

Th-234 in particulate and dissolved phases; POC/PON from R/V Thomas G. Thompson TT043, TT045, TT049, TT050 cruises in the Arabian Sea in 1995 (U.S. JGOFS Arabian Sea project)

Website: <https://www.bco-dmo.org/dataset/2523>

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Project

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

Program

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

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Dataset Description

Th-234 in particulate and dissolved phases; POC/PON

Methods & Sampling

Samples were collected using either: a) in-situ battery powered pump, the "Slurper", or b) ship's seawater line. In general, 200 liter samples were passed sequentially through a Nitex screen (53 micron), Quartz filter (1 micron) and two thorium adsorber cartridges.

Samples were collected on legs 1 (Jan.), 2 (March), 4 (July) and 5 (August) with a few additional samples in early July (SeaSoar cruise). On each cruise: Surface samples were collected at every station (n>30); 0-100 meter composite samples were collected at every intermediate and long station (n>14); and discrete depth samples were collected at every long station (n>5).

At sea analyses included: a) direct beta counting for all filters and some adsorbers samples counted 4-5 times to ensure accuracy and precision and b) direct gamma counting for adsorbers.

Post-cruise analyses included: a) CHN on all filters for POC content and b) radiochemical purification and samples plus standards counted on calibrated detectors.

Reference:

Buesseler, Ken, Lary Ball, John Andrews, Claudia Benitez-Nelson, Rebecca Belastock, Fei Chai and Yi Chao (1998). Upper ocean export of particulate organic carbon in the Arabian Sea derived from thorium-234 in Arabian Sea Expedition, Part I. Deep-Sea Research, 45(10-11): 2461-2487, U.S. JGOFS Contribution No. 411.

Parameters

Parameter	Description	Units
event	event number from event log	
sta	station number from event log	
sta_std	Arabian Sea standard station identifier	
lat	latitude in decimal degrees	
lon	longitude in decimal degrees	
sample	surface=ship's seawater line integrated=in-situ pump (Slurper) integrated over depth range discrete=in-situ pump (Slurper) at one discrete depth	
depth	either surface, discrete depth or integrated depth range	meters
Th234_p_gt53	particulate Th234 activity in the size fraction greater than 53 microns	dpm/liter
err_p_gt53	error of particulate Th234 activity greater than 53 microns; 1 sigma	
Th234_p_1to53	particulate Th234 activity in the size fraction between 1 and 53 microns	dpm/liter
err_p_1to53	error of particulate Th234 activity between 1 and 53 microns; 1 sigma	
Th234_d	dissolved Th234 activity	dpm/liter
err_d	error of dissolved Th234 activity; 1 sigma	
POC_gt53	particulate organic carbon in the size fraction greater than 53 microns	umol/liter
POC_1to53	particulate organic carbon in the size fraction between 1 and 53 microns	umol/liter
PON_gt53	particulate organic nitrogen in the size fraction greater than 53 microns	umol/liter
PON_1to53	particulate organic nitrogen in the size fraction between 1 and 53 microns	umol/liter

Instruments

Dataset-specific Instrument Name	Ken Buessler's Slurper pump
Generic Instrument Name	Slurper Pump
Dataset-specific Description	Ken Buessler's Slurper pump
Generic Instrument Description	The 'Slurper' is a custom designed in situ pumping system that pumps seawater in a way that allows large-volume sampling of pre-determined depth intervals. The 'Slurper' was used during US JGOFS cruises to acquire samples for 234-Thorium and POC/PON analysis (Buessler et al., 1988). The 'Slurper' sampling system comprised a positive displacement pump coupled to a DC motor. Pump speed and sample volume were controlled via shipboard laptop computer. References: Buessler, K. O., L. Ball, J. Andrews, C. Benitez-Nelson, R. Belastock, F. Chai and Y.Chao. 1998. Upper Ocean Export of Particulate Organic Carbon in the Arabian Sea derived from Thorium-234. Deep-Sea Res. II, Arabian Sea Volume, Vol. 45, No. 10-11, 2461-2488.

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	<p>Purpose: Process Cruise #1 (Late NE Monsoon)</p> <p>Methods & Sampling PI: Ken Buesseler of: Woods Hole Oceanographic Institution dataset: Th-234 in particulate and dissolved phases; POC/PON dates: January 08, 1995 to January 31, 1995 location: N: 22.4831 S: 9.9993 W: 57.3137 E: 68.7507 project/cruise: Arabian Sea/TN043 - Process Cruise 1 (Late NE Monsoon) ship: Thomas Thompson Buesseler notes: Where greater than 53 micron data is missing, 1 to 53 micron is actually greater than 1 micron size fraction. The "Slurper" is an in-situ pump capable of sampling discrete depths or integrating over a depth range. On TTN043 and TTN045, surface samples were collected using the ship's seawater line. On TTN049, surface samples were collected using both the ship's line and the Slurper. On TTN050, all samples were collected with the Slurper, including surface samples.</p>

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	<p>Methods & Sampling PI: Ken Buesseler of: Woods Hole Oceanographic Institution dataset: Th-234 in particulate and dissolved phases; POC/PON dates: March 14, 1995 to April 08, 1995 location: N: 22.4835 S: 9.9976 W: 57.3032 E: 68.745 project/cruise: Arabian Sea/TN045 - Process Cruise 2 (Spring Intermonsoon) ship: Thomas Thompson Buesseler notes: Where greater than 53 micron data is missing, 1 to 53 micron is actually greater than 1 micron size fraction. The "Slurper" is an in-situ pump capable of sampling discrete depths or integrating over a depth range. On TTN043 and TTN045, surface samples were collected using the ship's seawater line. On TTN049, surface samples were collected using both the ship's line and the Slurper. On TTN050, all samples were collected with the Slurper, including surface samples.</p>

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	<p>Methods & Sampling PI: Ken Buesseler of: Woods Hole Oceanographic Institution dataset: Th-234 in particulate and dissolved phases; POC/PON dates: July 18, 1995 to August 12, 1995 location: N: 22.5213 S: 9.9423 W: 57.3182 E: 68.756 project/cruise: Arabian Sea/TN049 - Process Cruise 4 (Middle SW Monsoon) ship: Thomas Thompson Buesseler notes: Where greater than 53 micron data is missing, 1 to 53 micron is actually greater than 1 micron size fraction. The "Slurper" is an in-situ pump capable of sampling discrete depths or integrating over a depth range. On TTN043 and TTN045, surface samples were collected using the ship's seawater line. On TTN049, surface samples were collected using both the ship's line and the Slurper. On TTN050, all samples were collected with the Slurper, including surface samples.</p>

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 PI: Ken Buesseler of: Woods Hole Oceanographic Institution dataset: Th-234 in particulate and dissolved phases; POC/PON dates: August 18, 1995 to September 12, 1995 location: N: 22.4878 S: 9.9465 W: 57.3012 E: 68.7517 project/cruise: Arabian Sea/TN050 - Process Cruise 5 (Late SW Monsoon) ship: Thomas Thompson Buesseler notes: Where greater than 53 micron data is missing, 1 to 53 micron is actually greater than 1 micron size fraction. The "Slurper" is an in-situ pump capable of sampling discrete depths or integrating over a depth range. On TTN043 and TTN045, surface samples were collected using the ship's seawater line. On TTN049, surface samples were collected using both the ship's line and the Slurper. On TTN050, all samples were collected with the Slurper, including surface samples.</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.

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
National Science Foundation (NSF)	unknown Arabian Sea NSF