MOCNESS-1 Plankton Abundances from the R/V Wecoma, R/V New Horizon W0004B, NH0005, W0007A, NH0007, W0009A, W0204A, W0205A from the Northeast Pacific, 2000 and 2002 (NEP project)

Website: https://www.bco-dmo.org/dataset/2454
Data Type: Cruise Results
Version: 1
Version Date: 2011-06-28

Project
» U.S. GLOBEC Northeast Pacific (NEP)

Program
» U.S. GLOBal ocean ECosystems dynamics (U.S. GLOBEC)

Contributors	Affiliation	Role
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Abstract
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Coverage

Spatial Extent: **N**:44.6517 **E**:-124.175 **S**:42.4733 **W**:-125.1167
Temporal Extent: 2000-04-11 - 2002-05-30

Dataset Description

U.S. GLOBEC Northeast Pacific California Current Program MOCNESS Plankton (MOC1) Data

Data Collections were done as part of several projects.
Contact for this dataset is:
Dr. William Peterson (bill.peterson@noaa.gov)
Phone: 541-867-0201

All inquiries about this data should be directed to Dr. Peterson.

Data Description

The MOC1 data are organized by cruise within year. The master page (Level 0) lists all of the cruises in chronological order. Clicking on a cruise will show all of the casts collected/processes from that cruise (Level 1). Clicking on a cast will bring up the Level 2 file that shows all of the samples (nets) processed from that cast. Clicking on the sample_id (ranges from "1" to "8" for this type of data) will display the Level 3 data, which are the actual taxonomic categories and abundances for that particular sample. Additional info about the variables is described below.

Program Codes	Description
LTOP	samples collected on Long-term Observation Program Cruises (ca. 4-6 cruises per year; all sample the Newport Hydrographic (NH) Line; some sample other standard lines further south)
MESO_1	samples collected from process cruise in June 2000
MESO_2	samples collected from process cruise in August 2000
MESO_3	samples collected from process cruise in June 2002

Life Stage Info Codes (partial listing)	Description
most are self-explanatory; Male, Female, CV ==> Copepodite 5, Zoea, Nauplii, N2 => Nauplius 2, Egg--a few are not, esp. for the euphausiids (Thysanoessa and Euphausia)	
F2	Second Stage Furcilia (aka Furcilia 2)
F3	Third Stage Furcilia (aka Furcilia 3)
F1_0	First Stage Furcilia with 0 legs
F2_32 or Furcilia_2_3L2S	Second Stage Furcilia with 3 pairs of legs total, with 2 pairs of legs having setae; this xLyS pattern is common, with x and y varying depending on stage of development

MOCNESS Sample Analysis Protocols from "comments" field	
Comment	**Description**
Proc_Protocol=0	**(Standard Protocol):** 1) Count, sex, measure, and stage all euphausiid species. 2) Count and measure *Limacina* pteropods 3) Count, stage, and measure both spp. of *Neocalanus* 4) Count and measure "Big Stuff" (large zooplankton, i.e., fish larvae, squid, octopi, jellies, other shrimp, etc...)
Proc_Protocol=1	**(Euphausiids only Protocol):** 1) Count, sex, measure, and stage all euphausiids.
Proc_Protocol=2	**('Acoustic Calibrations' Protocol):** 1) Count, sex, and measure all euphausiids (Adults and juveniles ONLY). 2) Count and measure *Limacina* pteropods.

Metadata last updated 29 May 2012;smr, BCO-DMO

Methods & Sampling

The MOCNESS is based on the Tucker Trawl principle (Tucker, 1951). The MOCNESS-1 has nine rectangular nets (1m x 1.4 m) which are opened and closed sequentially by commands through conducting cable from the surface (Wiebe et al., 1976). In MOCNESS systems, "the underwater unit sends a data frame, comprised of temperature, depth, conductivity, net-frame angle, flow count, time, number of open net, and net opening/closing, to the deck unit in a compressed hexadecimal format every 2 seconds and from the deck unit to a microcomputer every 4 seconds... Temperature (to approximately 0.01 deg C) and conductivity are measured with SEABIRD sensors . Normally, a modified T.S.K.-flowmeter is used... Both the temperature and

conductivity sensors and the flowmeter are mounted on top of the frame so that they face horizontally when the frame is at a towing angle of 45deg... Calculations of salinity (to approximately 0.01 o/oo S), potential temperature (theta), potential density (sigma), the oblique and vertical velocities of the net, and the approximate volume filtered by each net are made after each string of data has been received by the computer." (Wiebe et al., 1985) In addition, depending on the particular configuration of the MOCNESS-1, data may have been collected from other sensors attached to the frame : (Transmissometer, Fluorometer, Downwelling light sensor, and the Oxygen sensor). A SeaBird underwater pump was also included in the sensor suite.

Data Processing Description

After retrieval to deck, the contents of the nets were rinsed into the codends and transferred to storage bottles, and fixed and preserved with formalin. In the shore laboratory, the contents of the bottles were subsampled and counts and biomass estimates made for selected taxa (see the Proc_Protocol info below). This data object reports only the count information.

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Data Files

File
MOC1.csv (Comma Separated Values (.csv), 611.17 KB) MD5:c7a898d86a9c0c0091bd61cd4ddcf568 Primary data file for dataset ID 2454

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Related Publications

Tucker, G.H.(1951) Relation of fishes and other organisms to the scattering of underwater sound Journal of Marine Research, 10, pp. 215-238
Methods

Wiebe, P. H., K.H. Burt, S. H. Boyd, A. W. Morton (1976). A multiple opening/closing net and environment sensing system for sampling zooplankton. J. Mar. Res., 34, 313-326.
Methods

Wiebe, P. H., Morton, A. W., Bradley, A. M., Backus, R. H., Craddock, J. E., Barber, V., ... Flierl, G. R. (1985). New development in the MOCNESS, an apparatus for sampling zooplankton and micronekton. Marine Biology, 87(3), 313–323. doi:10.1007/bf00397811 https://doi.org/10.1007/BF00397811
Methods

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Parameters

Parameter	Description	Units
year	Year	n/a
program	See codes in table above (in 'Data Description' section).	n/a

cruise_id	Cruise ID.	n/a
cast	Cast number within the cruise.	n/a
station	Standard Station Name.	n/a
lat	Latitude.	decimal degrees
lon	Longitude.	decimal degrees
depth_bottom	Bottom depth at station location.	meters
sample_id	The net number, ranges from 1-8.	n/a
min_sample_depth	Minimum depth of a single net sample.	meters
max_sample_depth	Maximum depth of a single net sample.	meters
month_local	Month	n/a
day_local	Day	n/a
time_local	Local time.	n/a
d_n_flag	'DAY' or 'NIGHT' if flagged; some samples may not have been flagged.	n/a
gear_type	Name of instrument. ('MOCNESS' for this gear.)	n/a
gear_area_m2	Mouth area of net in square meters.	m^2
gear_mesh	Size of mesh of net in millimeters.	mm
vol_filt	Volume filtered in cubic meters.	m^3
counter_id	Initials of the Plankton Taxonomist.	n/a
comments	Misc. comments pertaining to sample. See definitions in table above (in 'Data Description' section).	n/a

nodc_code	Standard NODC taxonomic code.	n/a
species	Genus and species (e.g., NEOCALANUS_PLUMCHRUS).	n/a
life_stage	Life Stage info (see Life Stage Codes table above in 'Data Description' section).	n/a
abund	Density (individuals per cubic meter).	individuals per m^3

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Instruments

Dataset-specific Instrument Name	MOCNESS1
Generic Instrument Name	MOCNESS1
Dataset-specific Description	The MOCNESS is based on the Tucker Trawl principle (Tucker, 1951). The MOCNESS-1 has nine rectangular nets (1m x 1.4 m) which are opened and closed seq uentially by commands through conducting cable from the surface (Wiebe et al., 1976). In MOCNESS systems, "the underwater unit sends a data frame, comprised of temperature, depth, conductivity, net-frame angle, flow count, time, number of open net, and net opening/closing, to the deck unit in a compressed hexadecimal format every 2 seconds and from the deck unit to a microcomputer every 4 seconds... Temperatu re (to approximately 0.01 deg C) and conductivity are measured with SEABIRD sensors . Normally, a modified T.S.K.-flowmeter is used... Both the temperature and conductivity sensors and the flowmeter are mounted on top of the frame so that they face horizontally when the frame is at a towing angle of 45deg... Calculations of salinity (to approximately 0.01 o/oo S), potential temperature (theta), potential density (sigma), the oblique and vertical velocities of the net, and the approximate volume filtered by each net are made after each string of data has been received by the computer." (Wiebe et al., 1985)
Generic Instrument Description	The Multiple Opening/Closing Net and Environmental Sensing System or MOCNESS is a family of net systems based on the Tucker Trawl principle. The MOCNESS-1 carries nine 1-m2 nets usually of 335 micrometer mesh and is intended for use with the macrozooplankton. All nets are black to reduce contrast with the background. A motor/toggle release assembly is mounted on the top portion of the frame and stainless steel cables with swaged fittings are used to attach the net bar to the toggle release. A stepping motor in a pressure compensated case filled with oil turns the escapement crankshaft of the toggle release which sequentially releases the nets to an open then closed position on command from the surface. -- from the MOCNESS Operations Manual (1999 + 2003).

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Deployments

W0004B

Website	https://www.bco-dmo.org/deployment/57597
Platform	R/V Wecoma
Report	http://globec.whoi.edu/nep/reports/ccs_cruises/apr00cr.pdf
Start Date	2000-04-11
End Date	2000-04-17

NH0005

Website	https://www.bco-dmo.org/deployment/57557
Platform	R/V New Horizon
Report	http://globec.whoi.edu/nep/reports/ccs_cruises/nh0005/nh0005cr.pdf
Start Date	2000-05-28
End Date	2000-06-13

W0007A

Website	https://www.bco-dmo.org/deployment/57599
Platform	R/V Wecoma
Report	http://globec.whoi.edu/nep/reports/ccs_cruises/jul00cr.pdf
Start Date	2000-07-07
End Date	2000-07-13

NH0007

Website	https://www.bco-dmo.org/deployment/57558
Platform	R/V New Horizon
Report	http://globec.whoi.edu/nep/reports/ccs_cruises/nh0007/nh0007cr.pdf
Start Date	2000-07-27
End Date	2000-08-12

W0009A

Website	https://www.bco-dmo.org/deployment/57601
Platform	R/V Wecoma
Report	http://globec.whoi.edu/nep/reports/ccs_cruises/sep00cr.pdf
Start Date	2000-09-07
End Date	2000-09-12

W0204A

Website	https://www.bco-dmo.org/deployment/57608
Platform	R/V Wecoma
Report	http://globec.whoi.edu/nep/reports/ccs_cruises/apr02cr.pdf
Start Date	2002-04-04
End Date	2002-04-10

W0205A

Website	https://www.bco-dmo.org/deployment/57609
Platform	R/V Wecoma
Report	http://globec.whoi.edu/nep/reports/ccs_cruises/w0205acr.pdf
Start Date	2002-05-29
End Date	2002-06-18

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Project Information

U.S. GLOBEC Northeast Pacific (NEP)

Website: http://nepglobec.bco-dmo.org

Coverage: Northeast Pacific Ocean, Gulf of Alaska

Program in a Nutshell

Goal: To understand the effects of climate variability and climate change on the distribution, abundance and production of marine animals (including commercially important living marine resources) in the eastern North Pacific. To embody this understanding in diagnostic and prognostic ecosystem models, capable of capturing the ecosystem response to major climatic fluctuations.

Approach: To study the effects of past and present climate variability on the population ecology and population dynamics of marine biota and living marine resources, and to use this information as a proxy for how the ecosystems of the eastern North Pacific may respond to future global climate change. The strong temporal variability in the physical and biological signals of the NEP will be used to examine the biophysical mechanisms through which zooplankton and salmon populations respond to physical forcing and biological interactions in the coastal regions of the two gyres. Annual and interannual variability will be studied directly through **long-term observations** and detailed **process studies**; variability at longer time scales will be examined through **retrospective analysis** of directly measured and proxy data. Coupled **biophysical models** of the ecosystems of these regions will be developed and tested using the process studies and data collected from the long-term observation programs, then further tested and improved by hindcasting selected retrospective data series.

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Program Information

U.S. GLOBal ocean ECosystems dynamics (U.S. GLOBEC)

Website: http://www.usglobec.org/

Coverage: Global

U.S. GLOBEC (GLOBal ocean ECosystems dynamics) is a research program organized by oceanographers and fisheries scientists to address the question of how global climate change may affect the abundance and production of animals in the sea.

The U.S. GLOBEC Program currently had major research efforts underway in the Georges Bank / Northwest Atlantic Region, and the Northeast Pacific (with components in the California Current and in the Coastal Gulf of Alaska). U.S. GLOBEC was a major contributor to International GLOBEC efforts in the Southern Ocean and Western Antarctic Peninsula (WAP).

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Funding

Funding Source	Award
National Oceanic and Atmospheric Administration (NOAA)	unknown NEP NOAA
National Science Foundation (NSF)	unknown NEP NSF

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