

Total CO₂ and delta 13C of seawater from Niskin bottles 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/2726>

Version: May 3, 2001

Version Date: 2001-05-03

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
Quay, Paul	University of Washington (UW)	Principal Investigator
Chandler, Cynthia L.	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager

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Dataset Description

Total CO₂ and delta 13C of seawater from CTD casts

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Parameters

Parameter	Description	Units
event	event number from event log	
sta	station number from event log	
cast	CTD cast number	
bot	CTD bottle sequence number	
depth_n	nominal depth of sample	meters
TCO ₂ _man	manometric total CO ₂ in seawater	micromoles C/kilogram
delta13C	Carbon 13 to Carbon 12 ratio of TCO ₂	per mil

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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.

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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</p> <p>PI: Paul Quay of: University of Washington dataset: Total CO₂ and delta 13C of seawater from CTD casts dates: August 31, 1996 to September 18, 1996 location: N: -46.4002 S: -64.1155 W: -178.357 E: -169.364 project/cruise: AESOPS/NBP96-4 - Site Survey Cruise ship: Nathaniel B. Palmer References: 1. Kroopnick, P.M. (1974), The dissolved O₂-CO₂-13C system in the eastern equatorial Pacific. Deep-Sea Research, 21, 211-227. 2. Quay, P.D., B. Tilbrook and C.S. Wong (1992), Oceanic uptake of fossil fuel CO₂: Carbon-13 evidence. Science, 256, 74-79.</p>

NBP-97-03

Website	https://www.bco-dmo.org/deployment/57721
Platform	RVIB Nathaniel B. Palmer
Report	http://usjgofs.who.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: Paul Quay of: University of Washington dataset: Total CO2 and delta 13C of seawater from CTD casts dates: April 17, 1997 to April 28, 1997 location: N: -74.0021 S: -76.5126 W: 169.0565 E: -177.9619 project/cruise: AESOPS/NBP97-3 - Ross Sea Process 3 Cruise ship: Nathaniel B. Palmer References: 1. Kroopnick, P.M. (1974), The dissolved O2-CO2-13C system in the eastern equatorial Pacific. Deep-Sea Research, 21, 211-227. 2. Quay, P.D., B. Tilbrook and C.S. Wong (1992), Oceanic uptake of fossil fuel CO2: Carbon-13 evidence. Science, 256, 74-79.</p>

NBP-97-08

Website	https://www.bco-dmo.org/deployment/57722
Platform	RVIB Nathaniel B. Palmer
Report	http://usjgofs.who.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: Paul Quay of: University of Washington dataset: Total CO2 and delta 13C of seawater from CTD casts dates: November 28, 1997 to December 01, 1997 location: N: -76.492 S: -76.5035 W: 169.0238 E: -179.9878 project/cruise: AESOPS/NBP97-8 - Ross Sea Process 4 Cruise ship: Nathaniel B. Palmer References: 1. Kroopnick, P.M. (1974), The dissolved O2-CO2-13C system in the eastern equatorial Pacific. Deep-Sea Research, 21, 211-227. 2. Quay, P.D., B. Tilbrook and C.S. Wong (1992), Oceanic uptake of fossil fuel CO2: Carbon-13 evidence. Science, 256, 74-79.</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: Paul Quay of: University of Washington dataset: Total CO2 and delta 13C of seawater from CTD casts dates: March 05, 1998 to March 22, 1998 location: N: -56.8828 S: -66.1842 W: -170.2392 E: -169.6257 project/cruise: AESOPS/NBP98-2 - Ross Sea Benthic Process and Mooring Recovery Cruise ship: Nathaniel B. Palmer References: 1. Kroopnick, P.M. (1974), The dissolved O2-CO2-13C system in the eastern equatorial Pacific. Deep-Sea Research, 21, 211-227. 2. Quay, P.D., B. Tilbrook and C.S. Wong (1992), Oceanic uptake of fossil fuel CO2: Carbon-13 evidence. Science, 256, 74-79.</p>

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	<p>Polar Front Process II</p> <p>Methods & Sampling PI: Paul Quay of: University of Washington dataset: Total CO2 and delta 13C of seawater from CTD casts dates: February 22, 1998 to March 14, 1998 location: N: -54.3333 S: -70.4077 W: -173.3333 E: -165.9248 project/cruise: AESOPS/KIWI-9 - APFZ Polar Front Process Cruise 2 ship: R/V Roger A. Revelle References: 1. Kroopnick, P.M. (1974), The dissolved O2-CO2-13C system in the eastern equatorial Pacific. Deep-Sea Research, 21, 211-227. 2. Quay, P.D., B. Tilbrook and C.S. Wong (1992), Oceanic uptake of fossil fuel CO2: Carbon-13 evidence. Science, 256, 74-79.</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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