Nano and Microplankton Abundances from RVIB Nathaniel B. Palmer, R/V Roger Revelle NBP-96-4A, NBP-97-1, KIWI6, KIWI7, KIWI8, KIWI9 cruises in the Southern Ocean, 1997-1998 (U.S. JGOFS AESOPS project)

Website: https://www.bco-dmo.org/dataset/2744
Version: final
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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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Dataset Description

Nano and Microplankton Abundances

Methods & Sampling

M.Landry: Nano and microplankton abundances by epifluorescence microscopy

W.Smith: Nano and microplankton abundance and carbon biomass

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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	bottle number	
depth_n	nominal sample depth	meters
diatom_cen_gt2	Centric diatoms abundance	cells/liter
diatom_cen_gt2_C	Centric diatoms biomass	micrograms C/liter
diatom_pen_gt2	Pennate diatoms abundance	cells/liter
diatom_pen_gt2_C	Pennate diatoms biomass	micrograms C/liter
Phaeo_ant_gt2	Ph.antarctica colonial cell abundance	cells/liter
Phaeo_ant_gt2_C	Ph.antarctica colonial cell biomass	micrograms C/liter
dino_auto_gt2	Autotrophic dinoflagellate abundance	cells/liter
dino_auto_gt2_C	Autotrophic dinoflagellate biomass	micrograms C/liter
dino_het_gt2	Heterotrophic dinoflagellate abundance	cells/liter
dino_het_gt2_C	Heterotrophic dinoflagellate biomass	micrograms C/liter
nanoflag_auto_gt2	Autotrophic nanoflagellate abundance (excluding dinoflagellates)	cells/liter
nanoflag_auto_gt2_C	Autotrophic nanoflagellate biomass (excluding dinoflagellates)	micrograms C/liter
nanoflag_het_gt2	Heterotrophic nanoflagellate abundance (excluding dinoflagellates)	cells/liter
nanoflag_het_gt2_C	Heterotrophic nanoflagellate biomass (excluding dinoflagellates)	micrograms C/liter
mesod_rub_gt2	Mesodinium rubrum abundance	cells/liter
mesod_rub_gt2_C	Mesodinium rubrum biomass	micrograms C/liter
ciliates_n_gt2	non-loricate ciliate abundance	cells/liter
ciliates_n_gt2_C	non-loricate ciliate biomass	micrograms C/liter
olig_mix_gt2	Plastidic oligotrich abundance including dinoflagellates (Torodinium-like)	cells/liter
olig_mix_gt2_C	Plastidic oligotrich biomass including dinoflagellates (Torodinium-like)	micrograms C/liter
tint_gt2	Tintinnid (loricate ciliate) abundance	cells/liter
tint_gt2_C	Tintinnid (loricate ciliate) biomass	micrograms C/liter
hnp_1d5_2	abundances of heterotrophic nanoplankton, with lengths between 1.5 and 2 um	cells/ml
hnp_2_5	abundances of heterotrophic nanoplankton, with lengths between 2 and 5 um	cells/ml
hnp_5_10	abundances of heterotrophic nanoplankton, with lengths between 5 and 10 um	cells/ml
hnp_10_20	abundances of heterotrophic nanoplankton, with lengths between 10 and 20 um	cells/ml
hmp	abundances of heterotrophic microplankton, with lengths greater than 20 um	cells/ml

anp_1d5_2	abundances of autotrophic nanoplankton, with lengths between 1.5 and 2 um	cells/ml
anp_2_5	abundances of autotrophic nanoplankton, with lengths between 2 and 5 um	cells/ml
anp_5_10	abundances of autotrophic nanoplankton, with lengths between 5 and 10 um	cells/ml
anp_10_20	abundances of autotrophic nanoplankton, with lengths between 10 and 20 um	cells/ml
amp	abundances of autotrophic microplankton, with lengths greater than 20 um	cells/ml
diatom	abundance of diatoms	cells/ml
hnp_C_1d5_2	biomass of heterotrophic nanoplankton, with lengths between 1.5 and 2 um	ug C/liter
hnp_C_2_5	biomass of heterotrophic nanoplankton, with lengths between 2 and 5 um	ug C/liter
hnp_C_5_10	biomass of heterotrophic nanoplankton, with lengths between 5 and 10 um	ug C/liter
hnp_C_10_20	biomass of heterotrophic nanoplankton, with lengths between 10 and 20 um	ug C/liter
hmp_C	biomass of heterotrophic microplankton, with lengths greater than 20 um	ug C/liter
anp_C_1d5_2	biomass of autotrophic nanoplankton, with lengths between 1.5 and 2 um	ug C/liter
anp_C_2_5	biomass of autotrophic nanoplankton, with lengths between 2 and 5 um	ug C/liter
anp_C_5_10	biomass of autotrophic nanoplankton, with lengths between 5 and 10 um	ug C/liter
anp_C_10_20	biomass of autotrophic nanoplankton, with lengths between 10 and 20 um	ug C/liter
amp_C	biomass of autotrophic microplankton, with lengths greater than 20 um	ug C/liter
diatom_C	biomass of diatoms	ug C/liter

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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-96-04A

Website	https://www.bco-dmo.org/deployment/57718
Platform	RVIB Nathaniel B. Palmer
Report	http://usjgofs.whoi.edu/aesops/p1.html
Start Date	1996-10-02
End Date	1996-11-08
Description	Ross Sea Process Study 1 **Methods & Sampling** PI: Walker O. Smith of: University of Tennessee dataset: Nano and microplankton abundance and carbon biomass dates: October 18, 1996 to November 05, 1996 location: N: -76.4615 S: -78.0348 W: 168.9967 E: -175.9873 project/cruise: AESOPS/NBP96-4A - Ross Sea Process 1 Cruise ship: R/V Nathaniel B. Palmer Methodology Note 1: Although Phaeocystis antarctica colonial cells fall in the nano-size (2-20 micron) phytoplankton, they are part of colonies ranging from 10 to 200 microns. Note 2: Diatoms, dinoflagellates and ciliates range in size from 2-200 microns. Note 3: In the parameter names listed below, gt2 indicates that cells were in the nano-size phytoplankton range, greater than 2 microns.

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	Ross Sea Process Study 2 **Methods & Sampling** PI: Walker O. Smith of: University of Tennessee dataset: Nano and microplankton abundance and carbon biomass dates: January 13, 1997 to February 08, 1997 location: N: -76.4455 S: -78.043 W: 168.9581 E: -176.0241 project/cruise: AESOPS/NBP97-1 - Ross Sea Process Cruise 2 ship: R/V Nathaniel B. Palmer Methodology Note 1: Although Phaeocystis antarctica colonial cells fall in the nano-size (2-20 micron) phytoplankton, they are part of colonies ranging from 10 to 200 microns. Note 2: Diatoms, dinoflagellates and ciliates range in size from 2-200 microns. Note 3: In the parameter names listed below, gt2 indicates that cells were in the nano-size phytoplankton range, greater than 2 microns.

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	Polar Front Survey I **Methods & Sampling** PI: Michael R. Landry of: University of Hawaii dataset: Nano and microplankton abundances by epifluorescence microscopy dates: October 23, 1997 to November 18, 1997 location: N: -57 S: -62.3658 W: -170.6927 E: -168.2947 project/cruise: AESOPS/KIWI06; APFZ Polar Front Survey 1 cruise ship: R/V Roger A. Revelle Sampling Methodology

KIWI7

Website	https://www.bco-dmo.org/deployment/57725
Platform	R/V Roger Revelle
Report	http://usjgofs.whoi.edu/aesops/RRp1.html
Start Date	1997-12-02
End Date	1998-01-03
Description	Polar Front Process I **Methods & Sampling** PI: Michael R. Landry of: University of Hawaii dataset: Nano and microplankton abundances by epifluorescence microscopy dates: December 04, 1997 to December 26, 1997 location: N: -53.0302 S: -64.7418 W: -174.7295 E: -168.8333 project/cruise: AESOPS/KIWI07; APFZ Polar Front Process 1 cruise ship: R/V Roger A. Revelle Sampling Methodology

KIWI8

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	Polar Front Survey II **Methods & Sampling** PI: Michael R. Landry of: University of Hawaii dataset: Nano and microplankton abundances by epifluorescence microscopy dates: January 12, 1998 to January 28, 1998 location: N: -57 S: -67.52 W: -170.1117 E: -169.9983 project/cruise: AESOPS/KIWI08; APFZ Polar Front Survey 2 cruise ship: R/V Roger A. Revelle Sampling Methodology

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	Polar Front Process II **Methods & Sampling** PI: Michael R. Landry of: University of Hawaii dataset: Nano and microplankton abundances by epifluorescence microscopy dates: February 15, 1998 to March 11, 1998 location: N: -52.9678 S: -71.3072 W: -174.7338 E: -165.9145 project/cruise: AESOPS/KIWI09; APFZ Polar Front Process 2 cruise ship: R/V Roger A. Revelle Sampling Methodology

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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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