

Total carbon dioxide and pCO₂ from CTD casts from RVIB Nathaniel B. Palmer, R/V Roger Revelle NBP-96-5, NBP-97-1, NBP-97-8, KIWI8, KIWI9 cruises in the Southern Ocean, 1997-1998 (U.S. JGOFS AESOPS project)

Website: <https://www.bco-dmo.org/dataset/2748>

Version: August 23, 2001

Version Date: 2001-08-23

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

Total carbon dioxide and pCO₂ from CTD casts

Methods & Sampling

PI: Taro Takahashi
of: Lamont Doherty Earth Observatory
dataset: Total carbon dioxide and pCO₂ from CTD casts

A document describing methodology is available with each cruise deployment, including images illustrating the analyses of certified reference materials.

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Parameters

Parameter	Description	Units
event	event number from event log	
sta	station number from event log	
cast	cast number	
bot	CTD rosette bottle number	
depth_n	nominal depth of sample	meters
TCO2	total CO2 in seawater	micromoles C per kilogram
TCO2_crm	total CO2 adjusted by offset to CRM values	micromoles C per kilogram
pCO2_4	partial pressure of CO2 in seawater at 4 degrees Celsius	microatmospheres
pCO2_temp	temperature at which pCO2 was measured	degrees Celsius
pCO2_eq	partial pressure of CO2 in seawater at equilibration temperature	microatmospheres

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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-96-5

Website	https://www.bco-dmo.org/deployment/57719
Platform	RVIB Nathaniel B. Palmer
Report	http://usjgofs.whoi.edu/aesops/m1.html
Start Date	1996-11-11
End Date	1996-12-01
Description	<p>Moorings Deployment</p> <p>Methods & Sampling PI: Taro Takahashi of: Lamont Doherty Earth Observatory dataset: Total carbon dioxide and pCO2 from CTD casts dates: November 15, 1996 to November 26, 1996 location: N: -53.0385 S: -73.5523 W: 176.9095 E: -169.6785 project/cruise: AESOPS/NBP96-5 - Ross Sea Mooring Deployment Cruise ship: Nathaniel B. Palmer Methodology, including Figure A and Figure B illustrating the analyses of certified reference materials. ** Note: no pCO2 was measured during this cruise **</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: Taro Takahashi of: Lamont Doherty Earth Observatory dataset: Total carbon dioxide and pCO2 from CTD casts dates: January 13, 1997 to February 08, 1997 location: N: -74.0029 S: -78.0498 W: 163.3383 E: -173.9992 project/cruise: AESOPS/NBP97-1 - Ross Sea Process 2 Cruise ship: Nathaniel B. Palmer Methodology, including a figure illustrating the analyses of certified reference materials.</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: Taro Takahashi of: Lamont Doherty Earth Observatory dataset: Total carbon dioxide and pCO2 from CTD casts dates: November 15, 1997 to December 11, 1997 location: N: -73.5087 S: -77.888 W: 168.9907 E: -177.9562 project/cruise: AESOPS/NBP97-8 - Ross Sea Process 4 Cruise ship: Nathaniel B. Palmer Methodology, including a figure illustrating the analyses of certified reference materials.</p>

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	<p>Polar Front Survey II</p> <p>Methods & Sampling PI: Taro Takahashi of: Lamont Doherty Earth Observatory dataset: Total carbon dioxide and pCO₂ from CTD casts dates: January 12, 1998 to January 28, 1998 location: N: -57 S: -67.52 W: -170.1117 E: -169.9983 project/cruise: AESOPS/RR_KIWI08; APFZ Polar Front Survey Cruise 2 ship: Roger Revelle Methodology, including a figure illustrating the analyses of certified reference materials.</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: Taro Takahashi of: Lamont Doherty Earth Observatory dataset: Total carbon dioxide and pCO₂ from CTD casts dates: February 15, 1998 to March 15, 1998 location: N: -52.967 S: -71.3157 W: -174.7693 E: -165.9143 project/cruise: AESOPS/RR_KIWI9; APFZ Polar Front Process Cruise 2 ship: Roger Revelle Methodology, including a figure illustrating the analyses of certified reference materials.</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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