

# CTD MOCNESS data including calibrated oxygen from R/V Thomas G. Thompson cruises TT043, TT045, TT050, TT054 in the Arabian Sea in 1995 (Arabian Sea project)

**Website:** <https://www.bco-dmo.org/dataset/555763>

**Data Type:** Cruise Results

**Version:** 10 April 2015

**Version Date:** 2015-04-10

## Project

» [U.S. JGOFS Arabian Sea](#) (Arabian Sea)

## Program

» [U.S. Joint Global Ocean Flux Study](#) (U.S. JGOFS)

Contributors	Affiliation	Role
<a href="#">Wishner, Karen</a>	University of Rhode Island (URI-GSO)	Principal Investigator
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## Table of Contents

- [Coverage](#)
- [Dataset Description](#)
  - [Methods & Sampling](#)
  - [Data Processing Description](#)
- [Data Files](#)
- [Parameters](#)
- [Instruments](#)
- [Deployments](#)
- [Project Information](#)
- [Program Information](#)
- [Funding](#)

## Coverage

**Spatial Extent:** N:22.7496 E:68.7549 S:9.9188 W:57.1973

**Temporal Extent:** 1995-01-12 - 1995-12-23

## Dataset Description

CTD MOCNESS data including calibrated oxygen from RV/Thompson cruises in the Arabian Sea during 1995. Samples were obtained during four seasonal cruises in 1995: the late Northeast Monsoon (LNEM) in January (TN043), the Spring Intermonsoon (SI) in March (TN045), the late Southwest Monsoon (LSWM) in August–September (TN050), and the early Northeast Monsoon (ENEM) in December (TN054).

## Methods & Sampling

**Extracted from Wishner et al. 1998; see below for full paper citation:**

Mesozooplankton were collected with a double 1-m<sup>2</sup> MOCNESS (two 1-m<sup>2</sup> MOCNESS systems side-by-side), a multiple opening-closing net system with environmental sensors and control of the nets from shipboard. The nets were 153  $\mu$ m mesh with a 1-m<sup>2</sup> mouth opening (when towed at a 45° angle). The net was towed usually at 1.5–2.5 kts behind the ship. Wire was payed out at 10–25 m/min and hauled in at 5–20 m/min. Electronic data from the MOCNESS included time, volume filtered, depth, temperature (Sea-Bird SBE 3), salinity (Sea-Bird SBE 4), light transmission (SeaTech 25 cm beam transmissometer), and oxygen (Sea-Bird SBE 13). In some cases, the volume filtered for time intervals with electronic problems was extrapolated from trouble-free

portions of a tow. Typically, about 100—200 m<sup>3</sup> of water were filtered for the shallow samples and 500—800 m<sup>3</sup> for the deeper sparser OMZ samples. Usually, 16 discrete samples were collected in an oblique haul from 1000 m to the surface, with 100-m intervals at depth and 50 or 25 m intervals in the upper 400 m.

For oxygen methodology, refer to "[Processing Arabian Sea MOCNESS Oxygen Data](#)" (PDF).

#### Refer to related publications:

Wishner, K.F., M.M. Gowing, and C. Gelfman. 1998. Mesozooplankton biomass in the upper 1000 m in the Arabian Sea: overall seasonal and geographic patterns and relationship to oxygen gradients. *Deep-Sea Research II* 45:2405-2432. doi:[10.1016/S0967-0645\(98\)00078-2](#)

Gowing, M.M. and K.F. Wishner. 1998. Feeding ecology of the copepod *Lucicutia* aff. *L. grandis* near the lower interface of the Arabian Sea oxygen minimum zone. *Deep-Sea Research II* 45:2433-2459. doi:[10.1016/S0967-0645\(98\)00077-0](#)

Smith, S. L., M. Roman, I. Prusova, K. Wishner, M. Gowing, L.A. Codispoti, R. Barber, J. Marra, and C. Flagg. 1998. Seasonal response of zooplankton to monsoonal reversals in the Arabian Sea. *Deep-Sea Research II* 45:2369-2403. doi:[10.1016/S0967-0645\(98\)00075-7](#)

Morrison, J.M., L.A. Codispoti, S. L. Smith, K. Wishner, C. Flagg, W.D. Gardner, S. Gaurin, S.W.A. Naqvi, V. Manghnani, L. Prosperie and J.S. Gundersen. 1999. The oxygen minimum zone in the Arabian Sea during 1995. *Deep-Sea Research II* 46:1903-1931. doi:[10.1016/S0967-0645\(99\)00048-X](#)

Roman, M., S. Smith, K. Wishner, X. Zhang and M. Gowing. 2000. Mesozooplankton production and grazing in the Arabian Sea. *Deep-Sea Research II* 47:1423-1415. doi:[10.1016/S0967-0645\(99\)00149-6](#)

Wishner, K. F., M. M. Gowing, and C. Gelfman. 2000. Living in suboxia: ecology of an Arabian Sea oxygen minimum zone copepod. *Limnology and Oceanography* 45:1576-1593. doi:[10.4319/lo.2000.45.7.1576](#)

Gowing, M. M. D. L. Garrison, K. F. Wishner, and C. Gelfman. 2003. Mesopelagic microplankton of the Arabian Sea. *Deep-Sea Research I* 50:1205-1234. doi:[10.1016/S0967-0637\(03\)00130-4](#)

Wishner, K. F., C. Gelfman, M. M. Gowing, D. M. Outram, M. Rapien, and R. L. Williams. 2008. Vertical zonation and distributions of calanoid copepods through the lower oxycline of the Arabian Sea Oxygen Minimum Zone. *Progress in Oceanography* 78:163-191. doi:[10.1016/j.pocean.2008.03.001](#)

## Data Processing Description

**QC:** Some of the tows include erroneous surface data (i.e. times near the sea surface when the salinity sensor was probably out of the water). This results in negative density (sigma) values, which are not valid. The investigators didn't use those values in their analyses.

#### BCO-DMO Processing:

- modified parameter names to conform with BCO-DMO naming conventions;
- replaced blanks (miss and "#VALUE!" with "nd" (no data);
- obtained dates from cruise event logs for submitted files missing dates.

[ [table of contents](#) | [back to top](#) ]

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## Data Files

File
<b>ctd_mocness.csv</b> (Comma Separated Values (.csv), 10.35 MB) MD5:1afeea6662051c6df6ec497e2de6419f
Primary data file for dataset ID 555763

[ [table of contents](#) | [back to top](#) ]

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## Parameters

Parameter	Description	Units
datatype	Sampling method / instrument type, e.g. MOCNESS-1	unitless
cruiseid	Cruise identification, e.g. NBP0202, for RVIB Palmer cruise 0202	unitless
year_local	4-digit year of the cruise (local time zone)	unitless
tow	Tow number	unitless
day_local	2-digit day of the month (local time zone)	unitless
month_local	2-digit month of the year (local time zone)	unitless
press	Pressure	decibars (dbar)
temp	Water temperature	degrees Celsius ( C )
sal	Salinity	practical salinity units (PSU)
sigma	Sigma-t density	kilograms per cubic meter (kg/m3)
oxygen	O2	milliliters per liter (ml/L)
recal_o2	Re-calibrated O2	milliliters per liter (ml/L)
cal_o2	Calibrated O2	milliliters per liter (ml/L)
winkler_o2	Oxygen Winkler values	milliliters per liter (ml/L)

[ [table of contents](#) | [back to top](#) ]

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## Instruments

Dataset-specific Instrument Name	
Generic Instrument Name	MOCNESS1
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 <sup>2</sup> 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).

[ [table of contents](#) | [back to top](#) ]

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## Deployments

TT043

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57704">https://www.bco-dmo.org/deployment/57704</a>
<b>Platform</b>	R/V Thomas G. Thompson
<b>Report</b>	<a href="http://osprey.bcodmo.org/datasetDeployment.cfm?ddid=2580&amp;did=353&amp;flag=view">http://osprey.bcodmo.org/datasetDeployment.cfm?ddid=2580&amp;did=353&amp;flag=view</a>
<b>Start Date</b>	1995-01-08
<b>End Date</b>	1995-02-05
<b>Description</b>	Purpose: Process Cruise #1 (Late NE Monsoon)

#### TT045

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57706">https://www.bco-dmo.org/deployment/57706</a>
<b>Platform</b>	R/V Thomas G. Thompson
<b>Start Date</b>	1995-03-14
<b>End Date</b>	1995-04-10

#### TT050

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57711">https://www.bco-dmo.org/deployment/57711</a>
<b>Platform</b>	R/V Thomas G. Thompson
<b>Start Date</b>	1995-08-18
<b>End Date</b>	1995-09-15

#### TT054

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57715">https://www.bco-dmo.org/deployment/57715</a>
<b>Platform</b>	R/V Thomas G. Thompson
<b>Start Date</b>	1995-11-30
<b>End Date</b>	1995-12-28

[ [table of contents](#) | [back to top](#) ]

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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.

## 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).

## Funding

Funding Source	Award
<a href="#">NSF Division of Ocean Sciences (NSF OCE)</a>	<a href="#">OCE-9310577</a>
<a href="#">NSF Division of Ocean Sciences (NSF OCE)</a>	<a href="#">OCE-9310599</a>
<a href="#">NSF Division of Ocean Sciences (NSF OCE)</a>	<a href="#">OCE-9310591</a>
<a href="#">NSF Division of Ocean Sciences (NSF OCE)</a>	<a href="#">OCE-9310590</a>
<a href="#">NSF Division of Ocean Sciences (NSF OCE)</a>	<a href="#">OCE-0526502</a>