

Zooplankton displacement volume data from MOCNESS net tows from R/V Thomas G. Thompson TT039 TT050, TT054 cruises in the Arabian Sea in 1995 (U.S. JGOFS Arabian Sea project)

Website: <https://www.bco-dmo.org/dataset/2561>

Version: final

Version Date: 1997-05-02

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

Zooplankton displacement volumes, MOCNESS net tows

Methods & Sampling

See Platform deployments for cruise specific documentation

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Parameters

Parameter	Description	Units
year	year of sampling	
event	event number, from event log, can be translated into date as follows MMDDHHmm (year 1994)	
sta	station number, from event log	
sta_std	Arabian Sea standard station identifier	
tow	MOCNESS tow number	
lat	latitude of net tow (minus = south)	decimal deg.
lon	longitude of net tow (minus = west)	decimal deg.
net	MOCNESS net number	
depth_begin	depth at beginning of net tow	meters
depth_end	depth at end of net tow	meters
time_begin	time (UTC) at start of net tow	hours/minutes
time_end	time (UTC) at end of net tow	hours/minutes
vol_net	total volume of water sampled by net tow	m ³
zp_disp_vol	zooplankton displacement volume per net	cc/m ³

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Instruments

Dataset-specific Instrument Name	MOCNESS1
Generic Instrument Name	MOCNESS1
Dataset-specific Description	a double one meter Multiple OpeningClosing Net and Environmental Sensing System (MOCNESS) fitted with 153um Nitex nets.
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-m ² 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

TT050

Website	https://www.bco-dmo.org/deployment/57711
Platform	R/V Thomas G. Thompson
Start Date	1995-08-18
End Date	1995-09-15
Description	<p>Methods & Sampling</p> <p>PI: Sharon Smith of: University of Miami dataset: Zooplankton displacement volumes, MOCNESS net tows dates: August 20, 1995 to September 11, 1995 location: N: 21.828 S: 9.9813 W: 58.0172 E: 67.2127 project/cruise: Process 5 TN050 Summer monsoon in the Arabian Sea ship: R/V Thomas Thompson Zooplankton displacement volume measurements for Arabian Sea, Cruises TN050, TN054 (Process Cruise 5 and 7). Sharon L. Smith Rosenstiel School of Marine and Atmospheric Science University of Miami 4600 Rickenbacker Causeway Miami, FL 33149 Zooplankton samples were collected using a double one meter Multiple Opening Closing Net and Environmental Sensing System (MOCNESS) fitted with 153um Nitex nets. The nets fished with an open area of approximately one square meter. A flow meter mounted on the frame, just ahead of the net as it fished, measured the distance towed to allow the calculation of volume filtered. (See Wiebe et al, 1976 and 1985 for further documentation of the original MOCNESS). The MOCNESS was towed behind the ship at approximately 1.5 to 2 knots through the water. Winch speed usually ranged from 10 to 25 meters/minute during deployment and 5 to 15 meters/minute during recovery. On board the ship, samples were either split and 50% preserved or the entire sample was preserved in 4% buffered formaldehyde/sea water for transport to the laboratory. In the laboratory, the displacement volumes of the samples were determined following the methods described by Ahlstrom and Thraillkill, 1963 and Kane, 1982). In general, samples were poured into 250, 500 or 1000 ml graduated cylinders, depending on the volume of plankton present, the volume of plankton and water was measured, then the sample was poured through a 150 um sieve, allowed to drain, and the volume of water measured. The difference between the two volume measurements was the displacement volume. The displacement volume of each sample was divided by the volume filtered by the net (m^3) and the result is reported here in units of cc/m^3. References Ahlstrom, E. H. and J. R. Thraillkill, Plankton volume loss with time of preservation, Rep. 9, pp. 57-73, Calif. Coop. Oceanic Fish. Invest., La Jolla, 1963. Kane, J., Effect of season and location on the relationship between zooplankton displacement volume and dry weight in the Northwest Atlantic, Fish. Bull., 80, 631-642, 1982. Wiebe, P. H., K. H. Burt, S. H. Boyd, and A. W. Morton, A multiple opening-closing net and environmental sensing system for sampling zooplankton, J. Mar. Res., 34, 312-326, 1976. Wiebe, P. H., A. W. Morton, A. M. Bradley, J. E. Craddock, T. J. Cowles, V. A. Barber, R. H. Backus, and G. R. Flierl, New developments in the MOCNESS, an apparatus for sampling zooplankton and micronekton, Mar. Biol., 87, 313-323, 1985.</p>

TT054

Website	https://www.bco-dmo.org/deployment/57715
Platform	R/V Thomas G. Thompson
Start Date	1995-11-30
End Date	1995-12-28
Description	<p>Methods & Sampling</p> <p>PI: Sharon Smith of: University of Miami dataset: Zooplankton displacement volumes, MOCNESS net tows dates: December 01, 1995 to December 23, 1995 location: N: 22.5061 S: 10.0387 W: 58.0107 E: 68.6632 project/cruise: Arabian Sea / Process 7, TTN-054 (Early NE Monsoon) ship: R/V Thomas Thompson Zooplankton displacement volume measurements for Arabian Sea, Cruises TN050, TN054 (Process Cruise 5 and 7). Sharon L. Smith Rosenstiel School of Marine and Atmospheric Science University of Miami 4600 Rickenbacker Causeway Miami, FL 33149 Zooplankton samples were collected using a double one meter Multiple OpeningClosing Net and Environmental Sensing System (MOCNESS) fitted with 153um Nitex nets. The nets fished with an open area of approximately one square meter. A flow meter mounted on the frame, just ahead of the net as it fished, measured the distance towed to allow the calculation of volume filtered. (See Wiebe et al, 1976 and 1985 for further documentation of the original MOCNESS). The MOCNESS was towed behind the ship at approximately 1.5 to 2 knots through the water. Winch speed usually ranged from 10 to 25 meters/minute during deployment and 5 to 15 meters/minute during recovery. On board the ship, samples were either split and 50% preserved or the entire sample was preserved in 4% buffered formaldehyde/sea water for transport to the laboratory. In the laboratory, the displacement volumes of the samples were determined following the methods described by Ahlstrom and Thraillkill, 1963 and Kane, 1982). In general, samples were poured into 250, 500 or 1000 ml graduated cylinders, depending on the volume of plankton present, the volume of plankton and water was measured, then the sample was poured through a 150 um sieve, allowed to drain, and the volume of water measured. The difference between the two volume measurements was the displacement volume. The displacement volume of each sample was divided by the volume filtered by the net (m^3) and the result is reported here in units of cc/m^3. References Ahlstrom, E. H. and J. R. Thraillkill, Plankton volume loss with time of preservation, Rep. 9, pp. 57-73, Calif. Coop. Oceanic Fish. Invest., La Jolla, 1963. Kane, J., Effect of season and location on the relationship between zooplankton displacement volume and dry weight in the Northwest Atlantic, Fish. Bull., 80, 631-642, 1982. Wiebe, P. H., K. H. Burt, S. H. Boyd, and A. W. Morton, A multiple opening-closing net and environmental sensing system for sampling zooplankton, J. Mar. Res., 34, 312-326, 1976. Wiebe, P. H., A. W. Morton, A. M. Bradley, J. E. Craddock, T. J. Cowles, V. A. Barber, R. H. Backus, and G. R. Flierl, New developments in the MOCNESS, an apparatus for sampling zooplankton and micronekton, Mar. Biol., 87, 313-323, 1985.</p>

TT039

Website	https://www.bco-dmo.org/deployment/57700
Platform	R/V Thomas G. Thompson
Report	http://usjgofs.whoi.edu/arabian-docs/smith-update.html
Start Date	1994-09-18
End Date	1994-10-07
Description	<p>Intercalibration and Training Cruise</p> <p>Methods & Sampling PI: Sharon Smith of: University of Miami dataset: Zooplankton displacement volumes, MOCNESS net tows dates: August 20, 1995 to September 11, 1995 location: N: 21.828 S: 9.9813 W: 58.0172 E: 67.2127 project/cruise: Training & Calibration Cruise TN039 in the Arabian Sea ship: R/V Thomas Thompson Zooplankton displacement volume measurements for Arabian Sea, Cruise TN039 (Training & Calibration Cruise). Sharon L. Smith Rosenstiel School of Marine and Atmospheric Science University of Miami 4600 Rickenbacker Causeway Miami, FL 33149 Zooplankton samples were collected using a one meter Multiple Opening/Closing Net and Environmental Sensing System (MOCNESS) fitted with 149um Nitex nets. The nets fished with an open area of approximately one square meter. A flow meter mounted on the frame, just ahead of the net as it fished, measured the distance towed to allow the calculation of volume filtered. (See Wiebe et al, 1976 and 1985 for further documentation of the original MOCNESS). The MOCNESS was towed behind the ship at approximately 1.5 to 2 knots through the water. Winch speed usually ranged from 10 to 25 meters/minute during deployment and 5 to 15 meters/minute during recovery. On board the ship, samples were either split and 50% preserved or the entire sample was preserved in 4% buffered formaldehyde/sea water for transport to the laboratory. In the laboratory, the displacement volumes of the samples were determined following the methods described by Ahlstrom and Thraillkill, 1963 and Kane, 1982). In general, samples were poured into 250, 500 or 1000 ml graduated cylinders, depending on the volume of plankton present, the volume of plankton and water was measured, then the sample was poured through a 150 um sieve, allowed to drain, and the volume of water measured. The difference between the two volume measurements was the displacement volume. The displacement volume of each sample was divided by the volume filtered by the net (m^3) and the result is reported here in units of cc/m^3. References Ahlstrom, E. H. and J. R. Thraillkill, Plankton volume loss with time of preservation, Rep. 9, pp. 57-73, Calif. Coop. Oceanic Fish. Invest., La Jolla, 1963. Kane, J., Effect of season and location on the relationship between zooplankton displacement volume and dry weight in the Northwest Atlantic, Fish. Bull., 80, 631-642, 1982. Wiebe, P. H., K. H. Burt, S. H. Boyd, and A. W. Morton, A multiple opening-closing net and environmental sensing system for sampling zooplankton, J. Mar. Res., 34, 312-326, 1976. Wiebe, P. H., A. W. Morton, A. M. Bradley, J. E. Craddock, T. J. Cowles, V. A. Barber, R. H. Backus, and G. R. Flierl, New developments in the MOCNESS, an apparatus for sampling zooplankton and micronekton, Mar. Biol., 87, 313-323, 1985.</p>

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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
NSF Division of Ocean Sciences (NSF OCE)	OCE-9310577
NSF Division of Ocean Sciences (NSF OCE)	OCE-9310599
Office of Naval Research (ONR)	N00014-95-10042

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