Abundance, biovolume and biomass of heterotrophic dinoflagellates from cruises TT007, TT008, TT011, TT012 in the Equatorial Pacific in 1992 during the U.S. JGOFS Equatorial Pacific (EqPac) project

Website: https://www.bco-dmo.org/dataset/2668
Version: final
Version Date: 1997-05-01

Project
» U.S. JGOFS Equatorial Pacific (EqPac)

Program
» U.S. Joint Global Ocean Flux Study (U.S. JGOFS)

Contributors	Affiliation	Role
Verity, Peter	Skidaway Institute of Oceanography (SkIO)	Principal Investigator
Chandler, Cynthia L.	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager

Table of Contents

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

Dataset Description

Abundance, biovolume and biomass of heterotrophic dinoflagellates

Methods & Sampling

See Platform deployments for cruise specific documentation

[table of contents | back to top]

Data Files

File	
dino_TT007.csv	(Comma Separated Values (.csv), 3.53 KB) MD5:6a3c7ebc35c1eff3f1e8ff6063d42bd9
version May 1, 1997 Peter Verity Abundance/biovolume/biomass of heterotrophic dinoflagellates	
dino_TT008.csv	(Comma Separated Values (.csv), 1.41 KB) MD5:8f3936ff5325486240f7ddc0a878041c
version Nov 29, 1994 Peter Verity Abundance/biovolume/biomass of heterotrophic dinoflagellates Abundance and biovolume were measured using a fluorescence microscope image analysis system. Carbon was calculated from biovolume using a constant density factor of 0.24 pgC/cubic micron cell volume.	
dino_TT011.csv	(Comma Separated Values (.csv), 3.77 KB) MD5:0ebe26ad7e4035e2ca95d773a296ea32
version = Nov 29, 1994 Peter Verity Abundance/biovolume/biomass of heterotrophic dinoflagellates Abundance and biovolume were measured using a fluorescence microscope image analysis system. Carbon was calculated from biovolume using a constant density factor of 0.24 pgC/cubic micron cell volume.	
dino_TT012.csv	(Comma Separated Values (.csv), 3.21 KB) MD5:79d41368d31374464e18f50a1285237c
version Nov 29, 1994 Peter Verity Abundance/biovolume/biomass of heterotrophic dinoflagellates Abundance and biovolume were measured using a fluorescence microscope image analysis system. Carbon was calculated from biovolume using a constant density factor of 0.24 pgC/cubic micron cell volume.	

[table of contents | back to top]

Parameters

Parameter	Description	Units
sta	station number from event log	
cast	CTD cast number from event log	
event	event/operation number	
date	date reported as YYYYMMDD, year, month, day	
lat_n	nominal latitude, (minus = south)	degrees
bot	CTD rosette bottle number	
depth_n	nominal depth	meters
h_dino_a	hetertrophic dinoflagellate abundance	cells/ml
h_dino_v	hetertrophic dinoflagellate biovolume	um^3/cell
h_dino_m	hetertrophic dinoflagellate biomass	ugC/l

[table of contents | back to top]

Instruments

Dataset-specific Instrument Name	Fluorescence Microscope Image Analysis System
Generic Instrument Name	Fluorescence Microscope Image Analysis System
Dataset-specific Description	fluorescence microscope image analysis system used to measure Abundance and biovolume
Generic Instrument Description	A Fluorescence (or Epifluorescence) Microscope Image Analysis System uses semi-automated color image analysis to determine cell abundance, dimensions and biovolumes from an Epifluorescence Microscope. An Epifluorescence Microscope (conventional and inverted) includes a camera system that generates enlarged images of prepared samples. The microscope uses excitation ultraviolet light and the phenomena of fluorescence and phosphorescence instead of, or in addition to, reflection and absorption of visible light.

Dataset-specific Instrument Name	Niskin Bottle
Generic Instrument Name	Niskin bottle
Dataset-specific Description	CTD clean rosette (Niskin) bottles were used to collect water samples.
Generic Instrument Description	A Niskin bottle (a next generation water sampler based on the Nansen bottle) is a cylindrical, non-metallic water collection device with stoppers at both ends. The bottles can be attached individually on a hydrowire or deployed in 12, 24, or 36 bottle Rosette systems mounted on a frame and combined with a CTD. Niskin bottles are used to collect discrete water samples for a range of measurements including pigments, nutrients, plankton, etc.

[table of contents | back to top]

Deployments

TT007

Website	https://www.bco-dmo.org/deployment/57728
Platform	R/V Thomas G. Thompson
Start Date	1992-01-30
End Date	1992-03-13
Description	Purpose: Spring Survey Cruise; 12°N-12°S at 140°W TT007 was one of five cruises conducted in 1992 in support of the U.S. Equatorial Pacific (EqPac) Process Study. The five EqPac cruises aboard R/V Thomas G. Thompson included two repeat meridional sections (12°N - 12°S), 2 equatorial surveys, and a benthic survey (all at 140° W). The scientific objectives of this study were to observe the processes in the Equatorial Pacific controlling the fluxes of carbon and related elements between the atmosphere, euphotic zone, and deep ocean. As luck would have it, the survey window coincided with an El Nino event. A bonus for the research team. **Methods & Sampling** PI: Peter Verity of: Skidaway Institute of Oceanography dataset: Abundance/Biovolume/Biomass of heterotrophic dinoflagellates dates: February 05, 1992 to March 08, 1992 location: N: 12.0039 S: -12.0306 W: -140.4726 E: -134.9948 project/cruise: EQPAC/TT007 - Spring Survey ship: Thomas Thompson Methodology: Verity, P.G., D.K. Stoecker, M.E. Sieracki and J.R. Nelson 1996. Microzooplankton grazing of primary production at 140W in the equatorial Pacific. Deep-Sea Research II, vol 43, No. 4-6, pp 1227-1256. Abundance and biovolume were measured using a fluorescence microscope image analysis system. Carbon was calculated from biovolume using a constant density factor of 0.24 pgC/cubic micron cell volume. Abundance values are for organisms less than 20 microns.

TT008

Website	https://www.bco-dmo.org/deployment/57729
Platform	R/V Thomas G. Thompson
Start Date	1992-03-19
End Date	1992-04-15
Description	Purpose: Spring Time Series; Equator, 140°W TT008 was one of five cruises conducted in 1992 in support of the U.S. Equatorial Pacific (EqPac) Process Study. The five EqPac cruises aboard R/V Thomas G. Thompson included two repeat meridional sections (12°N - 12°S), 2 equatorial surveys, and a benthic survey (all at 140° W). The scientific objectives of this study were to observe the processes in the Equatorial Pacific controlling the fluxes of carbon and related elements between the atmosphere, euphotic zone, and deep ocean. As luck would have it, the survey window coincided with an El Nino event. A bonus for the research team. **Methods & Sampling** PI: Peter Verity of: Skidaway Institute of Oceanography dataset: Abundance/Biovolume/Biomass of heterotrophic dinoflagellates dates: March 23, 1992 to April 09, 1992 location: N: 0.0018 S: -0.0145 W: -140.0003 E: -139.9833 project/cruise: EQPAC/TT008 - Spring Time Series ship: Thomas Thompson Methodology: Verity, P.G., D.K. Stoecker, M.E. Sieracki and J.R. Nelson 1996. Microzooplankton grazing of primary production at 140W in the equatorial Pacific. Deep-Sea Research II, vol 43, No. 4-6, pp 1227-1256. PI-Notes:Abundance and biovolume were measured using a fluorescence microscope image analysis system. Carbon was calculated from biovolume using a constant density factor of 0.24 pgC/cubic micron cell volume. Abundance values are for organisms less than 20 microns.

TT011

Website	https://www.bco-dmo.org/deployment/57730
Platform	R/V Thomas G. Thompson
Start Date	1992-08-05
End Date	1992-09-18
Description	Purpose: Fall Survey; 12°N-12°S at 140°W TT011 was one of five cruises conducted in 1992 in support of the U.S. Equatorial Pacific (EqPac) Process Study. The five EqPac cruises aboard R/V Thomas G. Thompson included two repeat meridional sections (12°N - 12°S), 2 equatorial surveys, and a benthic survey (all at 140° W). The scientific objectives of this study were to observe the processes in the Equatorial Pacific controlling the fluxes of carbon and related elements between the atmosphere, euphotic zone, and deep ocean. As luck would have it, the survey window coincided with an El Nino event. A bonus for the research team. **Methods & Sampling** PI: Peter Verity of: Skidaway Institute of Oceanography dataset: Abundance/Biovolume/Biomass of heterotrophic dinoflagellates dates: August 10, 1992 to September 14, 1992 location: N: 11.9967 S: -11.885 W: -140.21 E: -134.9433 project/cruise: EQPAC/TT011 - Fall Survey ship: Thomas Thompson Methodology: Verity, P.G., D.K. Stoecker, M.E. Sieracki and J.R. Nelson 1996. Microzooplankton grazing of primary production at 140W in the equatorial Pacific. Deep-Sea Research II, vol 43, No. 4-6, pp 1227-1256. PI-Notes:Abundance and biovolume were measured using a fluorescence microscope image analysis system. Carbon was calculated from biovolume using a constant density factor of 0.24 pgC/cubic micron cell volume. Abundance values are for organisms less than 20 microns. EqPac bottle quality review summary from DMO

TT012

Website	https://www.bco-dmo.org/deployment/57731
Platform	R/V Thomas G. Thompson
Start Date	1992-09-24
End Date	1992-10-21
Description	Purpose: Fall Time Series; Equator, 140°W TT012 was one of five cruises conducted in 1992 in support of the U.S. Equatorial Pacific (EqPac) Process Study. The five EqPac cruises aboard R/V Thomas G. Thompson included two repeat meridional sections (12°N - 12°S), 2 equatorial surveys, and a benthic survey (all at 140° W). The scientific objectives of this study were to observe the processes in the Equatorial Pacific controlling the fluxes of carbon and related elements between the atmosphere, euphotic zone, and deep ocean. As luck would have it, the survey window coincided with an El Nino event. A bonus for the research team. **Methods & Sampling** PI: Peter Verity of: Skidaway Institute of Oceanography dataset: Abundance/Biovolume/Biomass of heterotrophic dinoflagellates dates: September 25, 1992 to October 20, 1992 location: N: 0.013 S: -12 W: -145.489 E: -139.8587 project/cruise: EQPAC/TT012 - Fall Time Series ship: Thomas Thompson Methodology: Verity, P.G., D.K. Stoecker, M.E. Sieracki and J.R. Nelson 1996. Microzooplankton grazing of primary production at 140W in the equatorial Pacific. Deep-Sea Research II, vol 43, No. 4-6, pp 1227-1256. PI-Notes: Abundance and biovolume were measured using a fluorescence microscope image analysis system. Carbon was calculated from biovolume using a constant density factor of 0.24 pgC/cubic micron cell volume. Abundance values are for organisms less than 20 microns.

[table of contents | back to top]

Project Information

U.S. JGOFS Equatorial Pacific (EqPac)

Website: http://usjgofs.whoi.edu/research/eqpac.html

Coverage: Equatorial Pacific

The U.S. EqPac process study consisted of repeat meridional sections (12°N -12°S) across the equator in the central and eastern equatorial Pacific from 95°W to 170°W during 1992. The major scientific program was focused at 140° W consisting of two meridional surveys, two equatorial surveys, and a benthic survey aboard the R/V Thomas Thompson. Long-term deployments of current meter and sediment trap arrays augmented the survey cruises. NOAA conducted boreal spring and fall sections east and west of 140°W from the R/V Baldridge and R/V Discoverer. Meteorological and sea surface observations were obtained from NOAA's in place TOGA-TAO buoy network.

The scientific objectives of this study were to determine the fluxes of carbon and related elements, and the processes controlling these fluxes between the Equatorial Pacific euphotic zone and the atmosphere and deep ocean. A broad overview of the program at the 140°W site is given by Murray et al. (Oceanography, 5: 134-142, 1992). A full description of the Equatorial Pacific Process Study, including the international context and the scientific results, appears in a series of Deep-Sea Research Part II special volumes:

Topical Studies in Oceanography, A U.S. JGOFS Process Study in the Equatorial Pacific (1995), Deep-Sea Research Part II, Volume 42, No. 2/3.

Topical Studies in Oceanography, A U.S. JGOFS Process Study in the Equatorial Pacific. Part 2 (1996), Deep-Sea Research Part II, Volume 43, No. 4/6.

Topical Studies in Oceanography, A U.S. JGOFS Process Study in the Equatorial Pacific (1997), Deep-Sea Research Part II, Volume 44, No. 9/10.

Topical Studies in Oceanography, The Equatorial Pacific JGOFS Synthesis (2002), Deep-Sea Research Part II,

Volume 49, Nos. 13/14.

[table of contents | back to top]

Program Information

U.S. Joint Global Ocean Flux Study (U.S. JGOFS)

Website: http://usjgofs.whoi.edu/

Coverage: Global

The United States Joint Global Ocean Flux Study was a national component of international JGOFS and an integral part of global climate change research.

The U.S. launched the Joint Global Ocean Flux Study (JGOFS) in the late 1980s to study the ocean carbon cycle. An ambitious goal was set to understand the controls on the concentrations and fluxes of carbon and associated nutrients in the ocean. A new field of ocean biogeochemistry emerged with an emphasis on quality measurements of carbon system parameters and interdisciplinary field studies of the biological, chemical and physical process which control the ocean carbon cycle. As we studied ocean biogeochemistry, we learned that our simple views of carbon uptake and transport were severely limited, and a new "wave" of ocean science was born. U.S. JGOFS has been supported primarily by the U.S. National Science Foundation in collaboration with the National Oceanic and Atmospheric Administration, the National Aeronautics and Space Administration, the Department of Energy and the Office of Naval Research. U.S. JGOFS, ended in 2005 with the conclusion of the Synthesis and Modeling Project (SMP).

[table of contents | back to top]