Pigments, HPLC method, standard casts 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/2732
Version: final
Version Date: 2001-09-14

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
Bidigare, Robert R.	University of Hawai'i (UH)	Principal Investigator
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Dataset Description

Pigments, HPLC method, standard casts

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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	TM = Trace Metal free rosette CTD = CTD rosette	
bot	bottle number	
depth_n	nominal depth	meters
chlide_a	Chlorophyllide a	nanogram/liter
chl_c3	Chlorophyll c3	nanogram/liter
chl_c	Chlorophyll c1 + chlorophyll c2 + Mg 3,8 divinyl pheoporphyrin a5	nanogram/liter
peridinin	Peridinin	nanogram/liter
fucox_but	19'-Butanoyloxyfucoxanthin	nanogram/liter
fucox	Fucoxanthin	nanogram/liter
fucox_hex	19'-Hexanoyloxyfucoxanthin	nanogram/liter
prasinox	Prasinoxanthin	nanogram/liter
violax	Violaxanthin	nanogram/liter
diadinox	Diadinoxanthin	nanogram/liter
allox	Alloxanthin	nanogram/liter
diatox	Diatoxanthin	nanogram/liter
lutein	Lutein	nanogram/liter
zeax	Zeaxanthin	nanogram/liter
chl_b1	Monovinyl chlorophyll b	nanogram/liter
chl_a1	Monovinyl chlorophyll a	nanogram/liter
carotene_a	alpha-carotene	nanogram/liter
carotene_b	beta-carotene	nanogram/liter
chl_a_tot	Monovinyl chlorophyll a plus chlorophyllide a	nanogram/liter
carotene_g	gamma carotene	nanogram/liter
chl_a1_prime	monovinyl chlorophyll a prime	nanogram/liter
chl_c12	chlorophyll c12	nanogram/liter
fucoxanthiol	fucoxanthiol	nanogram/liter
fucox_iso1	fucoxanthin isomer 1	nanogram/liter
fucox_iso2	fucoxanthin isomer 2	nanogram/liter
chl_c3_p	phytolated chlorophyll c3 (+)	nanogram/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: Robert R. Bidigare of: University of Hawaii dataset: Pigments, HPLC method, standard casts dates: October 19, 1996 to November 04, 1996 location: N: -76.4623 S: -76.5642 W: 168.9967 E: -177.8272 project/cruise: AESOPS/NBP-96-4A - Ross Sea Process 1 Cruise ship: R/V Nathaniel B. Palmer Methodology: Wright et. al., Mar. Ecol. Prog. Ser., 1991, 77:183-196 PI-Note on Methodology

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: Robert R. Bidigare of: University of Hawaii dataset: Pigments, HPLC method, standard casts dates: January 13, 1997 to February 08, 1997 location: N: -74.0027 S: -78.043 W: 163.3482 E: -175.9906 project/cruise: AESOPS/NBP-97-1 - Ross Sea Process 2 Cruise ship: R/V Nathaniel B. Palmer Methodology: Wright et. al., Mar. Ecol. Prog. Ser., 1991, 77:183-196 PI-Note on Methodology DMO Note on discrepencies with TMbottle data

NBP-97-03

Website	https://www.bco-dmo.org/deployment/57721
Platform	RVIB Nathaniel B. Palmer
Report	http://usjgofs.whoi.edu/aesops/p3.html
Start Date	1997-04-04
End Date	1997-05-11
Description	Ross Sea Process Study 3 **Methods & Sampling** PI: Robert R. Bidigare of: University of Hawaii dataset: Pigments, HPLC method, standard casts dates: April 12, 1997 to April 29, 1997 location: N: -73.9629 S: -77.9369 W: 168.9630 E: -176.1544 project/cruise: AESOPS/NBP-97-3 - Ross Sea Process 3 Cruise ship: R/V Nathaniel B. Palmer Methodology: Wright et. al., Mar. Ecol. Prog. Ser., 1991, 77:183-196 PI-Note on Methodology

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	Ross Sea Process Study 4 SeaWiFS transmits images to U.S. JGOFS scientists aboard the Palmer, for first time on November 23, 1997. **Methods & Sampling** PI: Robert R. Bidigare of: SOEST, University of Hawaii dataset: Pigments, HPLC method, standard casts dates: November 15, 1997 to December 11, 1997 location: N: -73.5055 S: -76.6213 W: 169.0023 E: -177.9883 project/cruise: AESOPS/NBP-97-8 - Ross Sea Process 4 Cruise ship: R/V Nathaniel B. Palmer Methodology: Wright et. al., Mar. Ecol. Prog. Ser., 1991, 77:183-196 DMO Note on multiple-bottle events DMO Note on discrepencies with TMbottle data

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: Ralf Goericke of: University of California, San Diego dataset: Pigments, HPLC method, standard casts dates: October 28, 1997 to November 18, 1997 location: N: -59.3333 S: -62.3658 W: -170.6933 E: -168.2947 project/cruise: AESOPS/RR_KIWI_6, APFZ Polar Front Survey 1 ship: R/V Roger A. Revelle Methodology: Samples that had been frozen in liquid nitrogen were extracted as described previously (Goericke and Repeta, 1993, MEPS 101: 307 - 313). Pigment extracts were analyzed on the reverse phase HPLC system described below. Pigments were detected by absorbance at 440nm. The identity of pigments was confirmed by frequently checking on-line spectra against those of standards. Column - Alltech Adsorbosphere C18, HS 3um, 4.6 mm, 10 cm. Solvents - A [methanol : acetonitrile : water : 0.5M aq ammonium acetate (30:30:30:10) B [methanol : acetonitrile : ethyl acetate (10:35:55)]. Gradient - [time (min); solvent A, solvent B] - [0; 100, 0], [4; 75, 25], [24; 12, 88], [26; 12, 88], [28; 100, 0]. Instruments - Waters 510 pumps, Shimadzu autosampler and uv/vis detector, Waters 991M photodiode detector and Waters Millenium data system

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: Ralf Goericke of: University of California, San Diego dataset: Pigments, HPLC method, standard casts dates: December 05, 1997 to December 30, 1997 location: N: -52.9823 S: -64.696 W: -174.7135 E: -168.8333 project/cruise: AESOPS/RR_KIWI_7, APFZ Polar Front Process 1 ship: R/V Roger A. Revelle Methodology: Samples that had been frozen in liquid nitrogen were extracted as described previously (Goericke and Repeta, 1993, MEPS 101: 307 - 313). Pigment extracts were analyzed on the reverse phase HPLC system described below. Pigments were detected by absorbance at 440nm. The identity of pigments was confirmed by frequently checking on-line spectra against those of standards. Column - Alltech Adsorbosphere C18, HS 3um, 4.6 mm, 10 cm. Solvents - A [methanol : acetonitrile : water : 0.5M aq ammonium acetate (30:30:30:10) B [methanol : acetonitrile : ethyl acetate (10:35:55)]. Gradient - [time (min); solvent A, solvent B] - [0; 100, 0], [4; 75, 25], [24; 12, 88], [26; 12, 88], [28; 100, 0]. Instruments - Waters 510 pumps, Shimadzu autosampler and uv/vis detector, Waters 991M photodiode detector and Waters Millenium data system

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: Ralf Goericke of: University of California, San Diego dataset: Pigments, HPLC method, standard casts dates: January 16, 1998 to January 28, 1998 location: N: -60 S: -67.784 W: -170.1283 E: -170.1 project/cruise: AESOPS/RR_KIWI_8, APFZ Polar Front Survey 2 ship: R/V Roger A. Revelle Methodology: Samples that had been frozen in liquid nitrogen were extracted as described previously (Goericke and Repeta, 1993, MEPS 101: 307 - 313). Pigment extracts were analyzed on the reverse phase HPLC system described below. Pigments were detected by absorbance at 440nm. The identity of pigments was confirmed by frequently checking on-line spectra against those of standards. Column - Alltech Adsorbosphere C18, HS 3um, 4.6 mm, 10 cm. Solvents - A [methanol : acetonitrile : water : 0.5M aq ammonium acetate (30:30:30:10) B [methanol : acetonitrile : ethyl acetate (10:35:55)]. Gradient - [time (min); solvent A, solvent B] - [0; 100, 0], [4; 75, 25], [24; 12, 88], [26; 12, 88], [28; 100, 0]. Instruments - Waters 510 pumps, Shimadzu autosampler and uv/vis detector, Waters 991M photodiode detector and Waters Millenium data system

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: Ralf Goericke of: University of California, San Diego dataset: Pigments, HPLC method, standard casts dates: February 16, 1998 to March 14, 1998 location: N: -52.9662 S: -71.3072 W: -174.7325 E: -165.9148 project/cruise: AESOPS/RR_KIWI_9, APFZ Polar Front Process 2 ship: R/V Roger A. Revelle Methodology: Samples that had been frozen in liquid nitrogen were extracted as described previously (Goericke and Repeta, 1993, MEPS 101: 307 - 313). Pigment extracts were analyzed on the reverse phase HPLC system described below. Pigments were detected by absorbance at 440nm. The identity of pigments was confirmed by frequently checking on-line spectra against those of standards. Column - Alltech Adsorbosphere C18, HS 3um, 4.6 mm, 10 cm. Solvents - A [methanol : acetonitrile : water : 0.5M aq ammonium acetate (30:30:30:10) B [methanol : acetonitrile : ethyl acetate (10:35:55)]. Gradient - [time (min); solvent A, solvent B] - [0; 100, 0], [4; 75, 25], [24; 12, 88], [26; 12, 88], [28; 100, 0]. Instruments - Waters 510 pumps, Shimadzu autosampler and uv/vis detector, Waters 991M photodiode detector and Waters Millenium data system

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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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