C-MORE cruise tracks from R/V Kilo Moana and R/V Ka`imikai-O-Kanaloa cruises from 2007-2011 (C-MORE project)

Website: https://www.bco-dmo.org/dataset/3286
Version: (See Platform Deployments)
Version Date: 2015-03-12

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

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Dataset Description

C-MORE Cruise track coordinates

Methods & Sampling

Generated from underway data files downloaded from C-More website(s)

Data Processing Description

Generated from underway data files downloaded from C-More website(s)

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Parameters

Parameter	Description	Units
date	date	YYYYMMDD GMT
time	time	HHMM GMT
lon	longitude	decimal degrees (West is negative)
lat	latitude	decimal degrees (South is negative)

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Instruments

Dataset-specific Instrument Name	Global Positioning System
Generic Instrument Name	Global Positioning System Receiver
Generic Instrument Description	The Global Positioning System (GPS) is a U.S. space-based radionavigation system that provides reliable positioning, navigation, and timing services to civilian users on a continuous worldwide basis. The U.S. Air Force develops, maintains, and operates the space and control segments of the NAVSTAR GPS transmitter system. Ships use a variety of receivers (e.g. Trimble and Ashtech) to interpret the GPS signal and determine accurate latitude and longitude.

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Deployments

KM0715

Website	https://www.bco-dmo.org/deployment/57999
Platform	R/V Kilo Moana
Report	ftp://ftp.soest.hawaii.edu/dkarl/cmore/Cruise_Reports/bloomer1//Letelier_cmore_2_rpt.pdf
Start Date	2007-08-09
End Date	2007-08-21
Description	C-MORE BLOOMER (BLOOM Ecological Reconnaissance) C-MORE 2 cruise C-MORE August 2007 cruise objectives and logistics downloaded from C-MORE site 'Cruise objectives' document, 14 September 2009 GENERAL CRUISE OBJECTIVES The primary goal this year will be the characterization of the microbial assemblage and biogeochemical fluxes associated to summer increases in cyanobacterial biomass in the vicinity of Station ALOHA. This characterization will be compared to a sampling site where no biomass increase is detected. In addition, we will try to establish transects across a bloom region, or try to sample distinct areas where blooms are detected from remote sensing and SeaGliders, to assess the spatial heterogeneity of these blooms. GENERAL CRUISE PLAN: August 8th: Loading day August 9th, 8:00 Departure from Snug. 1st scenario: If a boom is remotely detected within 100km of Station ALOHA August 9th to August 10th at 5AM: Transit to the bloom station August 10th to August 13th in the morning: Sample and carry experiments within the bloom (considers the deployment of sediment traps for at least 72 hours on August 10th and carrying on deck incubation time series for 5 days [August 15th]) August 13th noon to August 14th evening: Series of stations to characterize the spatial heterogeneity of the bloom. August 14th evening to August 15th 5AM: Transit toward Station ALOHA or a site within 100km of this site not displaying high accumulation of chlorophyll in surface waters. August 15th to August 18th in the morning: Sample and carry experiments outside the bloom. August 19th is left as a buffer and could be used to revisit the sampling site. August 20th early morning - noon: start transit back to Honolulu. 2nd scenario: If blooms are not detected in the vicinity of Station ALOHA: August 9th to August 10th at 5AM: Transit to 24N, 158W where increase sea surface chlorophyll concentration was observed on July 18 to 28. This location could change once we have developed the full MODIS chlorophyll statistics for the month of July for the study region. We will use these statistics to assess the station that has had the largest change in chlorophyll concentration as well as the station that has not seen significant chlorophyll fluctuation within 100 to 200km radius north of Station ALOHA. These will represent our primary sampling sites, replacing the bloom and non bloom sites in the 1st scenario. As in the first scenario, we will devote August 13th and August 14th to assess the spatial heterogeneity of the sampling region. 3rd scenario: A bloom develops during the cruise. We will modify the cruise plan accordingly in order to characterize the bloom evolution. C-MORE 2 BLOOMER Cruise Reports Cruise reports available from the C-MORE ftp site:ftp://ftp.soest.hawaii.edu/dkarl/cmore/Cruise_Reports/bloomer1/ each investigator contributed a separate report. Related information sources from the C-MORE Web Site: Homepage: http://cmore.soest.hawaii.edu/cruises/cmore_2/index.htm Data: http://hahana.soest.hawaii.edu/cmorebloomer/cmorebloomer.html Cruise track: http://hahana.soest.hawaii.edu/cmorebloomer/cm2LocMap.gif Cruise objectives: http://hahana.soest.hawaii.edu/cmorebloomer/cmore_2_objectives_logistics... Cruise event sheet: http://hahana.soest.hawaii.edu/cmorebloomer/cmore_2_final_master_event_s... Cruise information and original data are available from the NSF R2R data catalog. **Methods & Sampling** Generated from underway data files downloaded from C-More website(s) **Processing Description** Generated from underway data files downloaded from C-More website(s)

KM0704

Website	https://www.bco-dmo.org/deployment/57997
Platform	R/V Kilo Moana
Report	http://bcodata.whoi.edu/C-MORE/BULA1_cruise_activities.pdf
Start Date	2007-04-19
End Date	2007-04-30
Description	The BULA cruise, a transect from Suva, Fiji to Honolulu, Hawaii was the inagural cruise of the Center for Microbial Oceanography: Research and Education (C-MORE). Some of the many goals were: (1) to identify prominent trends in plankton biomass, biomass structure, and elemental stoichiometry, (2) to examine latitudinal variability in upper ocean concentrations of colored dissolved organic matter and trace metal ligands, (3) to isolate new Prochlorococcus strains, (4) to optically determine upper ocean biogeochemical variables, (5) to study the distribution, production and loss rates of dissolved hydrogen and its relationship to nitrogen fixation, (6) to study viral diversity along biogeochemical gradients, (7) to assay spatial distributions of microbial community structure based on rRNA fingerprinting and sequencing, and (8) to assess spacial variability in photophysiological responses to photoautotrophs. Original sources available from C-MORE Web Site: BULA Home page: http://cmore.soest.hawaii.edu/cruises/bula/index.htm BULA Data: http://hahana.soest.hawaii.edu/cmorebula/cmorebula.html Cruise track: http://hahana.soest.hawaii.edu/cmorebula/bula1track.gif Cruise log: http://hahana.soest.hawaii.edu/cmorebula/CMOREBULA_Cruise_Log.pdf (sample log sheets) Cruise activities: http://hahana.soest.hawaii.edu/cmorebula/Cruise_activities.pdf (Cruise Report) Cruise summary: ftp://ftp.soest.hawaii.edu/dkarl/cmore/cruise.summaries/bula1.sum (station/cast locations) Cruise information and original data are available from the NSF R2R data catalog. **Methods & Sampling** Generated from underway data files downloaded from C-More website(s) **Processing Description** Generated from underway data files downloaded from C-More website(s)

KM0814

Website	https://www.bco-dmo.org/deployment/58018
Platform	R/V Kilo Moana
Start Date	2008-07-30
End Date	2008-08-14
Description	OPEREX Cruise Objective The objective of the OPEREX cruise will be to explore the potential and limitations of perturbation experiments at sea. We will follow some natural perturbations including blooms and eddies, and we will perform some of the artificial perturbation experiments including bench/lab scale incubations, ship deck incubations, and ship deck pH shift experiments. Original cruise data are available from the NSF R2R data catalog Related information from the C-MORE OPEREX cruise Web site: Homepage: http://cmore.soest.hawaii.edu/cruises/operex/index.htm Science plan: http://cmore.soest.hawaii.edu/cruises/operex/science_objective.htm Data: http://hahana.soest.hawaii.edu/cmoreoperex/operex.html Cruise track: http://hahana.soest.hawaii.edu/cmoreoperex/OPEREXtrack.gif Cruise plan: http://cmore.soest.hawaii.edu/cruises/operex/documents/km0814_cruise_pla... Cruise overview: http://hahana.soest.hawaii.edu/cmoreoperex/OPEREX_overview.pdf Cruise schedule: http://cmore.soest.hawaii.edu/cruises/operex/documents/OPPEREX_schedule.xls **Methods & Sampling** Generated from underway data files downloaded from C-More website(s) **Processing Description** Generated from underway data files downloaded from C-More website(s)

KM0817

Website	https://www.bco-dmo.org/deployment/57998
Platform	R/V Kilo Moana
Report	http://data.bco-dmo.org/C-MORE/SUPER_HI-CAT_Chief_Scientist_Report.pdf
Start Date	2008-08-25
End Date	2008-09-05

Description	Preliminary Cruise Report from: http://cmore.soest.hawaii.edu/cruises/super/cruisereport.htm C-MORE science and volunteer crew reported to Snug Harbor at 0630 on Monday, 25 August, 2008. After fueling the ship, the R/V Kilo Moana departed from Honolulu, HI at approximately 1630. Starting at 2200 on this first day and for the duration of the cruise, daily and nightly underway samples were collected from the ship's flow-through system. Water collected from this system was processed for particulates, nutrients, ATP, chlorophyll, and a suite of other analyses for contextual data. The cruise track began with a northeasterly course from Oahu to 34° N, 151° W. Six stations were visited before heading east, approximately tracing 35° N latitude, along which 10 additional stations were taken. This track took us 27 hours off of the great circle path between Honolulu and Port Hueneme. The total distance of the sample transect was 2115 km. The first station consisted of a single CTD cast at 1300 on Tuesday, 26 August to collect water for a mixing experiment (mixing deep water with surface water to change nutrient concentrations). From Wednesday, 27 August to Monday, 1 September, two to three stations were visited per day, during which the manta trawl was deployed for 1.5 hours, the CTD rosette was cast to the deep chlorophyll maximum, and the HyperPro profiler and LISST particle analyzer were deployed to approximately 125m depth. Upon recovery of the manta trawl, the net was rinsed with sea water, and the cod end was detached and placed in a bucket on deck. The cod end was then taken to Lab 2, where the contents were sieved through three filters of the following mesh sizes: 5mm, 2mm, and 0.2mm. Large pieces that were not kept for later use were measured and photographed (the upper size limit for whether a sample was retained was determined by the size of the largest storage containers). The presence and abundance of fauna collected in the net were recorded. The metazoan community consisted primarily of Valella valella, Porpita porpita, Halobates, Janthina, isopods, copepods, amphipods, and small crabs. In the following summary of sample allocations, the "large" size class refers to plastic pieces >5mm; "medium" refers to 2-5mm sized pieces, and "small" refers to 0.2-2mm sized pieces. For each sample, 30-100 pieces of plastic were collected from the large and medium size classes for DNA and RNA analyses. For chlorophyll extractions, 3 large, 6 medium, and 30 small pieces were placed in acetone and refrigerated (each size class was divided into 3 tubes, for a total of 9 chlorophyll samples per station). For ATP, 5 large, 15 medium, and 50 small pieces were boiled in TRIS buffer and then frozen (each size class was divided into 5 tubes, yielding a total of 15 ATP tubes per station). From 6 of the 14 trawl collections,between 14-19 large and medium pieces were used for incubation experiments. The remaining plastic pieces were sorted by size class and stored in 5% formalin. All of the 2-5mm and >5mm sized pieces were counted, and as many of the 0.2-2mm sized pieces were counted as time allowed. In addition to these collections, an incubation experiment was conducted in which microbial processes were examined in treatments without plastic particles, with sterilized plastic particles, and with "in situ" (non-sterilized) plastic particles. The combined density of plastic particles in the 2-5mm and >5mm size classes ranged from 0.35-3.71 pieces m-3 across all sampling stations. Integrated over the top 0.5m of the ocean, the particle concentrations along the transect ranged from 174,000 to 1.85 million plastic fragments km-2. Related information from the C-MORE SUPER cruise Web site: Homepage: http://cmore.soest.hawaii.edu/cruises/super/index.htm Cruise Report: http://cmore.soest.hawaii.edu/cruises/super/cruisereport.htm Science plan: http://cmore.soest.hawaii.edu/cruises/super/science.htm Data: http://hahana.soest.hawaii.edu/cmoresuperhicat/superhicat.html Chief Scientist Report: http://hahana.soest.hawaii.edu/cmoresuperhicat/SUPER_HI-CAT_Chief_Scient... Cruise track: http://hahana.soest.hawaii.edu/cmoresuperhicat/super1track.gif Cruise plan: http://hahana.soest.hawaii.edu/cmoresuperhicat/SUPER_HI-CAT_final_cruise... Cruise information and original data are available from the NSF R2R data catalog. **Methods & Sampling** Generated from underway data files downloaded from C-More website(s) **Processing Description** Generated from underway data files downloaded from C-More website(s)

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 **Methods & Sampling** Cruise track for the BAG-1 research cruise **Processing Description** # C-MORE BAG-EM-UP cruise track data # Laboratory for Microbial Oceanography # Steve Poulos # CMORE/BAG-EM-UP # date ingested into BCO-DMO: June 6 2014 # revised March 12 2015 : removed two bad data points

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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)

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Funding

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

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