record additional information.

Methods & Sampling

For acquistion information, read about the R2R scientific sampling event log.

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Data Files

File
event_log.csv (Comma Separated Values (.csv), 245.96 KB) MD5:4dd54c2a0ca5c5e2f8ada52bc3f4bffc Primary data file for dataset ID 3528

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Parameters

Parameter	Description	Units
cruise_id	Cruise_ID	dimensionless
event	unique sampling event number derived from local YYYYMMDD.HHMM	dimensionless
time_local	local time (close to EDT) as 2400 clock HHMM format	dimensionless
date	date (UTC) as YYYYMMDD	dimensionless
time	time (UTC) using 24 hour clock HHMM format	dimensionless
lat	latitude (North is positive; South is negative)	decimal degrees
lon	longitude (East is positive; West is negative)	decimal degrees
instrument	name of sampling device	dimensionless
activity	activity performed with the instrument	dimensionless
transect	transect number	dimensionless
station	station number	dimensionless
cast	cast number	dimensionless
depth_w	depth of water; seafloor depth from the shipboard 12 kHz Knudsen echosounder	meters
author	name of person entering the event	dimensionless
comment	free text comment	dimensionless

PI_name	name of investigator responsible for the data from a sampling device	dimensionless
year	year that sampling was done	dimensionless
cruise_description	brief description of the type of cruise; indicates whether the cruise was planned for before or after the Herring spawning season	dimensionless
date_local	date of activity in local time, designated as yyyymmdd	dimensionless
depth_cast	depth of cast or tow	meters
start_date	date for start of cruise	dimensionless
end_date	date for end of cruise	dimensionless
chief_scientist	name of chief scientist for this cruise	dimensionless

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Deployments

OC473

Website	https://www.bco-dmo.org/deployment/58720
Platform	R/V Oceanus
Report	http://hdl.handle.net/1834/43091
Start Date	2011-08-07
End Date	2011-09-01

Description	The primary objective of the proposed research is to quantify the distribution, abundance, species composition, shell condition, and vertical migratory behavior of oceanic thecosome pteropods in the northwest Atlantic and northeast Pacific, and correlate these quantities to hydrography and concurrent measurements of carbonate chemistry, including vertical and horizontal distributions of aragonite saturation. During OC473, the first cruise in the Atlantic, a combination of underway data collection and station activities will be conducted along a transect spanning 15 degrees of latitude (35° to 50° N) in the northwest Atlantic, employing six instrument packages: (1) a 1-m2 MOCNESS plankton net system; (2) a profiling Video Plankton Recorder / CTD package, including bottles for water sampling; (3) a deep (500m) towed broadband acoustic scattering system ; 94) a hull-mounted narrowband multi-frequency acoustic scattering system. It is possible that the hull mounted transducers will suffer from noise when the vessel is underway and so as a backup we will have a surface-towed sled with a backup complement of transducers; 5) an underway multi-parameter inorganic carbon analyzer and 6) a suite of chemistry-related instruments including a DIC auto-analyzer for discret bottle sample analysis, an alkalinity auto-titrator for bottle analysis and an Agilent spectrophotometer for discrete pH measurement. Supporting documentation: Cruise track image Cruise information and original data are available from the NSF R2R data catalog. **Methods & Sampling** This event log used a test version of the R2R EventLogger software, Elog. Elog is an open source browser-based event logger from the NSF program "Rolling Deck to Repository" [http://www.whoi.edu/page.do?pid=35716]. Events could be entered to Elog from any computer that was connected to the ship's intranet. After some research the IP address was discovered so that this was true for wired and wirelessly connected computers. Prior to the cruise, the headings were custom assigned such as the addition of transect and local time according to the specifications of the Chief Scientist. The list of instruments and names of cruise participants was created and edited in the configuration file. At first, the event entries were often missed or delayed but this improved quickly once routines were established. An event could be queued up with all the information except for the local time prior to the event. Once it occurred, the local time would be added and the event submitted At that moment, the position and UTC time were automatically updated. This was fine as long as the event was entered promptly. If it was added later, the UTC time and event number were off and had to be manually edited. Position data for late entries were also updated to the moment of submission and will need to be corrected post-cruise as this information was not readily available. The echosounder interfered with the other science acoustics and was therefore only turned on briefly prior to CTD casts. It was thought that a script unsuccessfully looking for seafloor depth resulted in a significant delay for 'new' and 'duplicate' events. When the script was edited so that depth wasn't included, it did not seem to speed things up. It took about 10 seconds for a new or duplicate page to appear. This was found to be uncomfortably long and should be examined further by the R2R team. **Processing Description** During and post-cruise, the event log was examined and corrected as necessary. One person was in charge of checking the log to make corrections in locked fields (event number, UTC time, etc) and to check for consistency such as: - corrected bad lat/lon data by matching time to alongtrack positions. - made sure end events following start events - corrected transect numbers - added column for UTC time, calculated from local time. The time_GPS is not always correct - it is based on when the event was entered and not the actual time of the event.

NH1208

Website	https://www.bco-dmo.org/deployment/58830
Platform	R/V New Horizon
Report	http://hdl.handle.net/1834/43090
Start Date	2012-08-09
End Date	2012-09-18
Description	The primary objective of this cruise was to quantify the distribution, abundance, species composition, shell condition, and vertical migratory behavior of oceanic thecosome pteropods in the northeast Pacific, and correlate these quantities to concurrent measurements of carbonate chemistry. Underway data collection and station activities were conducted on a transect running between 35 and 50N along CLIVAR line P17N. Six instrument types were used: (1) a 1-m2 MOCNESS plankton net system and a 1-m diameter Reeve net; (2) a profiling Video Plankton Recorder mounted on the CTD package that includes a Rosette system with Niskin bottles for water sampling; (3) a deep (500 meter) towed broadband acoustic scattering system; (4) a surface narrowband multi-frequency acoustic scattering system; (5) an underway multi-parameter inorganic carbon analyzer and a GO underway pCO2 system; and (6) a suite of chemistry-related lab instruments for bottle sample analysis including a DIC auto-analyzer, an alkalinity auto-titrator, and an Agilent spectrophotometer for pH measurement. The R/V New Horizon departed from Newport OR, and set a course for the transect start point at 50N 150W. Following instrument package test deployments over the continental shelf, the transect ran in a single zig-zag between the start point and the end at 35N 135W; a total of 34 stations were sampled along the transect, every 1/2 degree of latitude. In addition 10 other stations were sampled with a Reeve net for live experimental pteropods. The science party, divided into biology and chemistry teams conducted 24-hour operations. Cruise information and original data are available from the NSF R2R data catalog. **Methods & Sampling** Event log captured using the R2R Elog software and server on board the ship. **Processing Description** Dates and positions were checked to ensure accuracy.

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Project Information

Horizontal and Vertical Distribution of Thecosome Pteropods in Relation to Carbonate Chemistry in the Northwest Atlantic and Northeast Pacific (OAPS)

Coverage: 35 and 50 degrees North in the northwest Atlantic and northeast Pacific

Modified version of the NSF award abstract:
The impact of ocean acidification on marine ecosystems represents a vital question facing both marine scientists and managers of ocean resources. Thecosome pteropods are a group of calcareous planktonic molluscs widely distributed in coastal and open ocean pelagic ecosystems of the worldi¦s oceans. These animals secrete an aragonite shell, and thus are highly sensitive to ocean acidification due to the water column's changing carbonate chemistry, and particularly the shoaling of the aragonite compensation depth at which seawater becomes corrosive to aragonite. In many regions, however, relatively little is known about the abundance, distribution, vertical migratory behavior, and ecological importance of pteropods. Assessing the likely ecosystem consequences of changes in pteropod dynamics resulting from ocean acidification will require a detailed understanding of pteropod distribution and abundance relative to changing aragonite saturation in the water column.

The primary objective of this project is to quantify the distribution, abundance, species composition, shell condition, and vertical migratory behavior of oceanic thecosome pteropods in the northwest Atlantic and northeast Pacific, and correlate these quantities to hydrography and concurrent measurements of carbonate

chemistry, including vertical and horizontal distributions of aragonite saturation. In particular, the project will capitalize on present-day variability in the depth distribution of aragonite saturation levels within and between the Atlantic and Pacific Oceans as a "natural experiment" to address the hypotheses that pteropod vertical distribution, species composition, and abundance vary as the compensation depth becomes shallower. Secondary objectives are to develop acoustic protocols for the remote quantification of pteropod abundance for future integration into ocean acidification monitoring networks, and to characterize carbonate chemistry and nutrients along portions of two WOCE/CLIVAR Repeat Hydrography transects (A20 in the Atlantic and P17N in the Pacific) to identify decadal-scale changes in the carbonate system. These hypotheses and objectives will be addressed through two cruises along survey transects between 35 and 50 degrees North in the northwest Atlantic and northeast Pacific involving a combination of station-work and underway measurements, and a comprehensive array of instruments, including acoustic, optical, towed net, hydrographic, and carbonate chemistry sensors and sampling systems.

This highly inter-disciplinary project, combines expertise in zooplankton ecology, acoustics, and marine chemistry. The proposed work will result in a detailed baseline understanding of variability in the horizontal and vertical distribution, as well as species composition, of thecosome pteropods in the northwest Atlantic and northeast Pacific, making a key contribution to zooplankton ecology generally. In addition, by quantifying the response to current spatial variability within and between the Atlantic and Pacific Oceans, the project will provide important information on the likely response of pteropod distribution to future changes in the vertical distribution of aragonite saturation levels, a necessary component in modeling the impacts of ocean acidification on marine ecosystem function, services, and resources.

Ocean acidification is increasingly appreciated as an urgent societal concern. Thecosome pteropods are key prey for a variety of commercially-exploited fish species, and the improved understanding the PIs seek of pteropod distribution and likely response to changing water column carbonate chemistry will have important implications for our understanding of potential effects of ocean acidification on marine resources.

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Program Information

Science, Engineering and Education for Sustainability NSF-Wide Investment (SEES): Ocean Acidification (formerly CRI-OA) (SEES-OA)

Website: https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503477

Coverage: global

NSF Climate Research Investment (CRI) activities that were initiated in 2010 are now included under Science, Engineering and Education for Sustainability NSF-Wide Investment (SEES). SEES is a portfolio of activities that highlights NSF's unique role in helping society address the challenge(s) of achieving sustainability. Detailed information about the SEES program is available from NSF (https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504707).

In recognition of the need for basic research concerning the nature, extent and impact of ocean acidification on oceanic environments in the past, present and future, the goal of the SEES: OA program is to understand (a) the chemistry and physical chemistry of ocean acidification; (b) how ocean acidification interacts with processes at the organismal level; and (c) how the earth system history informs our understanding of the effects of ocean acidification on the present day and future ocean.

Solicitations issued under this program:
NSF 10-530, FY 2010-FY2011
NSF 12-500, FY 2012
NSF 12-600, FY 2013
NSF 13-586, FY 2014
NSF 13-586 was the final solicitation that will be released for this program.

PI Meetings:

1st U.S. Ocean Acidification PI Meeting(March 22-24, 2011, Woods Hole, MA)
2nd U.S. Ocean Acidification PI Meeting(Sept. 18-20, 2013, Washington, DC)
3rd U.S. Ocean Acidification PI Meeting (June 9-11, 2015, Woods Hole, MA – Tentative)

NSF media releases for the Ocean Acidification Program:

Press Release 10-186 NSF Awards Grants to Study Effects of Ocean Acidification

Discovery Blue Mussels "Hang On" Along Rocky Shores: For How Long?

Discovery nsf.gov - National Science Foundation (NSF) Discoveries - Trouble in Paradise: Ocean Acidification This Way Comes - US National Science Foundation (NSF)

Press Release 12-179 nsf.gov - National Science Foundation (NSF) News - Ocean Acidification: Finding New Answers Through National Science Foundation Research Grants - US National Science Foundation (NSF)

Press Release 13-102 World Oceans Month Brings Mixed News for Oysters

Press Release 13-108 nsf.gov - National Science Foundation (NSF) News - Natural Underwater Springs Show How Coral Reefs Respond to Ocean Acidification - US National Science Foundation (NSF)

Press Release 13-148 Ocean acidification: Making new discoveries through National Science Foundation research grants

Press Release 13-148 - Video nsf.gov - News - Video - NSF Ocean Sciences Division Director David Conover answers questions about ocean acidification. - US National Science Foundation (NSF)

Press Release 14-010 nsf.gov - National Science Foundation (NSF) News - Palau's coral reefs surprisingly resistant to ocean acidification - US National Science Foundation (NSF)

Press Release 14-116 nsf.gov - National Science Foundation (NSF) News - Ocean Acidification: NSF awards $11.4 million in new grants to study effects on marine ecosystems - US National Science Foundation (NSF)

Ocean Carbon and Biogeochemistry (OCB)

Website: http://us-ocb.org/

Coverage: Global

The Ocean Carbon and Biogeochemistry (OCB) program focuses on the ocean's role as a component of the global Earth system, bringing together research in geochemistry, ocean physics, and ecology that inform on and advance our understanding of ocean biogeochemistry. The overall program goals are to promote, plan, and coordinate collaborative, multidisciplinary research opportunities within the U.S. research community and with international partners. Important OCB-related activities currently include: the Ocean Carbon and Climate Change (OCCC) and the North American Carbon Program (NACP); U.S. contributions to IMBER, SOLAS, CARBOOCEAN; and numerous U.S. single-investigator and medium-size research projects funded by U.S. federal agencies including NASA, NOAA, and NSF.

The scientific mission of OCB is to study the evolving role of the ocean in the global carbon cycle, in the face of environmental variability and change through studies of marine biogeochemical cycles and associated ecosystems.

The overarching OCB science themes include improved understanding and prediction of: 1) oceanic uptake and release of atmospheric CO2 and other greenhouse gases and 2) environmental sensitivities of biogeochemical cycles, marine ecosystems, and interactions between the two.

The OCB Research Priorities (updated January 2012) include: ocean acidification; terrestrial/coastal carbon fluxes and exchanges; climate sensitivities of and change in ecosystem structure and associated impacts on biogeochemical cycles; mesopelagic ecological and biogeochemical interactions; benthic-pelagic feedbacks on biogeochemical cycles; ocean carbon uptake and storage; and expanding low-oxygen conditions in the coastal and open oceans.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1041068

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