Total organic carbon profile data from R/V Thomas G. Thompson TT043, TT045, TT049, TT050, TT053, TT054 cruises in the Arabian Sea in 1995 (U.S. JGOFS Arabian Sea project)

Website: https://www.bco-dmo.org/dataset/2543
Version: final
Version Date: 2001-05-08

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

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

Contributors	Affiliation	Role
Hansell, Dennis	University of Miami Rosenstiel School of Marine and Atmospheric Science (UM-RSMAS)	Principal Investigator
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Dataset Description

Total organic carbon profile data

Methods & Sampling

See Platform deployments for cruise specific documentation

Data Processing Description

Methods reported in:

Peltzer, Edward T. (1993). Shipboard determination of total organic carbon by a high temperature combustion/direct injection technique. U.S. Joint Global Ocean Flux Study - Equatorial Pacific Protocols, 1993, section 21A.

The EqPac methods were followed explicity on the Arabian Sea Process cruises with two exceptions:

1. For Process cruises 1, 2 and 4, the WHOI custom built HTC/DI-TOC

analyzer was used. For Process cruises 6 and 7, the BBSR custom built HTC/DI-TOC analyzer was used.

2. Low carbon water (LCW) prepared using a commercial Milli-Q UV/TOC (R) system was used to measure the instrument blank as opposed to the carbon free distilled water (CFDW) that was used in EqPac. For all legs, the LCW was assigned a background TOC value of 0 uMC.

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Parameters

Parameter	Description	Units
event	event number, from event log	
sta	station number, from event log	
sta_std	Arabian Sea standard station identifier	
cast	CTD cast number, from event log	
lat	latitude (minus = South)	decimal degrees
lon	longitude (minus = West)	decimal degrees
bot	CTD rosette bottle number	
depth	sample depth (calculated from pressure)	meters
TOC	total organic carbon	micromoles C/liter
TOC_kg	total organic carbon	micromoles C/kilogram
press	sample depth reported as pressure	decibars

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Instruments

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: Edward Peltzer of: Woods Hole Oceanographic Institution dataset: Total organic carbon profile data dates: January 08, 1995 to February 01, 1995 location: N: 22.483 S: 9.9826 W: 57.2999 E: 68.75 project/cruise: Arabian Sea/TTN-043 - Process Cruise 1 (Late NE Monsoon) ship: Thomas Thompson at sea analysts: Edward Peltzer (WHOI) and Tye Waterhouse (BBSR) **Processing Description** Methods reported in: Peltzer, Edward T. (1993). Shipboard determination of total organic carbon by a high temperature combustion/direct injection technique. U.S. Joint Global Ocean Flux Study - http://usjgofs.whoi.edu/eqpac-docs/proto-21A.html">Equatorial Pacific Protocols, 1993, section 21A. The EqPac methods were followed explicity on the Arabian Sea Process cruises with two exceptions: 1. For Process cruises 1, 2 and 4, the WHOI custom built HTC/DI-TOC analyzer was used. For Process cruises 6 and 7, the BBSR custom built HTC/DI-TOC analyzer was used. 2. Low carbon water (LCW) prepared using a commercial Milli-Q UV/TOC (R) system was used to measure the instrument blank as opposed to the carbon free distilled water (CFDW) that was used in EqPac. For all legs, the LCW was assigned a background TOC value of 0 uMC.

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: Dennis Hansell of: Bermuda Biological Station for Research dataset: Total organic carbon profile data dates: March 14, 1995 to April 08, 1995 location: N: 22.4858 S: 9.9993 W: 57.3007 E: 68.7532 project/cruise: Arabian Sea/TTN-045 - Process Cruise 2 (Spring Intermonsoon) ship: Thomas Thompson at sea analysts: Dennis Hansell (BBSR) and Nancy Hayward (WHOI) **Processing Description** Methods reported in: Peltzer, Edward T. (1993). Shipboard determination of total organic carbon by a high temperature combustion/direct injection technique. U.S. Joint Global Ocean Flux Study - http://usjgofs.whoi.edu/eqpac-docs/proto-21A.html">Equatorial Pacific Protocols, 1993, section 21A. The EqPac methods were followed explicity on the Arabian Sea Process cruises with two exceptions: 1. For Process cruises 1, 2 and 4, the WHOI custom built HTC/DI-TOC analyzer was used. For Process cruises 6 and 7, the BBSR custom built HTC/DI-TOC analyzer was used. 2. Low carbon water (LCW) prepared using a commercial Milli-Q UV/TOC (R) system was used to measure the instrument blank as opposed to the carbon free distilled water (CFDW) that was used in EqPac. For all legs, the LCW was assigned a background TOC value of 0 uMC.

TT049

Website	https://www.bco-dmo.org/deployment/57710
Platform	R/V Thomas G. Thompson
Start Date	1995-07-17
End Date	1995-08-15
Description	**Methods & Sampling** PI: Edward Peltzer of: Woods Hole Oceanographic Institution dataset: Total organic carbon profile data dates: July 18, 1995 to August 13, 1995 location: N: 22.5268 S: 9.911 W: 57.2997 E: 68.7507 project/cruise: Arabian Sea/TTN-049 - Process Cruise 4 (Middle SW Monsoon) ship: Thomas Thompson at sea analysts: Edward Peltzer (WHOI) and Nancy Hayward (WHOI) The total organic carbon analyses in the U.S. JGOFS Arabian Sea program were performed as a collaborative effort of the laboratories of Edward Peltzer (WHOI) and Dennis Hansell (BBSR). Samples for this leg were analyzed at sea by Edward Peltzer (WHOI) and Nancy Hayward (WHOI). See the documentation for a complete description of the methodology used, blank correction protocols and data units. PLEASE NOTE: These samples were NOT filtered; ergo they are TOTAL ORGANIC CARBON (TOC) analyses, not dissolved organic carbon analyses (DOC). A note from the Investigator For Process 4 Station 25 (S6), casts 01 and 03 (event no's 08051242 and 08051535) have been removed due to bad data. These samples were collected in 30 mL vials and analyzed on-shore after the cruise unlike all of the rest of the samples for this leg which were collected in 100 mL bottles and analyzed at sea. We suspect that the teflon cap liners leaked during storage and transport contaminating the samples. Edward T. Peltzer,III etp3@mbari.org **Processing Description** Methods reported in: Peltzer, Edward T. (1993). Shipboard determination of total organic carbon by a high temperature combustion/direct injection technique. U.S. Joint Global Ocean Flux Study - http://usjgofs.whoi.edu/eqpac-docs/proto-21A.html">Equatorial Pacific Protocols, 1993, section 21A. The EqPac methods were followed explicity on the Arabian Sea Process cruises with two exceptions: 1. For Process cruises 1, 2 and 4, the WHOI custom built HTC/DI-TOC analyzer was used. For Process cruises 6 and 7, the BBSR custom built HTC/DI-TOC analyzer was used. 2. Low carbon water (LCW) prepared using a commercial Milli-Q UV/TOC (R) system was used to measure the instrument blank as opposed to the carbon free distilled water (CFDW) that was used in EqPac. For all legs, the LCW was assigned a background TOC value of 0 uMC.

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	**Methods & Sampling** PI: Dennis Hansell of: Bermuda Biological Station for Research dataset: Total organic carbon data from CTD casts dates: August 19, 1995 to September 10, 1995 location: N: 22.487 S: 9.9991 W: 58.0008 E: 68.7492 project/cruise: Arabian Sea/TTN-050, Process Cruise 5 (Late SW Monsoon) ship: Thomas Thompson **Processing Description** Total organic carbon profile data Dennis Hansell Bermuda Biological Station for Research Laboratory analyst: Rachel Parsons (BBSR) Method reported in: Hansell, D.A., C.A. Carlson, N. Bates and A. Poisson. Horizontal and vertical removal of organic carbon in the equatorial Pacific Ocean: a mass balance assessment. Deep-Sea Research II (in press). Notes: 1. For Process cruises 1, 2 and 4, the WHOI custom built HTC/DI-TOC analyzer was used. For Process cruises 5, 6 and 7, the BBSR custom built HTC/DI-TOC analyzer was used. 2. Low carbon water (LCW) prepared using a commercial Milli-Q UV/TOC (R) system was used to measure the instrument blank as opposed to the carbon free distilled water (CFDW) that was used in EqPac. For all legs, the LCW was assigned a background TOC value of 0 uMC.

TT053

Website	https://www.bco-dmo.org/deployment/57714
Platform	R/V Thomas G. Thompson
Start Date	1995-10-29
End Date	1995-11-26
Description	**Methods & Sampling** PI: Dennis Hansell (Bermuda Biological Station for Research) dataset: Total organic carbon profile data dates: October 29, 1995 to November 25, 1995 location: N: 24.3329 S: 10.0848 W: 56.5005 E: 67.1668 project/cruise: Arabian Sea/TTN-053 - Process Cruise 6 (bio-optics) ship: Thomas Thompson at sea analysts: Dennis Hansell (BBSR) and Rachel Parsons (BBSR) Laboratory analyst: Rachel Parsons (BBSR) **Processing Description** Methods reported in: Hansell, D.A., C.A. Carlson, N. Bates and A. Poisson. Horizontal and vertical removal of organic carbon in the equatorial Pacific Ocean: a mass balance assessment. Deep-Sea Research II (in press). The EqPac methods were followed explicity on the Arabian Sea Process cruises with two exceptions: 1. For Process cruises 1, 2 and 4, the WHOI custom built HTC/DI-TOC analyzer was used. For Process cruises 6 and 7, the BBSR custom built HTC/DI-TOC analyzer was used. 2. Low carbon water (LCW) prepared using a commercial Milli-Q UV/TOC (R) system was used to measure the instrument blank as opposed to the carbon free distilled water (CFDW) that was used in EqPac. For all legs, the LCW was assigned a background TOC value of 0 micromoles C.

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	**Methods & Sampling** PI: Dennis Hansell of: Bermuda Biological Station for Research dataset: Total organic carbon profile data dates: November 30, 1995 to December 26, 1995 location: N: 22.5005 S: 9.9789 W: 57.2992 E: 68.7849 project/cruise: Arabian Sea/TTN-054 - Process Cruise 7 (Early NE Monsoon) ship: Thomas Thompson at sea analysts: Tye Waterhouse (BBSR) and Liz Caporelli (BBSR) **Processing Description** Methods reported in: Hansell, D.A., C.A. Carlson, N. Bates and A. Poisson. Horizontal and vertical removal of organic carbon in the equatorial Pacific Ocean: a mass balance assessment. Deep-Sea Research II (in press). The EqPac methods were followed explicity on the Arabian Sea Process cruises with two exceptions: 1. For Process cruises 1, 2 and 4, the WHOI custom built HTC/DI-TOC analyzer was used. For Process cruises 6 and 7, the BBSR custom built HTC/DI-TOC analyzer was used. 2. Low carbon water (LCW) prepared using a commercial Milli-Q UV/TOC (R) system was used to measure the instrument blank as opposed to the carbon free distilled water (CFDW) that was used in EqPac. For all legs, the LCW was assigned a background TOC value of 0 micromoles C.

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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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