

# pCO<sub>2</sub> from shipboard continuous surface system 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/2728>

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)

Contributors	Affiliation	Role
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## Table of Contents

- [Dataset Description](#)
- [Data Files](#)
- [Parameters](#)
- [Deployments](#)
- [Project Information](#)
- [Program Information](#)

## Dataset Description

pCO<sub>2</sub> from shipboard continuous surface system

[ [table of contents](#) | [back to top](#) ]

## Data Files

File
<b>pCO<sub>2</sub>_surface.csv</b> (Comma Separated Values (.csv), 10.55 MB) MD5:280842fdee62893a61f21aefeeeb55c
Primary data file for dataset ID 2728

[ [table of contents](#) | [back to top](#) ]

## Parameters

Parameter	Description	Units
cruise_id	cruise designation	
cruise_alias	commonly used cruise name	
date_begin	date sampling started (YYYYMMDD)	
lat	latitude, negative=south	decimal degrees
lon	longitude, negative=west	decimal degrees
year	4 digit year	
yrday	day of year, including time of the day	decimal days
temp	sea surface temperature	degrees Celsius
sal	sea surface salinity	PSU
press_bar	pressure of equilibration	millibars
pCO2_temp	temperature at which pCO2 was measured	degrees Celsius
vco2_sw	mole volume of CO2 in dry air	parts per million
pco2_meas	measured partial pressure of CO2 in seawater	microatmospheres
pco2_theta	partial pressure of CO2 in seawater corrected to the sea surface temperature using 4.23 percent per degree Celsius	microatmospheres

[ [table of contents](#) | [back to top](#) ]

## Deployments

**NBP-96-4**

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57717">https://www.bco-dmo.org/deployment/57717</a>
<b>Platform</b>	RVIB Nathaniel B. Palmer
<b>Report</b>	<a href="http://usjgofs.whoi.edu/aesops/ss.html">http://usjgofs.whoi.edu/aesops/ss.html</a>
<b>Start Date</b>	1996-08-30
<b>End Date</b>	1996-09-24
<b>Description</b>	<p>Site Survey Cruise</p> <p><b>Methods &amp; Sampling</b>  PI: Taro Takahashi of: Lamont Doherty Earth Observatory dataset: pCO2 from shipboard continuous surface system project/cruise: AESOPS/NBP-96-4 ship: R/V Nathaniel B. Palmer  Methodology/References Same document in WORD format Notes: 1. NBP94-6, NBP96-6 and NBP97-9 were not JGOFS cruises but are included here by the P.I. as relevant data. 2. All cruises have been processed by averaging the data to approximately 3.5 minute intervals. 3. Data from JGOFS Southern Ocean Process 1 (NBP96-4A) is not available. The shipboard pCO2 system was not properly started and no data were recorded.</p>

#### NBP-96-5

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57719">https://www.bco-dmo.org/deployment/57719</a>
<b>Platform</b>	RVIB Nathaniel B. Palmer
<b>Report</b>	<a href="http://usjgofs.whoi.edu/aesops/m1.html">http://usjgofs.whoi.edu/aesops/m1.html</a>
<b>Start Date</b>	1996-11-11
<b>End Date</b>	1996-12-01
<b>Description</b>	<p>Moorings Deployment</p> <p><b>Methods &amp; Sampling</b>  PI: Taro Takahashi of: Lamont Doherty Earth Observatory dataset: pCO2 from shipboard continuous surface system project/cruise: AESOPS/NBP-96-5 ship: R/V Nathaniel B. Palmer  Methodology/References Same document in WORD format Notes: 1. NBP94-6, NBP96-6 and NBP97-9 were not JGOFS cruises but are included here by the P.I. as relevant data. 2. All cruises have been processed by averaging the data to approximately 3.5 minute intervals. 3. Data from JGOFS Southern Ocean Process 1 (NBP96-4A) is not available. The shipboard pCO2 system was not properly started and no data were recorded.</p>

#### NBP-97-01

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57720">https://www.bco-dmo.org/deployment/57720</a>
<b>Platform</b>	RVIB Nathaniel B. Palmer
<b>Report</b>	<a href="http://usjgofs.whoi.edu/aesops/p2.html">http://usjgofs.whoi.edu/aesops/p2.html</a>
<b>Start Date</b>	1997-01-13
<b>End Date</b>	1997-02-11
<b>Description</b>	<p>Ross Sea Process Study 2</p> <p><b>Methods &amp; Sampling</b>  PI: Taro Takahashi of: Lamont Doherty Earth Observatory dataset: pCO2 from shipboard continuous surface system project/cruise: AESOPS/NBP-97-1 ship: R/V Nathaniel B. Palmer  Methodology/References Same document in WORD format Notes: 1. NBP94-6, NBP96-6 and NBP97-9 were not JGOFS cruises but are included here by the P.I. as relevant data. 2. All cruises have been processed by averaging the data to approximately 3.5 minute intervals. 3. Data from JGOFS Southern Ocean Process 1 (NBP96-4A) is not available. The shipboard pCO2 system was not properly started and no data were recorded.</p>

**NBP-97-03**

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57721">https://www.bco-dmo.org/deployment/57721</a>
<b>Platform</b>	RVIB Nathaniel B. Palmer
<b>Report</b>	<a href="http://usjgofs.whoi.edu/aesops/p3.html">http://usjgofs.whoi.edu/aesops/p3.html</a>
<b>Start Date</b>	1997-04-04
<b>End Date</b>	1997-05-11
<b>Description</b>	<p>Ross Sea Process Study 3</p> <p><b>Methods &amp; Sampling</b> PI: Taro Takahashi of: Lamont Doherty Earth Observatory dataset: pCO<sub>2</sub> from shipboard continuous surface system project/cruise: AESOPS/NBP-97-3 ship: R/V Nathaniel B. Palmer Methodology/References Same document in WORD format Notes: 1. NBP94-6, NBP96-6 and NBP97-9 were not JGOFS cruises but are included here by the P.I. as relevant data. 2. All cruises have been processed by averaging the data to approximately 3.5 minute intervals. 3. Data from JGOFS Southern Ocean Process 1 (NBP96-4A) is not available. The shipboard pCO<sub>2</sub> system was not properly started and no data were recorded.</p>

**NBP-97-08**

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57722">https://www.bco-dmo.org/deployment/57722</a>
<b>Platform</b>	RVIB Nathaniel B. Palmer
<b>Report</b>	<a href="http://usjgofs.whoi.edu/aesops/p4.html">http://usjgofs.whoi.edu/aesops/p4.html</a>
<b>Start Date</b>	1997-11-05
<b>End Date</b>	1997-12-13
<b>Description</b>	<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><b>Methods &amp; Sampling</b> PI: Taro Takahashi of: Lamont Doherty Earth Observatory dataset: pCO<sub>2</sub> from shipboard continuous surface system project/cruise: AESOPS/NBP-97-8 ship: R/V Nathaniel B. Palmer Methodology/References Same document in WORD format Notes: 1. NBP94-6, NBP96-6 and NBP97-9 were not JGOFS cruises but are included here by the P.I. as relevant data. 2. All cruises have been processed by averaging the data to approximately 3.5 minute intervals. 3. Data from JGOFS Southern Ocean Process 1 (NBP96-4A) is not available. The shipboard pCO<sub>2</sub> system was not properly started and no data were recorded.</p>

**NBP-98-2**

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57723">https://www.bco-dmo.org/deployment/57723</a>
<b>Platform</b>	RVIB Nathaniel B. Palmer
<b>Report</b>	<a href="http://usjgofs.whoi.edu/aesops/nbp-bp_mr.html">http://usjgofs.whoi.edu/aesops/nbp-bp_mr.html</a>
<b>Start Date</b>	1998-02-25
<b>End Date</b>	1998-04-03
<b>Description</b>	<p>Benthic Process and Moorings Recovery</p> <p><b>Methods &amp; Sampling</b>  PI: Taro Takahashi of: Lamont Doherty Earth Observatory dataset: pCO<sub>2</sub> from shipboard continuous surface system project/cruise: AESOPS/NBP-98-2 ship: R/V Nathaniel B. Palmer  Methodology/References Same document in WORD format Notes: 1. NBP94-6, NBP96-6 and NBP97-9 were not JGOFS cruises but are included here by the P.I. as relevant data. 2. All cruises have been processed by averaging the data to approximately 3.5 minute intervals. 3. Data from JGOFS Southern Ocean Process 1 (NBP96-4A) is not available. The shipboard pCO<sub>2</sub> system was not properly started and no data were recorded.</p>

#### KIWI8

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57726">https://www.bco-dmo.org/deployment/57726</a>
<b>Platform</b>	R/V Roger Revelle
<b>Report</b>	<a href="http://usjgofs.whoi.edu/aesops/RRs2.html">http://usjgofs.whoi.edu/aesops/RRs2.html</a>
<b>Start Date</b>	1998-01-08
<b>End Date</b>	1998-02-08
<b>Description</b>	<p>Polar Front Survey II. Additional information about this cruise can be found at <a href="https://usjgofs.whoi.edu/aesops/aboutrr8.html">https://usjgofs.whoi.edu/aesops/aboutrr8.html</a></p> <p><b>Methods &amp; Sampling</b>  PI: Taro Takahashi of: Lamont Doherty Earth Observatory dataset: pCO<sub>2</sub> from shipboard continuous surface system project/cruise: AESOPS/KIWI8 ship: R/V Roger Revelle  Methodology/References Same document in WORD format Notes: 1. NBP94-6, NBP96-6 and NBP97-9 were not JGOFS cruises but are included here by the P.I. as relevant data. 2. All cruises have been processed by averaging the data to approximately 3.5 minute intervals. 3. Data from JGOFS Southern Ocean Process 1 (NBP96-4A) is not available. The shipboard pCO<sub>2</sub> system was not properly started and no data were recorded.</p>

#### KIWI9

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57727">https://www.bco-dmo.org/deployment/57727</a>
<b>Platform</b>	R/V Roger Revelle
<b>Report</b>	<a href="http://usjgofs.whoi.edu/aesops/RRp2.html">http://usjgofs.whoi.edu/aesops/RRp2.html</a>
<b>Start Date</b>	1998-02-13
<b>End Date</b>	1998-03-19
<b>Description</b>	<p>Polar Front Process II. Additional information about this cruise can be found at <a href="https://usjgofs.whoi.edu/aesops/aboutrr9.html">https://usjgofs.whoi.edu/aesops/aboutrr9.html</a></p> <p><b>Methods &amp; Sampling</b>  PI: Taro Takahashi of: Lamont Doherty Earth Observatory dataset: pCO<sub>2</sub> from shipboard continuous surface system project/cruise: AESOPS/KIWI9 ship: R/V Roger Revelle  Methodology/References Same document in WORD format Notes: 1. NBP94-6, NBP96-6 and NBP97-9 were not JGOFS cruises but are included here by the P.I. as relevant data. 2. All cruises have been processed by averaging the data to approximately 3.5 minute intervals. 3. Data from JGOFS Southern Ocean Process 1 (NBP96-4A) is not available. The shipboard pCO<sub>2</sub> system was not properly started and no data were recorded.</p>

#### NBP-94-06

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57754">https://www.bco-dmo.org/deployment/57754</a>
<b>Platform</b>	RVIB Nathaniel B. Palmer
<b>Report</b>	<a href="http://www.marine-geo.org/tools/search/entry.php?id=NBP9406">http://www.marine-geo.org/tools/search/entry.php?id=NBP9406</a>
<b>Start Date</b>	1994-11-03
<b>End Date</b>	1994-12-19
<b>Description</b>	<p>Note that the NBP-94-6 cruise was not a U.S. JGOFS cruise but is included here by the P.I. as having collected relevant data. The cruise was associated with the Collaborative Research on Bloom Dynamics and Food Web Structure in the Ross Sea research initiative funded by NSF OPP award OPP93-17587. The cruise report is provided by the LDEO MGDS data repository.</p> <p><b>Methods &amp; Sampling</b>  PI: Taro Takahashi of: Lamont Doherty Earth Observatory dataset: pCO<sub>2</sub> from shipboard continuous surface system project/cruise: AESOPS/NBP-94-6 ship: Nathaniel B. Palmer  Methodology/References Same document in WORD format Notes: 1. NBP94-6, NBP96-6 and NBP97-9 were not JGOFS cruises but are included here by the P.I. as relevant data. 2. All cruises have been processed by averaging the data to approximately 3.5 minute intervals. 3. Data from JGOFS Southern Ocean Process 1 (NBP96-4A) is not available. The shipboard pCO<sub>2</sub> system was not properly started and no data were recorded.</p>

#### NBP-96-6

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57755">https://www.bco-dmo.org/deployment/57755</a>
<b>Platform</b>	RVIB Nathaniel B. Palmer
<b>Report</b>	<a href="http://www.marine-geo.org/tools/search/entry.php?id=NBP9606">http://www.marine-geo.org/tools/search/entry.php?id=NBP9606</a>
<b>Start Date</b>	1996-12-11
<b>End Date</b>	1997-01-08
<b>Description</b>	<p>Note that the NBP-96-6 cruise was not a U.S. JGOFS cruise but is included here by the P.I. as having collected relevant data. The cruise was associated with the ROAVERRS program (Research on Ocean-Atmosphere Variability and Ecosystem Response in the Ross Sea) and funding was provided by NSF OPP award OPP94-19605. The cruise report is provided by the LDEO MGDS data repository.</p> <p><b>Methods &amp; Sampling</b>  PI: Taro Takahashi of: Lamont Doherty Earth Observatory dataset: pCO2 from shipboard continuous surface system project/cruise: AESOPS/NBP-96-6 ship: R/V Nathaniel B. Palmer Methodology/References Same document in WORD format Notes: 1. NBP94-6, NBP96-6 and NBP97-9 were not JGOFS cruises but are included here by the P.I. as relevant data. 2. All cruises have been processed by averaging the data to approximately 3.5 minute intervals. 3. Data from JGOFS Southern Ocean Process 1 (NBP96-4A) is not available. The shipboard pCO2 system was not properly started and no data were recorded.</p>

#### NBP-97-9

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57756">https://www.bco-dmo.org/deployment/57756</a>
<b>Platform</b>	RVIB Nathaniel B. Palmer
<b>Report</b>	<a href="http://www.marine-geo.org/tools/search/entry.php?id=NBP9709">http://www.marine-geo.org/tools/search/entry.php?id=NBP9709</a>
<b>Start Date</b>	1997-12-20
<b>End Date</b>	1998-01-10
<b>Description</b>	<p>Note that the NBP-97-9 cruise was not a U.S. JGOFS cruise but is included here by the P.I. as having collected relevant data. The cruise was associated with the ROAVERRS program (Research on Ocean-Atmosphere Variability and Ecosystem Response in the Ross Sea) and funding was provided by NSF OPP award OPP98-96356. The cruise report is provided by the LDEO MGDS data repository. OPP94-19605</p> <p><b>Methods &amp; Sampling</b>  PI: Taro Takahashi of: Lamont Doherty Earth Observatory dataset: pCO2 from shipboard continuous surface system project/cruise: AESOPS/NBP-97-3 ship: R/V Nathaniel B. Palmer Methodology/References Same document in WORD format Notes: 1. NBP94-6, NBP96-6 and NBP97-9 were not JGOFS cruises but are included here by the P.I. as relevant data. 2. All cruises have been processed by averaging the data to approximately 3.5 minute intervals. 3. Data from JGOFS Southern Ocean Process 1 (NBP96-4A) is not available. The shipboard pCO2 system was not properly started and no data were recorded.</p>

[ [table of contents](#) | [back to top](#) ]

## 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.

[ [table of contents](#) | [back to top](#) ]

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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).

[ [table of contents](#) | [back to top](#) ]