CTD measurements from three mesocosms located near Hawaii and surrounding Pacific waters from Dec 6-11, 2011CTD - BAG 1 from R/V Ka'imikai-O-Kanaloa KOK1115 in the Near Kona, Hawaii from December 2011 (C-MORE project)

Website: https://www.bco-dmo.org/dataset/553900
Version: 17 March 2015
Version Date: 2015-03-17

Project
» Center for Microbial Oceanography: Research and Education (C-MORE)

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Table of Contents

- Dataset Description
  - Methods & Sampling
- Data Files
- Parameters
- Instruments
- Deployments
- Project Information
- Funding

Dataset Description

CTD measurements from three mesocosms located near Hawaii as well as the surrounding Pacific waters from Dec 6-11, 2011. The first mesocosm (BAG-1A) was a control. The following nutrients were added to the other two mesocosms (BAG-1B and BAG-1C): N, Si, trace metals and vitamins. In addition, phosphorus was added to BAG-1C only.

Methods & Sampling

C-MORE BAG-EM-UP/BAG-1 CTD data
Laboratory for Microbial Oceanography
David Karl
CMORE/BAG-EM-UP
date ingested into BCO-DMO: March 17 2015

[table of contents | back to top]

Data Files

File
CTD_bag1.csv(Comma Separated Values (.csv), 617.14 KB) MD5:3793965706d8597c427e8d08e7de0615 Primary data file for dataset ID 553900

[table of contents | back to top]

Parameters

Parameter	Description	Units
date	date	YYYYMMDD
location_id	location ID	dimensionless
treatment	treatment applied	dimensionless
lat	latitude (positive north)	decimal degrees
lon	longitude (positive east)	decimal degrees
press	pressure	decibars
temp	temperature	degrees Celsius (ITS-90)
sal	salinity	dimensionless (PSS-78)
cond	conductivity	milliSiemens/centimeter
sigma_t	potential density	kilograms/meter^3 - 1000
pH	pH	dimensionless
chl_a	chlorophyll a concentration	micrograms/liter
turbidity	turbidity	Formazin Turbidity Unit (FTU)
O2_sat_pcnt	oxygen saturation	percent
O2	oxygen; dissolved	milligrams/liter
PAR	PAR	microEinsteins/meter^2/second

[table of contents | back to top]

Instruments

Dataset-specific Instrument Name	CTD 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

KOK1115

Website	https://www.bco-dmo.org/deployment/516667
Platform	R/V Ka`imikai-O-Kanaloa
Report	http://cmore.soest.hawaii.edu/cmoredata/logs/BAG/BAG1/BAG1_Post_Cruise_Summation.pdf
Start Date	2011-12-03
End Date	2011-12-13
Description	BAG EM UP (Biogeochemistry and Genomes (BAG-1) Mesocosm Experiment: Experimental Long term ocean ecology characterization is predicated on a variety of in situ shorter term experiments and field exercises. These shorter term experiments can be generally classed in one of two ways. The first way of approach is to observe or capture physical or biogeochemical ocean events that are short term in duration or in location. We would consider the use of the research vessel or autonomous vehicle, or sediment trap part of this first approach. The second type of experiment is also an in situ approach, where one perturbs a “subset” of the natural ecosystem by manipulating or isolating various features (and/or processes) to test a hypothesis. This is illustrated with the use of instruments such as the wave pump (transport mechanism) or with our current effort to utilize a system of larger ‘bags’ called mesocosms (larger volume subset) to induce a phytoplankton response. Historically, the mesocosm is akin to the use of lakes or ponds to test the growth response (negative or positive) of an ecosystem when artificially exposed to a variety of chemical substances. The mesocosm does enclose a larger mass of water but it is different from a pond or lake, in that the ratio of the vertical depth (benthic) to the horizontal affords the user unique opportunities to simulate depth or measure stratified characteristics of plankton communities. In this particular cruise experiment, IFM-GEOMAR and C-MORE are partnering together to utilize three mesocosms in the open ocean to study the biogeochemical effects to Deep Sea Water (DSW) nutrient additions. This exercise has both engineering and scientific components. The first part is to test the feasibility of deploying and successfully maintaining large scale mesocosms in the open ocean. This mesocosm design has been successfully used in the Arctic region: Ny-Alesund | Svalbard, so our goal is to extend its usage into more potential hostile conditions. The second part is to measure the surface response of the phytoplankton when deep water macro and micro nutrients are added in. Website Introduction Post Cruise Summary Cruise Log Bridge Log Cast Sheets

[table of contents | back to top]

Project Information

Center for Microbial Oceanography: Research and Education (C-MORE)

Website: http://cmore.soest.hawaii.edu/

Coverage: North Pacific Subtropical Gyre (large region around 22 45 N, 158 W)

Project summary

The **Center for Microbial Oceanography: Research and Education** (C-MORE) is a recently established (August 2006; NSF award: EF-0424599) NSF-sponsored Science and Technology Center designed to facilitate a more comprehensive understanding of the diverse assemblages of microorganisms in the sea, ranging from the genetic basis of marine microbial biogeochemistry including the metabolic regulation and environmental controls of gene expression, to the processes that underpin the fluxes of carbon, related bioelements and energy in the marine environment. Stated holistically, C-MORE's primary mission is: *Linking Genomes to Biomes*.

We believe that the time is right to address several major, long-standing questions in microbial oceanography. Recent advances in the application of molecular techniques have provided an unprecedented view of the structure, diversity and possible function of sea microbes. By combining these and other novel approaches with more well-established techniques in microbiology, oceanography and ecology, it may be possible to develop a meaningful predictive understanding of the ocean with respect to energy transduction, carbon sequestration, bioelement cycling and the probable response of marine ecosystems to global environmental variability and climate change. The strength of C-MORE resides in the synergy created by bringing together experts who traditionally have not worked together and this, in turn, will facilitate the creation and dissemination of new knowledge on the role of marine microbes in global habitability.

The new Center will design and conduct novel research, broker partnerships, increase diversity of human resources, implement education and outreach programs, and utilize comprehensive information about microbial life in the sea. The Center will bring together teams of scientists, educators and community members who otherwise do not have an opportunity to communicate, collaborate or design creative solutions to long-term ecosystem scale problems. The Center's research will be organized around four interconnected themes:

- (Theme I) microbial biodiversity,
- (Theme II) metabolism and C-N-P-energy flow,
- (Theme III) remote and continuous sensing and links to climate variability, and
- (Theme IV) ecosystem modeling, simulation and prediction.

Each theme will have a leader to help coordinate the research programs and to facilitate interactions among the other related themes. The education programs will focus on pre-college curriculum enhancements, in service teacher training and formal undergraduate/graduate and post-doctoral programs to prepare the next generation of microbial oceanographers. The Center will establish and maintain creative outreach programs to help diffuse the new knowledge gained into society at large including policymakers. The Center's activities will be dispersed among five partner institutions:

- Massachusetts Institute of Technology,
- Woods Hole Oceanographic Institution,
- Monterey Bay Aquarium Research Institute,
- University of California at Santa Cruz and
- Oregon State University

and will be coordinated at the University of Hawaii at Manoa.

Related Files:

Strategic plan (PDF file)

[table of contents | back to top]

Funding

Funding Source	Award
NSF Division of Biological Infrastructure (NSF DBI)	DBI-0424599

[table of contents | back to top]