

# Mixed Layer Depths, Ross Sea and APFZ 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/2743>

**Version:** final

**Version Date:** 2002-05-07

## 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

Mixed Layer Depths, Ross Sea and APFZ

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## Parameters

Parameter	Description	Units
event	event number, from event log	
sta	station number, from event log	
cast	cast number	
date	date as YYYYMMDD	
yrday	day of year where Jan 1 = day 1	
lat_begin	starting latitude of cast, negative = south	decimal degrees
lon_begin	starting longitude of cast, negative = west	decimal degrees
MLD_0d01_d	mixed layer depth as defined by a change in sigma-t of 0.01 from the surface value	meters
MLD_0d02_d	mixed layer depth as defined by a change in sigma-t of 0.02 from the surface value	meters
MLD_0d05_d	mixed layer depth as defined by a change in sigma-t of 0.05 from the surface value	meters
depth_light_1	depth of 1% light level penetration	meters
depth_light_0d1	depth of 0.1% light level penetration	meters
time	time of day	decimal hours
lat_n	nominal latitude (- = south, + = north)	decimal degrees
lon_n	nominal longitude (- = west, + = east)	decimal degrees
MLD_0d01_dp	mixed layer pressure delta potential density from surface = .01	decibars
MLD_0d02_dp	mixed layer pressure delta potential density from surface = .02	decibars
MLD_0d05_dp	mixed layer pressure delta potential density from surface = .05	decibars
CTD_top_db	pressure of first reported CTD observation	decibars
CTD_top_m	depth of first reported CTD observation	meters

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## Instruments

<b>Dataset-specific Instrument Name</b>	CTD Sea-Bird
<b>Generic Instrument Name</b>	CTD Sea-Bird
<b>Generic Instrument Description</b>	Conductivity, Temperature, Depth (CTD) sensor package from SeaBird Electronics, no specific unit identified. This instrument designation is used when specific make and model are not known. See also other SeaBird instruments listed under CTD. More information from Sea-Bird Electronics.

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## Deployments

### NBP-96-04A

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57718">https://www.bco-dmo.org/deployment/57718</a>
<b>Platform</b>	RVIB Nathaniel B. Palmer
<b>Report</b>	<a href="http://usjgofs.whoi.edu/aesops/p1.html">http://usjgofs.whoi.edu/aesops/p1.html</a>
<b>Start Date</b>	1996-10-02
<b>End Date</b>	1996-11-08
<b>Description</b>	Ross Sea Process Study 1  <b>Methods &amp; Sampling</b> PI: Walker O. Smith of: University of Tennessee, Knoxville dataset: Ross Sea Mixed Layer Depths dates: October 17, 1996 to November 06, 1996 location: N: -76.4733 S: -78.0175 W: 168.9800 E: -170.5797 project/cruise: AESOPS/NBP-96-4A - Ross Sea Process Cruise 1 ship: R/V Nathaniel B. Palmer

### 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>	Ross Sea Process Study 2  <b>Methods &amp; Sampling</b> PI: Walker O. Smith of: University of Tennessee, Knoxville dataset: Ross Sea Mixed Layer Depths dates: January 13, 1997 to February 09, 1997 location: N: -74.0029 S: -78.0414 W: 163.3383 E: -173.9992 project/cruise: AESOPS/NBP-97-1 - Ross Sea Process Cruise 2 ship: R/V Nathaniel B. Palmer

### 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>	Ross Sea Process Study 3  <b>Methods &amp; Sampling</b> PI: Walker O. Smith of: University of Tennessee, Knoxville dataset: Ross Sea Mixed Layer Depths dates: April 12, 1997 to April 29, 1997 location: N: -63.5023 S: -77.9640 W: 168.8260 E: -176.0699 project/cruise: AESOPS/NBP-97-3 - Ross Sea Process Cruise 3 ship: R/V Nathaniel B. Palmer

### 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: Walker O. Smith of: University of Tennessee, Knoxville dataset: Ross Sea Mixed Layer Depths dates: November 15, 1997 to December 11, 1997 location: N: -73.521 S: -77.888 W: 168.7308 E: -169.8918 project/cruise: AESOPS/NBP-97-8 - Ross Sea Process Cruise 4 ship: R/V Nathaniel B. Palmer</p>

#### KIWI6

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57724">https://www.bco-dmo.org/deployment/57724</a>
<b>Platform</b>	R/V Roger Revelle
<b>Report</b>	<a href="http://usjgofs.whoi.edu/aesops/RRs1.html">http://usjgofs.whoi.edu/aesops/RRs1.html</a>
<b>Start Date</b>	1997-10-20
<b>End Date</b>	1997-11-24
<b>Description</b>	<p>Polar Front Survey I</p> <p><b>Methods &amp; Sampling</b>  PI: John Morrison of: North Carolina State University dataset: APFZ Mixed Layer Depths dates: October 23, 1997 to November 18, 1997 location: N: -56.9998 S: -62.341 W: -171.9 E: -168.0622 project/cruise: AESOPS/KIWI6 - APFZ Survey Cruise 1 ship: R/V Roger Revelle Note: event 02162111 salts were bad, therefore density was not computed. Some station casts were not deep enough to show a mixed layer.</p>

#### KIWI7

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57725">https://www.bco-dmo.org/deployment/57725</a>
<b>Platform</b>	R/V Roger Revelle
<b>Report</b>	<a href="http://usjgofs.whoi.edu/aesops/RRp1.html">http://usjgofs.whoi.edu/aesops/RRp1.html</a>
<b>Start Date</b>	1997-12-02
<b>End Date</b>	1998-01-03
<b>Description</b>	<p>Polar Front Process I</p> <p><b>Methods &amp; Sampling</b>  PI: John Morrison of: North Carolina State University dataset: APFZ Mixed Layer Depths dates: December 03, 1997 to December 30, 1997 location: N: -52.9143 S: -64.7418 W: -174.7303 E: -168.8302 project/cruise: AESOPS/KIWI7 - APFZ Process Cruise 1 ship: R/V Roger Revelle Note: event 02162111 salts were bad, therefore density was not computed. Some station casts were not deep enough to show a mixed layer.</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</p> <p><b>Methods &amp; Sampling</b>  PI: John Morrison of: North Carolina State University dataset: APFZ Mixed Layer Depths dates: January 12, 1998 to January 28, 1998 location: N: -56.9998 S: -67.7842 W: -170.1117 E: -169.9983 project/cruise: AESOPS/KIWI8 - APFZ Survey Cruise 2 ship: R/V Roger Revelle Note: event 02162111 salts were bad, therefore density was not computed. Some station casts were not deep enough to show a mixed layer.</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</p> <p><b>Methods &amp; Sampling</b>  PI: John Morrison of: North Carolina State University dataset: APFZ Mixed Layer Depths dates: February 15, 1998 to March 15, 1998 location: N: -52.966 S: -71.3157 W: -174.7755 E: -165.9143 project/cruise: AESOPS/KIWI9 - APFZ Process Cruise 2 ship: R/V Roger Revelle Note: event 02162111 salts were bad, therefore density was not computed. Some station casts were not deep enough to show a mixed layer.</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.

## 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).