Th-234 in particulate and dissolved phases; POC/PON from RVIB Nathaniel B. Palmer and R/V Roger Revelle cruises in the Southern Ocean, 1997-1998 (U.S. JGOFS AESOPS project)

Website: https://www.bco-dmo.org/dataset/2733
Version: final
Version Date: 1999-12-13

Project
» U.S. JGOFS Antarctic Environment and Southern Ocean Process Study (AESOPS)

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

Contributors	Affiliation	Role
Buesseler, Kenneth O.	Woods Hole Oceanographic Institution (WHOI)	Principal Investigator
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Dataset Description

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

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Data Files

File	
th234_pump_KIWI6.csv	(Comma Separated Values (.csv), 4.03 KB) MD5:ba9dae379c90003eec79667ca9de265e

version December 13, 1999
Ken Buesseler, Michael Bacon & Kirk Cochran
Th-234 in particulate and dissolved phases; POC/PON
AESOPS/KIWI6; APFZ Survey 1 cruise

File		
th234_pump_KIWI7.csv	(Comma Separated Values (.csv), 7.93 KB) MD5:fc139a4e6c77fb5ea522ab6f0e275099	
version December 13, 1999 Ken Buesseler, Michael Bacon & Kirk Cochran Th-234 in particulate and dissolved phases; POC/PON AESOPS/KIWI7; APFZ Process 1 cruise		
th234_pump_KIWI8.csv	(Comma Separated Values (.csv), 4.29 KB) MD5:3dead920998e86b4f63b9dae41b38213	
version December 13, 1999 Ken Buesseler, Michael Bacon & Kirk Cochran Th-234 in particulate and dissolved phases; POC/PON AESOPS/KIWI8; APFZ Survey 2 cruise		
th234_pump_KIWI9.csv	(Comma Separated Values (.csv), 7.99 KB) MD5:4d94d530b2ad8932e5cf23b4ef88c224	
version December 13, 1999 Ken Buesseler, Michael Bacon & Kirk Cochran Th-234 in particulate and dissolved phases; POC/PON AESOPS/KIWI9; APFZ Process 2 cruise		
th234_pump_NBP-96-04A.csv	(Comma Separated Values (.csv), 4.24 KB) MD5:49b1f8c91feb38448eb4432d144d2aa2	
version June 17, 1999 Ken Buesseler, Michael Bacon & Kirk Cochran Th-234 in particulate and dissolved phases; POC/PON AESOPS/NBP96-4A; Ross Sea Process 1 cruise		
th234_pump_NBP-97-01.csv	(Comma Separated Values (.csv), 5.02 KB) MD5:4c1ceecd8ce405a882d3608fc30a8fd6	
version June 17, 1999 Ken Buesseler, Michael Bacon & Kirk Cochran Th-234 in particulate and dissolved phases; POC/PON AESOPS/NBP97-1; Ross Sea Process 2 cruise		
th234_pump_NBP-97-03.csv	(Comma Separated Values (.csv), 7.05 KB) MD5:6fc5ae5d499b05f936334dc2fd709243	
version June 17, 1999 Ken Buesseler, Michael Bacon & Kirk Cochran Th-234 in particulate and dissolved phases; POC/PON AESOPS/NBP97-3; Ross Sea Process 3 cruise		

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Parameters

Parameter	Description	Units
event	event number from event log	
sta	station number from event log	

lat	latitude in decimal degrees	
lon	longitude in decimal degrees	
sample	integrated=in-situ pump (Slurper) integrated over depth range discrete=in-situ pump (Slurper) at one discrete depth	
depth_n	nominal depth	meters
Th234_p_gt70	particulate Th234 activity in the size fraction greater than 70 microns	dpm/liter
err_p_gt70	error of particulate Th234 activity greater than 70 microns; 1 sigma	
Th234_p_1to70	particulate Th234 activity in the size fraction between 1 and 70 microns	dpm/liter
err_p_1to70	error of particulate Th234 activity between 1 and 70 microns; 1 sigma	
Th234_d	dissolved Th234 activity	dpm/liter
Th234_d_err	error of dissolved Th234 activity; 1 sigma	dpm/liter
Th234_t	total Th234 activity	dpm/liter
Th234_t_err	error of total Th234 activity; 1 sigma	dpm/liter
flag_q	Th234 data quality code a = good b = Mn cartridge efficiency poor c = other error	
POC_gt70	particulate organic carbon in the size fraction greater than 70 microns	umol/liter
PON_gt70	particulate organic nitrogen in the size fraction greater than 70 microns	umol/liter
POC_1to70	particulate organic carbon in the size fraction between 1 and 70 microns	umol/liter
PON_1to70	particulate organic nitrogen in the size fraction between 1 and 70 microns	umol/liter

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Instruments

Dataset-specific Instrument Name	Ken Buesseler's Slurper pump
Generic Instrument Name	Slurper Pump
Dataset-specific Description	Ken Buesseler's Slurper th234_pump, thorium-234 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 (Buesseler 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: Buesseler, 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.

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Deployments

NBP-96-04A

Website	https://www.bco-dmo.org/deployment/57718
Platform	RVIB Nathaniel B. Palmer
Report	http://usjgofs.whoi.edu/aesops/p1.html
Start Date	1996-10-02
End Date	1996-11-08
Description	Ross Sea Process Study 1 **Methods & Sampling** PI: Ken Buesseler, Michael Bacon and Kirk Cochran of: Woods Hole Oceanographic Institution (Buesseler,Bacon) and SUNY/Stony Brook (Cochran) dataset: Th-234 in particulate and dissolved phases; POC/PON dates: October 08, 1996 to November 05, 1996 location: N: -63.4455 S: -77.9937 W: 168.9907 E: -177.9562 project/cruise: AESOPS/NBP-96-4A - Ross Sea Process 1 Cruise ship: R/V Nathaniel B. Palmer Methodology Reference K. Buesseler, L. Ball, J. Andrews, C. Benitez-Nelson, R. Belastock, F. Chai and Y. Chao. Upper ocean export of particulate organic carbon in the Arabian Sea derived from thorium-234. Deep-Sea Research II, Vol. 45, No. 10-11, p.2461.

NBP-97-01

Website	https://www.bco-dmo.org/deployment/57720
Platform	RVIB Nathaniel B. Palmer
Report	http://usjgofs.whoi.edu/aesops/p2.html
Start Date	1997-01-13
End Date	1997-02-11
Description	Ross Sea Process Study 2 **Methods & Sampling** PI: Ken Buesseler, Michael Bacon and Kirk Cochran of: Woods Hole Oceanographic Institution (Buesseler,Bacon) and SUNY/Stony Brook (Cochran) dataset: Th-234 in particulate and dissolved phases; POC/PON dates: January 13, 1997 to February 08, 1997 location: N: -74.0085 S: -77.392 W: 168.9067 E: -175.9915 project/cruise: AESOPS/NBP-97-1 - Ross Sea Process 2 Cruise ship: R/V Nathaniel B. Palmer Methodology Reference K. Buesseler, L. Ball, J. Andrews, C. Benitez-Nelson, R. Belastock, F. Chai and Y. Chao. Upper ocean export of particulate organic carbon in the Arabian Sea derived from thorium-234. Deep-Sea Research II, Vol. 45, No. 10-11, p.2461.

NBP-97-03

Website	https://www.bco-dmo.org/deployment/57721
Platform	RVIB Nathaniel B. Palmer
Report	http://usjgofs.whoi.edu/aesops/p3.html
Start Date	1997-04-04
End Date	1997-05-11
Description	Ross Sea Process Study 3 **Methods & Sampling** PI: Ken Buesseler, Michael Bacon and Kirk Cochran of: Woods Hole Oceanographic Institution (Buesseler,Bacon) and SUNY/Stony Brook (Cochran) dataset: Th-234 in particulate and dissolved phases; POC/PON dates: April 10, 1997 to May 04, 1997 location: N: -67.6337 S: -77.9897 W: 168.9694 E: -176.1115 project/cruise: AESOPS/NBP-97-3 - Ross Sea Process Cruise 3 ship: R/V Nathaniel B. Palmer Methodology Reference K. Buesseler, L. Ball, J. Andrews, C. Benitez-Nelson, R. Belastock, F. Chai and Y. Chao. Upper ocean export of particulate organic carbon in the Arabian Sea derived from thorium-234. Deep-Sea Research II, Vol. 45, No. 10-11, p.2461.

KIWI6

Website	https://www.bco-dmo.org/deployment/57724
Platform	R/V Roger Revelle
Report	http://usjgofs.whoi.edu/aesops/RRs1.html
Start Date	1997-10-20
End Date	1997-11-24
Description	Polar Front Survey I. Additional information about this cruise can be found at https://usjgofs.whoi.edu/aesops/aboutrr6.html **Methods & Sampling** PI: Ken Buesseler, Michael Bacon and Kirk Cochran of: Woods Hole Oceanographic Institution (Buesseler,Bacon) and SUNY/Stony Brook (Cochran) dataset: Th-234 in particulate and dissolved phases; POC/PON dates: October 24, 1997 to November 18, 1997 location: N: -57.0148 S: -62.3172 W: -170.6927 E: -168.1918 project/cruise: AESOPS/KIWI6 - APFZ Polar Front Survey 1 cruise ship: R/V Roger A. Revelle Methodology Reference K. Buesseler, L. Ball, J. Andrews, C. Benitez-Nelson, R. Belastock, F. Chai and Y. Chao. Upper ocean export of particulate organic carbon in the Arabian Sea derived from thorium-234. Deep-Sea Research II, Vol. 45, No. 10-11, p.2461.

KIWI7

Website	https://www.bco-dmo.org/deployment/57725
Platform	R/V Roger Revelle
Report	http://usjgofs.whoi.edu/aesops/RRp1.html
Start Date	1997-12-02
End Date	1998-01-03
Description	Polar Front Process I. Additional information about this cruise can be found at https://usjgofs.whoi.edu/aesops/aboutrr7.html **Methods & Sampling** PI: Ken Buesseler, Michael Bacon and Kirk Cochran of: Woods Hole Oceanographic Institution (Buesseler,Bacon) and SUNY/Stony Brook (Cochran) dataset: Th-234 in particulate and dissolved phases; POC/PON dates: December 04, 1997 to December 26, 1997 location: N: -53.0298 S: -64.6732 W: -174.7287 E: -168.8332 project/cruise: AESOPS/KIWI7 - APFZ Polar Front Process 1 cruise ship: R/V Roger A. Revelle Methodology Reference K. Buesseler, L. Ball, J. Andrews, C. Benitez-Nelson, R. Belastock, F. Chai and Y. Chao. Upper ocean export of particulate organic carbon in the Arabian Sea derived from thorium-234. Deep-Sea Research II, Vol. 45, No. 10-11, p.2461.

KIWI8

Website	https://www.bco-dmo.org/deployment/57726
Platform	R/V Roger Revelle
Report	http://usjgofs.whoi.edu/aesops/RRs2.html
Start Date	1998-01-08
End Date	1998-02-08
Description	Polar Front Survey II. Additional information about this cruise can be found at https://usjgofs.whoi.edu/aesops/aboutrr8.html **Methods & Sampling** PI: Ken Buesseler, Michael Bacon and Kirk Cochran of: Woods Hole Oceanographic Institution (Buesseler,Bacon) and SUNY/Stony Brook (Cochran) dataset: Th-234 in particulate and dissolved phases; POC/PON dates: January 17, 1998 to January 28, 1998 location: N: -60 S: -67.7842 W: -170.1133 E: -170.1 project/cruise: AESOPS/KIWI8 - APFZ Polar Front Survey 2 cruise ship: R/V Roger A. Revelle Methodology Reference K. Buesseler, L. Ball, J. Andrews, C. Benitez-Nelson, R. Belastock, F. Chai and Y. Chao. Upper ocean export of particulate organic carbon in the Arabian Sea derived from thorium-234. Deep-Sea Research II, Vol. 45, No. 10-11, p.2461.

KIWI9

Website	https://www.bco-dmo.org/deployment/57727
Platform	R/V Roger Revelle
Report	http://usjgofs.whoi.edu/aesops/RRp2.html
Start Date	1998-02-13
End Date	1998-03-19
Description	Polar Front Process II. Additional information about this cruise can be found at https://usjgofs.whoi.edu/aesops/aboutrr9.html **Methods & Sampling** PI: Ken Buesseler, Michael Bacon and Kirk Cochran of: Woods Hole Oceanographic Institution (Buesseler,Bacon) and SUNY/Stony Brook (Cochran) dataset: Th-234 in particulate and dissolved phases; POC/PON dates: February 16, 1998 to March 15, 1998 location: N: -52.9775 S: -70.4002 W: -174.733 E: -165.9148 project/cruise: AESOPS/KIWI9 - APFZ Polar Front Process 2 cruise ship: R/V Roger A. Revelle Methodology Reference K. Buesseler, L. Ball, J. Andrews, C. Benitez-Nelson, R. Belastock, F. Chai and Y. Chao. Upper ocean export of particulate organic carbon in the Arabian Sea derived from thorium-234. Deep-Sea Research II, Vol. 45, No. 10-11, p.2461.

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Project Information

U.S. JGOFS Antarctic Environment and Southern Ocean Process Study (AESOPS)

Website: http://usjgofs.whoi.edu/research/aesops.html

Coverage: Southern Ocean, Ross Sea

The U.S. Southern Ocean JGOFS program, called Antarctic Environment and Southern Ocean Process Study (AESOPS), began in August 1996 and continued through March 1998. The U.S. JGOFS AESOPS program focused on two regions in the Southern Ocean: an east/west section of the Ross-Sea continental shelf along

76.5°S, and a second north/south section of the Southern Ocean spanning the Antarctic Circumpolar Current (ACC) at ~170°W (identified as the Polar Front). The science program, coordinated by Antarctic Support Associates (ASA), comprised eleven cruises using the R.V.I.B Nathaniel B. Palmer and R/V Roger Revelle as observational platforms and for deployment and recovery of instrumented moorings and sediment-trap arrays. The Ross-Sea region was occupied on six occasions and the Polar Front five times. Mapping data were obtained from SeaSoar, ADCP, and bathymetric systems. Satellite coverage was provided by the NASA SeaWiFS and the NOAA/NASA Pathfinder programs.

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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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