Microplankton abundance and biomass from CTD casts from R/V Thomas G. Thompson TT043, TT045 cruises in the Arabian Sea in 1995 (U.S. JGOFS Arabian Sea project)

Website: https://www.bco-dmo.org/dataset/2526
Version: August 21, 2001
Version Date: 2001-08-21

Project
» U.S. JGOFS Arabian Sea (Arabian Sea)

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

Contributors	Affiliation	Role
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Dataset Description

Microplankton abundance and biomass from CTD casts

Methods & Sampling

See Platform deployments for cruise specific documentation

Data Processing Description

David Caron
WHOI

Methods for microplankton counts

Samples for the enumeration of microplankton were preserved with a 10% final concentration of acid Lugols in 1L amber glass bottles and stored in the dark (Stoecker et al., 1994a). Samples were presettled and concentrated 10-fold before final settling in counting chambers for the enumeration of 20-200 micrometer organisms using inverted microscopy. Microplankton were grouped by major taxa (diatoms, dinoflagellates, other algae, non-loricate ciliates, tintinnid ciliates, sarcodines, nauplii). The high concentration of Lugols solution used for preservation (to minimize losses of ciliate protozoa) precluded

distinguishing phototrophs from heterotrophs by autofluorescence.

Microplankton biovolumes were determined from measurements of their linear dimensions (using volume equations for appropriate geometric shapes). Volume determinations of all assemblages at 4 depths from each station were extrapolated to the 0-160 m water column. Biovolume estimates were converted to carbon biomass for each of the plankton categories using published conversion factors.

References

Stoecker, D. K., D. J. Gifford and M. Putt (1994a) Preservation of marine planktonic ciliates: losses and cell shrinkage during fixation. Marine Ecology Progress Series, 110, 293-299.

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Parameters

Parameter	Description	Units
event	event number from event log	
sta_std	Arabian Sea standard station identifier	
sta	station number from event log	
cast	CTD cast number	
bot	CTD bottle number	
press	sample depth reported as pressure	decibars
diatom_tot	total diatom abundance	cells/liter
diatom_tot_C	total diatom biomass	micrograms C/liter
dino_tot	total dinoflagellate abundance	cells/liter
dino_tot_C	total dinoflagellate biomass	micrograms C/liter
phyto_oth	other phytoplankton abundance	cells/liter
phyto_oth_C	other phytoplankton biomass	micrograms C/liter
sarc	sarcodine abundance	cells/liter
sarc_C	sarcodine biomass	micrograms C/liter
tint	tintinid abundance	cells/liter
tint_C	tintinid biomass	micrograms C/liter
ciliates_n	non-loricate ciliate abundance	cells/liter
ciliates_n_C	non-loricate ciliate biomass	micrograms C/liter
copepod_na	nauplii abundance	cells/liter
copepod_na_C	nauplii biomass	micrograms C/liter

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Instruments

Dataset-specific Instrument Name	Amber Bottle
Generic Instrument Name	In-situ incubator
Dataset-specific Description	1L amber glass bottles were used to store samples with a 10% final concentration of acid Lugols. During US JGOFS, Niskin bottle sample water was transferred to amber glass bottles and stored in the dark before analysis.
Generic Instrument Description	A device on a ship or in the laboratory that holds water samples under controlled conditions of temperature and possibly illumination.

Dataset-specific Instrument Name	Niskin Bottle
Generic Instrument Name	Niskin bottle
Dataset-specific Description	CTD/Niskin Rosette bottles.
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.

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Deployments

TT043

Website	https://www.bco-dmo.org/deployment/57704
Platform	R/V Thomas G. Thompson
Report	http://osprey.bcodmo.org/datasetDeployment.cfm?ddid=2580&did=353&flag=view
Start Date	1995-01-08
End Date	1995-02-05
Description	Purpose: Process Cruise #1 (Late NE Monsoon) **Methods & Sampling** PI: David Caron of: Woods Hole Oceanographic Institution dataset: Microplankton abundance and biomass from CTD casts dates: January 09, 1995 to January 31, 1995 location: N: 22.4826 S: 10.0013 W: 57.2999 E: 68.75 project/cruise: Arabian Sea/TTN-043 - Process Cruise 1 (Late NE Monsoon) ship: Thomas Thompson Note: Abundances represent the 20-200 micron size class. **Processing Description** David Caron WHOI Methods for microplankton counts Samples for the enumeration of microplankton were preserved with a 10% final concentration of acid Lugols in 1L amber glass bottles and stored in the dark (Stoecker et al., 1994a). Samples were presettled and concentrated 10-fold before final settling in counting chambers for the enumeration of 20-200 micrometer organisms using inverted microscopy. Microplankton were grouped by major taxa (diatoms, dinoflagellates, other algae, non-loricate ciliates, tintinnid ciliates, sarcodines, nauplii). The high concentration of Lugols solution used for preservation (to minimize losses of ciliate protozoa) precluded distinguishing phototrophs from heterotrophs by autofluorescence. Microplankton biovolumes were determined from measurements of their linear dimensions (using volume equations for appropriate geometric shapes). Volume determinations of all assemblages at 4 depths from each station were extrapolated to the 0-160 m water column. Biovolume estimates were converted to carbon biomass for each of the plankton categories using published conversion factors. References Stoecker, D. K., D. J. Gifford and M. Putt (1994a) Preservation of marine planktonic ciliates: losses and cell shrinkage during fixation. Marine Ecology Progress Series, 110, 293-299.

TT045

Website	https://www.bco-dmo.org/deployment/57706
Platform	R/V Thomas G. Thompson
Start Date	1995-03-14
End Date	1995-04-10
Description	**Methods & Sampling** PI: David Caron of: Woods Hole Oceanographic Institution dataset: Microplankton abundance and biomass from CTD casts dates: March 15, 1995 to April 07, 1995 location: N: 22.4853 S: 9.9994 W: 57.3007 E: 68.7532 project/cruise: Arabian Sea/TTN-045 - Process Cruise 2 (Spring Intermonsoon) ship: Thomas Thompson Note: Abundances represent the 20-200 micron size class. **Processing Description** David Caron WHOI Methods for microplankton counts Samples for the enumeration of microplankton were preserved with a 10% final concentration of acid Lugols in 1L amber glass bottles and stored in the dark (Stoecker et al., 1994a). Samples were presettled and concentrated 10-fold before final settling in counting chambers for the enumeration of 20-200 micrometer organisms using inverted microscopy. Microplankton were grouped by major taxa (diatoms, dinoflagellates, other algae, non-loricate ciliates, tintinnid ciliates, sarcodines, nauplii). The high concentration of Lugols solution used for preservation (to minimize losses of ciliate protozoa) precluded distinguishing phototrophs from heterotrophs by autofluorescence. Microplankton biovolumes were determined from measurements of their linear dimensions (using volume equations for appropriate geometric shapes). Volume determinations of all assemblages at 4 depths from each station were extrapolated to the 0-160 m water column. Biovolume estimates were converted to carbon biomass for each of the plankton categories using published conversion factors. References Stoecker, D. K., D. J. Gifford and M. Putt (1994a) Preservation of marine planktonic ciliates: losses and cell shrinkage during fixation. Marine Ecology Progress Series, 110, 293-299.

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Project Information

U.S. JGOFS Arabian Sea (Arabian Sea)

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

Coverage: Arabian Sea

The U.S. Arabian Sea Expedition which began in September 1994 and ended in January 1996, had three major components: a U.S. JGOFS Process Study, supported by the National Science Foundation (NSF); Forced Upper Ocean Dynamics, an Office of Naval Research (ONR) initiative; and shipboard and aircraft measurements supported by the National Aeronautics and Space Administration (NASA). The Expedition consisted of 17 cruises aboard the R/V Thomas Thompson, year-long moored deployments of five instrumented surface buoys and five sediment-trap arrays, aircraft overflights and satellite observations. Of the seventeen ship cruises, six were allocated to repeat process survey cruises, four to SeaSoar mapping cruises, six to mooring and benthic work, and a single calibration cruise which was essentially conducted in transit to the Arabian Sea.

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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).

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Funding

Funding Source	Award
National Science Foundation (NSF)	unknown Arabian Sea NSF

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