Particulate absorption data from R/V Thomas G. Thompson TT053, TT045, TT054 cruises in the Arabian Sea in 1995 (U.S. JGOFS Arabian Sea project)

Website: https://www.bco-dmo.org/dataset/2564
Version: July 2, 2002
Version Date: 2002-07-02

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

Particulate absorption data

Methods & Sampling

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Arabian Sea particulate absorption data

Process Cruises 2, 6 and 7

Chuck Trees
Particulate absorption methodology
Arabesque 1 and Process Cruises 2, 6 and 7

Particulate matter was collected by filtering approximately 1.1 liters of sample through 25 mm GF/F glass fiber filters having a nominal pore size of 0.7 micrometers. Spectral absorption was measured on a Perkin-Elmer Lambda 3b dual beam spectrophotometer. Diffuse absorption coefficients for total particulate matter was calculated using the equations described in the SeaWiFS Optical Protocols (Mueller and Austin, 1995) and a pathlength amplification factor determined from two diatom cultures. The amplification factor, beta, is calculated by plotting optical densities on a filter versus optical densities in suspension and fitting a 2nd order polynomial to the data. The Beta factor for the Lambda 3b is

ODs = 0.3090*(ODf) + 0.5473*(ODf)**2,

r**2 = 0.993.

Hot methanol was used to extract pigmented compounds from the filtered sample, and the bleached filter was then measured to estimate detrital absorption. The difference between the two measurements represent absorption by phytoplankton pigments. The units for the particulate absorption are in per meter; measurements have been scaled by the volume filtered and the area of the filter on which the particles were deposited.

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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, from event log	
lat	latitude (negative = south)	decimal degrees
lon	longitude (negative = west)	decimal degrees
sample	particulate or detrital	
depth_n	sample depth	meters
wl_XXX	measured absorption at wavelength XXX nm	meter^-1

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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

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: Chuck Trees of: San Diego State University dataset: Particulate absorption data dates: October 29, 1995 to November 25, 1995 location: N: 24.3274 S: 10.0823 W: 56.4858 E: 67.1664 project/cruise: Arabian Sea/TTN-053 - Process Cruise 6 (bio-optics) ship: Thomas Thompson Arabian Sea particulate absorption data Process Cruises 2, 6 and 7 Chuck Trees Particulate absorption methodology Arabesque 1 and Process Cruises 2, 6 and 7 Particulate matter was collected by filtering approximately 1.1 liters of sample through 25 mm GF/F glass fiber filters having a nominal pore size of 0.7 micrometers. Spectral absorption was measured on a Perkin-Elmer Lambda 3b dual beam spectrophotometer. Diffuse absorption coefficients for total particulate matter was calculated using the equations described in the SeaWiFS Optical Protocols (Mueller and Austin, 1995) and a pathlength amplification factor determined from two diatom cultures. The amplification factor, beta, is calculated by plotting optical densities on a filter versus optical densities in suspension and fitting a 2nd order polynomial to the data. The Beta factor for the Lambda 3b is ODs = 0.3090*(ODf) + 0.5473*(ODf)**2, r**2 = 0.993. Hot methanol was used to extract pigmented compounds from the filtered sample, and the bleached filter was then measured to estimate detrital absorption. The difference between the two measurements represent absorption by phytoplankton pigments. The units for the particulate absorption are in per meter; measurements have been scaled by the volume filtered and the area of the filter on which the particles were deposited. Charles C. Trees Center for Hydro-Optics and Remote Sensing San Diego State University ctrees@chors.sdsu.edu

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: Chuck Trees of: San Diego State University dataset: Particulate absorption data dates: October 29, 1995 to November 25, 1995 location: N: 24.3274 S: 10.0823 W: 56.4858 E: 67.1664 project/cruise: Arabian Sea/TTN-053 - Process Cruise 6 (bio-optics) ship: Thomas Thompson Arabian Sea particulate absorption data Process Cruises 2, 6 and 7 Chuck Trees Particulate absorption methodology Arabesque 1 and Process Cruises 2, 6 and 7 Particulate matter was collected by filtering approximately 1.1 liters of sample through 25 mm GF/F glass fiber filters having a nominal pore size of 0.7 micrometers. Spectral absorption was measured on a Perkin-Elmer Lambda 3b dual beam spectrophotometer. Diffuse absorption coefficients for total particulate matter was calculated using the equations described in the SeaWiFS Optical Protocols (Mueller and Austin, 1995) and a pathlength amplification factor determined from two diatom cultures. The amplification factor, beta, is calculated by plotting optical densities on a filter versus optical densities in suspension and fitting a 2nd order polynomial to the data. The Beta factor for the Lambda 3b is ODs = 0.3090*(ODf) + 0.5473*(ODf)**2, r**2 = 0.993. Hot methanol was used to extract pigmented compounds from the filtered sample, and the bleached filter was then measured to estimate detrital absorption. The difference between the two measurements represent absorption by phytoplankton pigments. The units for the particulate absorption are in per meter; measurements have been scaled by the volume filtered and the area of the filter on which the particles were deposited. Charles C. Trees Center for Hydro-Optics and Remote Sensing San Diego State University ctrees@chors.sdsu.edu

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: Chuck Trees of: San Diego State University dataset: Particulate absorption data dates: October 29, 1995 to November 25, 1995 location: N: 24.3274 S: 10.0823 W: 56.4858 E: 67.1664 project/cruise: Arabian Sea/TTN-053 - Process Cruise 6 (bio-optics) ship: Thomas Thompson Arabian Sea particulate absorption data Process Cruises 2, 6 and 7 Chuck Trees Particulate absorption methodology Arabesque 1 and Process Cruises 2, 6 and 7 Particulate matter was collected by filtering approximately 1.1 liters of sample through 25 mm GF/F glass fiber filters having a nominal pore size of 0.7 micrometers. Spectral absorption was measured on a Perkin-Elmer Lambda 3b dual beam spectrophotometer. Diffuse absorption coefficients for total particulate matter was calculated using the equations described in the SeaWiFS Optical Protocols (Mueller and Austin, 1995) and a pathlength amplification factor determined from two diatom cultures. The amplification factor, beta, is calculated by plotting optical densities on a filter versus optical densities in suspension and fitting a 2nd order polynomial to the data. The Beta factor for the Lambda 3b is ODs = 0.3090*(ODf) + 0.5473*(ODf)**2, r**2 = 0.993. Hot methanol was used to extract pigmented compounds from the filtered sample, and the bleached filter was then measured to estimate detrital absorption. The difference between the two measurements represent absorption by phytoplankton pigments. The units for the particulate absorption are in per meter; measurements have been scaled by the volume filtered and the area of the filter on which the particles were deposited. Charles C. Trees Center for Hydro-Optics and Remote Sensing San Diego State University ctrees@chors.sdsu.edu

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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 Aeronautics & Space Administration (NASA)	unknown Arabian Sea NASA

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