

Natural nitrogen and carbon stable isotopic composition 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/2719>

Version: final

Version Date: 2002-10-02

Project

» [U.S. JGOFS Antarctic Environment and Southern Ocean Process Study](#) (AESOPS)

Program

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

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Dataset Description

Natural nitrogen and carbon stable isotopic composition

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Parameters

Parameter	Description	Units
event	event number, from event log	
sta	station number, from event log	
cast	cast number	
cast_type	CTD = Ctd rosette TM = Trace Metal rosette	
bot	rosette bottle number	
depth_n	nominal or target sample depth	meters
dN15_NO3	delta 15N of dissolved nitrate	per mil (ppt)
dN15_POM	delta 15N of particulate organic	per mil (ppt)
dC13_POM	delta 13C of particulate organic	per mil (ppt)

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Instruments

Dataset-specific Instrument Name	Niskin Bottle
Generic Instrument Name	Niskin bottle
Dataset-specific Description	CTD clean rosette (Niskin) bottles were used to collect water samples.
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.

Dataset-specific Instrument Name	Trace Metal Bottle
Generic Instrument Name	Trace Metal Bottle
Dataset-specific Description	Trace metal (TM) clean rosette bottles were used to collect water samples.
Generic Instrument Description	Trace metal (TM) clean rosette bottle used for collecting trace metal clean seawater samples.

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Deployments

NBP-96-4

Website	https://www.bco-dmo.org/deployment/57717
Platform	RVIB Nathaniel B. Palmer
Report	http://usjgofs.whoi.edu/aesops/ss.html
Start Date	1996-08-30
End Date	1996-09-24
Description	<p>Site Survey Cruise</p> <p>Methods & Sampling PI: Mark Altabet and Roger Francois of: University of Massachusetts, Dartmouth (Altabet) Woods Hole Oceanographic Institution (Francois) dataset: Natural nitrogen and carbon stable isotopic composition dates: August 31, 1996 to September 18, 1996 location: N: -46.4002 S: -63.9078 W: -178.357 E: -169.364 project/cruise: AESOPS/NBP-96-4 - Site Survey Cruise ship: R/V Nathaniel B. Palmer Methods for nitrate isotopic reported in: Sigman, D. M., M. A. Altabet, R. Michener, D. C. McCorkle, B. Fry and R. M. Holmes. (1997). Natural Abundance-level measurement of the nitrogen isotopic composition of oceanic nitrate: an adaptation of the ammonia diffusion method. Mar. Chem. 57, 227-242. Methods for POM isotopic composition in: Altabet, M. A., and R. Francois, 1994. Sedimentary N isotopic ratio as a recorder for surface ocean nitrate utilization. Global Biogeochemical Cycles., 8, 103-116.</p>

NBP-96-04A

Website	https://www.bco-dmo.org/deployment/57718
Platform	RVIB Nathaniel B. Palmer
Report	http://usjgofs.who.edu/aesops/p1.html
Start Date	1996-10-02
End Date	1996-11-08
Description	<p>Ross Sea Process Study 1</p> <p>Methods & Sampling PI: Mark Altabet and Roger Francois of: University of Massachusetts, Dartmouth (Altabet) Woods Hole Oceanographic Institution (Francois) dataset: Natural nitrogen and carbon stable isotopic composition dates: October 18, 1996 to November 06, 1996 location: N: -76.443 S: -76.5622 W: 168.9803 E: -177.6887 project/cruise: AESOPS/NBP-96-4A - Ross Sea Process Cruise 1 ship: R/V Nathaniel B. Palmer Methods for nitrate isotopic reported in: Sigman, D. M., M. A. Altabet, R. Michener, D. C. McCorkle, B. Fry and R. M. Holmes. (1997). Natural Abundance-level measurement of the nitrogen isotopic composition of oceanic nitrate: an adaptation of the ammonia diffusion method. Mar. Chem. 57, 227-242. Methods for POM isotopic composition in: Altabet, M. A., and R. Francois, 1994. Sedimentary N isotopic ratio as a recorder for surface ocean nitrate utilization. Global Biogeochemical Cycles., 8, 103-116.</p>

NBP-96-5

Website	https://www.bco-dmo.org/deployment/57719
Platform	RVIB Nathaniel B. Palmer
Report	http://usjgofs.who.edu/aesops/m1.html
Start Date	1996-11-11
End Date	1996-12-01
Description	<p>Moorings Deployment</p> <p>Methods & Sampling PI: Mark Altabet and Roger Francois of: University of Massachusetts, Dartmouth (Altabet) Woods Hole Oceanographic Institution (Francois) dataset: Natural nitrogen and carbon stable isotopic composition dates: November 13, 1996 to November 24, 1996 location: N: -56.8703 S: -76.5168 W: 176.9095 E: -169.6785 project/cruise: AESOPS/NBP-96-5 - Mooring and Trap Deployment ship: R/V Nathaniel B. Palmer Methods for nitrate isotopic reported in: Sigman, D. M., M. A. Altabet, R. Michener, D. C. McCorkle, B. Fry and R. M. Holmes. (1997). Natural Abundance-level measurement of the nitrogen isotopic composition of oceanic nitrate: an adaptation of the ammonia diffusion method. Mar. Chem. 57, 227-242. Methods for POM isotopic composition in: Altabet, M. A., and R. Francois, 1994. Sedimentary N isotopic ratio as a recorder for surface ocean nitrate utilization. Global Biogeochemical Cycles., 8, 103-116.</p>

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	<p>Ross Sea Process Study 2</p> <p>Methods & Sampling PI: Mark Altabet and Roger Francois of: University of Massachusetts, Dartmouth (Altabet) Woods Hole Oceanographic Institution (Francois) dataset: Natural nitrogen and carbon stable isotopic composition dates: January 19, 1997 to February 07, 1997 location: N: -76.1042 S: -76.5422 W: 163.3865 E: -178.0017 project/cruise: AESOPS/NBP-97-1 - Ross Sea Process Cruise 2 ship: R/V Nathaniel B. Palmer Methods for nitrate isotopic reported in: Sigman, D. M., M. A. Altabet, R. Michener, D. C. McCorkle, B. Fry and R. M. Holmes. (1997). Natural Abundance-level measurement of the nitrogen isotopic composition of oceanic nitrate: an adaptation of the ammonia diffusion method. Mar. Chem. 57, 227-242. Methods for POM isotopic composition in: Altabet, M. A., and R. Francois, 1994. Sedimentary N isotopic ratio as a recorder for surface ocean nitrate utilization. Global Biogeochemical Cycles., 8, 103-116.</p>

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	<p>Ross Sea Process Study 3</p> <p>Methods & Sampling PI: Mark Altabet and Roger Francois of: University of Massachusetts, Dartmouth (Altabet) Woods Hole Oceanographic Institution (Francois) dataset: Natural nitrogen and carbon stable isotopic composition dates: April 12, 1997 to May 02, 1997 location: N: -71.0866 S: -77.964 W: 168.8260 E: -176.0699 project/cruise: AESOPS/NBP-97-3 - Ross Sea Process Cruise 3 ship: R/V Nathaniel B. Palmer Methods for nitrate isotopic reported in: Sigman, D. M., M. A. Altabet, R. Michener, D. C. McCorkle, B. Fry and R. M. Holmes. (1997). Natural Abundance-level measurement of the nitrogen isotopic composition of oceanic nitrate: an adaptation of the ammonia diffusion method. Mar. Chem. 57, 227-242. Methods for POM isotopic composition in: Altabet, M. A., and R. Francois, 1994. Sedimentary N isotopic ratio as a recorder for surface ocean nitrate utilization. Global Biogeochemical Cycles., 8, 103-116.</p>

NBP-97-08

Website	https://www.bco-dmo.org/deployment/57722
Platform	RVIB Nathaniel B. Palmer
Report	http://usjgofs.whoi.edu/aesops/p4.html
Start Date	1997-11-05
End Date	1997-12-13
Description	<p>Ross Sea Process Study 4 SeaWiFS transmits images to U.S. JGOFS scientists aboard the Palmer, for first time on November 23, 1997.</p> <p>Methods & Sampling PI: Mark Altabet and Roger Francois of: University of Massachusetts, Dartmouth (Altabet) Woods Hole Oceanographic Institution (Francois) dataset: Natural nitrogen and carbon stable isotopic composition dates: November 24, 1997 to December 10, 1997 location: N: -76.4792 S: -76.5673 W: 175.7027 E: -178.0592 project/cruise: AESOPS/NBP-97-8 - Ross Sea Process Cruise 4 ship: R/V Nathaniel B. Palmer Methods for nitrate isotopic reported in: Sigman, D. M., M. A. Altabet, R. Michener, D. C. McCorkle, B. Fry and R. M. Holmes. (1997). Natural Abundance-level measurement of the nitrogen isotopic composition of oceanic nitrate: an adaptation of the ammonia diffusion method. Mar. Chem. 57, 227-242. Methods for POM isotopic composition in: Altabet, M. A., and R. Francois, 1994. Sedimentary N isotopic ratio as a recorder for surface ocean nitrate utilization. Global Biogeochemical Cycles., 8, 103-116.</p>

NBP-98-2

Website	https://www.bco-dmo.org/deployment/57723
Platform	RVIB Nathaniel B. Palmer
Report	http://usjgofs.whoi.edu/aesops/nbp-bp_mr.html
Start Date	1998-02-25
End Date	1998-04-03
Description	<p>Benthic Process and Moorings Recovery</p> <p>Methods & Sampling PI: Mark Altabet and Roger Francois of: University of Massachusetts, Dartmouth (Altabet) Woods Hole Oceanographic Institution (Francois) dataset: Natural nitrogen and carbon stable isotopic composition dates: February 26, 1998 to March 31, 1998 location: N: -49.9148 S: -76.4962 W: 176.8417 E: -169.6257 project/cruise: AESOPS/NBP-98-2 - Ross Sea Benthic Processes Cruise ship: R/V Nathaniel B. Palmer Methods for nitrate isotopic reported in: Sigman, D. M., M. A. Altabet, R. Michener, D. C. McCorkle, B. Fry and R. M. Holmes. (1997). Natural Abundance-level measurement of the nitrogen isotopic composition of oceanic nitrate: an adaptation of the ammonia diffusion method. Mar. Chem. 57, 227-242. Methods for POM isotopic composition in: Altabet, M. A., and R. Francois, 1994. Sedimentary N isotopic ratio as a recorder for surface ocean nitrate utilization. Global Biogeochemical Cycles., 8, 103-116.</p>

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	<p>Polar Front Survey I</p> <p>Methods & Sampling PI: Mark Altabet and Roger Francois of: University of Massachusetts, Dartmouth (Altabet) Woods Hole Oceanographic Institution (Francois) dataset: Natural nitrogen and carbon stable isotopic composition dates: October 25, 1997 to November 17, 1997 location: N: -56.9998 S: -62.341 W: -171.9 E: -168.1587 project/cruise: AESOPS/RR_KIWI06 - APFZ Survey Cruise 1 ship: R/V Roger A. Revelle Methods for nitrate isotopic reported in: Sigman, D. M., M. A. Altabet, R. Michener, D. C. McCorkle, B. Fry and R. M. Holmes. (1997). Natural Abundance-level measurement of the nitrogen isotopic composition of oceanic nitrate: an adaptation of the ammonia diffusion method. Mar. Chem. 57, 227-242. Methods for POM isotopic composition in: Altabet, M. A., and R. Francois, 1994. Sedimentary N isotopic ratio as a recorder for surface ocean nitrate utilization. Global Biogeochemical Cycles., 8, 103-116.</p>

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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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