# Trace metal concentrations from MLML TM-GoFlo Kevlar 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/2735
**Version**: February 5, 2002
**Version Date**: 2002-02-05

**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 |
|---|---|---|
| Coale, Kenneth H. | Moss Landing Marine Laboratories (MLML) | Principal Investigator, Principal Investigator |
| Johnson, Ken | Moss Landing Marine Laboratories (MLML) | Co-Principal Investigator |
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## Table of Contents



## Dataset Description

Trace metal concentrations from MLML TM-GoFlo Kevlar casts

[ table of contents | back to top ]

## Data Files

| File |
|---|
| **trace_metals_KIWI6.csv** (Comma Separated Values (.csv), 6.70 KB)<br>MD5:7a65e47e6e37425b1f6abf01ba0e1686<br><br>version: February 5, 2002 (previous version: March 25, 1999)<br>PI: Kenneth Coale, Ken Johnson<br>of: Moss Landing Marine Laboratory (MLML)<br>dataset: Trace metals, from MLML TM-GoFlo Kevlar casts<br>project/cruise: AESOPS KIWI06, APFZ Survey cruise 1<br>ship: R/V Roger Revelle<br><br>DMO note:<br>Each station profile is a composite of several casts as can be seen in the event numbers that make up the profile. |
| **trace_metals_KIWI8.csv** (Comma Separated Values (.csv), 8.39 KB)<br>MD5:ac77336e3fd2365019c95ecc6d0f3fe2<br><br>version: February 5, 2002 (previous version: March 25, 1999)<br>PI: Kenneth Coale, Ken Johnson<br>of: Moss Landing Marine Laboratory (MLML)<br>dataset: Trace metals, from MLML TM-GoFlo Kevlar casts<br>project/cruise: AESOPS KIWI08, APFZ Survey cruise 2<br>ship: R/V Roger Revelle<br><br>DMO note:<br>Each station profile is a composite of several casts as can be seen in the event numbers that make up the profile. |
| **trace_metals_NBP-96-04A.csv** (Comma Separated Values (.csv), 9.79 KB)<br>MD5:13ee76fded8195bf13f4a86812e2a70b<br><br>version: February 5, 2002 (previous version: March 25, 1999)<br>PI: Kenneth Coale, Ken Johnson<br>of: Moss Landing Marine Laboratory (MLML)<br>dataset: Trace metals, from MLML TM-GoFlo Kevlar casts<br>project/cruise: AESOPS/NBP96-4A, Ross Sea Process 1 cruise<br>ship: R/V Nathaniel B. Palmer<br><br>DMO note:<br>Each station profile has been assembled from several casts as can be seen by the event numbers that make up the profile. |
| **trace_metals_NBP-97-01.csv** (Comma Separated Values (.csv), 11.17 KB)<br>MD5:be791d6fa8607296e20d415f351930df<br><br>version: February 5, 2002 (previous version: March 25, 1999)<br>PI: Kenneth Coale, Ken Johnson<br>of: Moss Landing Marine Laboratory (MLML)<br>dataset: Trace metals, from MLML TM-GoFlo Kevlar casts<br>project/cruise: AESOPS/NBP97-1, Ross Sea Process 2 cruise<br>ship: R/V Nathaniel B. Palmer<br><br>DMO note:<br>Each station profile has been assembled from several casts as can be seen by the event numbers that make up the profile. |

[ table of contents | back to top ]

## Parameters

| Parameter | Description | Units |
|---|---|---|

| | | |
|---|---|---|
| sta_name | station name, unique station identifier within AESOPS | |
| event | event number from event log | |
| lat_n | nominal latitude (negative = south) | decimal degrees |
| lon_n | nominal longitude (negative = west) | decimal degrees |
| depth_n | nominal sample depth | meters |
| Al_part_gt0.4_leach | aluminium, particulate gt0.4 microns in the leachable fraction | nano moles/kilogram |
| Al_part_gt0.4_refrac | aluminium, particulate gt0.4 microns in the refactory fraction | nano moles/kilogram |
| Al_part_gt0.4_sum | aluminum, particulate gt0.4 microns; sum of leach and refactory fractions | nano moles/kilogram |
| Cd_part_gt0.4_leach | cadmium, particulate gt0.4 microns in the leachable fraction | pico moles/kilogram |
| Cd_part_gt0.4_refrac | cadmium, particulate gt0.4 microns in the refactory fraction | pico moles/kilogram |
| Cd_part_gt0.4_sum | cadmium, particulate gt0.4 microns; sum of leach and refactory fractions | pico moles/kilogram |
| Cd_diss_lt0.4 | cadmium, dissolved lt0.4 microns | pico moles/kilogram |
| Co_part_gt0.4_leach | cobalt, particulate gt0.4 microns in the leachable fraction | pico moles/kilogram |
| Co_part_gt0.4_refrac | cobalt, particulate gt0.4 microns in the refactory fraction | pico moles/kilogram |
| Co_part_gt0.4_sum | cobalt, particulate gt0.4 microns; sum of leach and refactory fractions | pico moles/kilogram |
| Co_diss_lt0.4 | cobalt, dissolved lt0.4 microns | pico moles/kilogram |
| Cu_part_gt0.4_leach | copper, particulate gt0.4 microns in the leachable fraction | nano moles/kilogram |
| Cu_part_gt0.4_refrac | copper, particulate gt0.4 microns in the refactory fraction | nano moles/kilogram |

| | | |
|---|---|---|
| Cu_part_gt0.4_sum | copper, particulate gt0.4 microns; sum of leach and refactory fractions | nano moles/kilogram |
| Cu_diss_lt0.4 | copper, dissolved lt0.4 microns | nano moles/kilogram |
| Fe_part_gt0.4_leach | iron, particulate gt0.4 microns in the leachable fraction | nano moles/kilogram |
| Fe_part_gt0.4_refrac | iron, particulate gt0.4 microns in the refactory fraction | nano moles/kilogram |
| Fe_part_gt0.4_sum | iron, particulate gt0.4 microns; sum of leach and refactory fractions | nano moles/kilogram |
| Fe_diss_lt0.4 | iron, dissolved lt0.4 microns | nano moles/kilogram |
| Mn_part_gt0.4_leach | manganese, particulate gt0.4 microns in the leachable fraction | nano moles/kilogram |
| Mn_part_gt0.4_refrac | manganese, particulate gt0.4 microns in the refactory fraction | nano moles/kilogram |
| Mn_part_gt0.4_sum | manganese, particulate gt0.4 microns; sum of leach and refactory fractions | nano moles/kilogram |
| Mn_diss_lt0.4 | manganese, dissolved lt0.4 microns | nano moles/kilogram |
| Ni_part_gt0.4_leach | nickel, particulate gt0.4 microns in the leachable fraction | nano moles/kilogram |
| Ni_part_gt0.4_refrac | nickel, particulate gt0.4 microns in the refactory fraction | nano moles/kilogram |
| Ni_part_gt0.4_sum | nickel, particulate gt0.4 microns; sum of leach and refactory fractions | nano moles/kilogram |
| Ni_diss_lt0.4 | nickel, dissolved lt0.4 microns | nano moles/kilogram |
| Zn_part_gt0.4_leach | zinc, particulate gt0.4 microns in the leachable fraction | nano moles/kilogram |
| Zn_part_gt0.4_refrac | zinc, particulate gt0.4 microns in the refactory fraction | nano moles/kilogram |
| Zn_part_gt0.4_sum | zinc, particulate gt0.4 microns; sum of leach and refactory fractions | nano moles/kilogram |

| | | |
|---|---|---|
| Zn_diss_lt0.4 | zinc, dissolved lt0.4 microns | nano moles/kilogram |
| sta | station number from event log | |

[ table of contents | back to top ]

## Instruments

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|---|---|
| **Dataset-specific Instrument Name** | Trace Metal GoFlo |
| **Generic Instrument Name** | GO-FLO Teflon Trace Metal Bottle |
| **Generic Instrument Description** | GO-FLO Teflon-lined Trace Metal free sampling bottles are used for collecting water samples for trace metal, nutrient and pigment analysis. The GO-FLO sampling bottle is designed specifically to avoid sample contamination at the surface, internal spring contamination, loss of sample on deck (internal seals), and exchange of water from different depths. |

[ table of contents | back to top ]

## 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<br><br>**Methods & Sampling**<br>PI: Kenneth Coale and Ken Johnson of: Moss Landing Marine Laboratory (Johnson) Oregon State University (Coale) dataset: Trace metal concentrations from MLML TM-GoFlo Kevlar casts dates: October 20, 1996 to November 05, 1996 location: N: -76.4227 S: -78.0177 W: 169.0855 E: -175.9077 project/cruise: AESOPS/NBP-96-4A - Ross Sea Process 1 Cruise ship: R/V Nathaniel B. Palmer Methodology: Johnson, K.S., R.M. Gordon and K.H. Coale, 1997. What contols dissolved iron concentrations in the worlds ocean? Marine Chemistry; 57:137-161 DMO Note: The event numbers in this data set are NOT arranged in ascending order, from beginning to end of cruise, as is normally the case. The principal investigators have assembled the data into depth descending profiles at nominal geographic locations. As a result, each profile is a composite of several bottle casts (events). PI Notes: leachable particulate = two hour 25% Acetic acid digestion refractory particulate = total digestion of remaining material |

**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<br><br>**Methods & Sampling**<br>PI: Kenneth Coale and Ken Johnson of: Moss Landing Marine Laboratory (Johnson) Oregon State University (Coale) dataset: Trace metal concentrations from MLML TM-GoFlo Kevlar casts dates: January 13, 1997 to February 07, 1997 location: N: -73.9972 S: -78.0422 W: 163.3867 E: -176.0511 project/cruise: AESOPS/NBP-97-1 - Ross Sea Process 2 Cruise ship: R/V Nathaniel B. Palmer Methodology: Johnson, K.S., R.M. Gordon and K.H. Coale, 1997. What contols dissolved iron concentrations in the worlds ocean? Marine Chemistry; 57:137-161 DMO Note: The event numbers in this data set are NOT arranged in ascending order, from beginning to end of cruise, as is normally the case. The principal investigators have assembled the data into depth descending profiles at nominal geographic locations. As a result, each profile is a composite of several bottle casts (events). PI Notes: leachable particulate = two hour 25% Acetic acid digestion refractory particulate = total digestion of remaining material |

**KIWI6**

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|---|---|
| **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. Additional information about this cruise can be found at https://usjgofs.whoi.edu/aesops/aboutrr6.html<br><br>**Methods & Sampling**<br>PI: Kenneth Coale and Ken Johnson of: Moss Landing Marine Laboratory (Johnson) Oregon State University (Coale) dataset: Trace metal concentrations from MLML TM-GoFlo Kevlar casts dates: October 24, 1997 to November 18, 1997 location: N: -57.0013 S: -62.341 W: -170.6933 E: -168.1587 project/cruise: AESOPS/KIWI06, APFZ Polar Front Survey cruise 1 ship: R/V Roger Reville Methodology: Johnson, K.S., R.M. Gordon and K.H. Coale, 1997. What contols dissolved iron concentrations in the worlds ocean? Marine Chemistry; 57:137-161 DMO Note: The event numbers in this dataset are NOT arranged in ascending order, from beginning to end of cruise, as is normally the case. The principal investigators have assembled the data into depth descending profiles at nominal geographic locations. As a result, each profile is a composite of several bottle casts (events). PI Notes: leachable particulate = two hour 25% Acetic acid digestion refractory particulate = total digestion of remaining material |

**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. Additional information about this cruise can be found at https://usjgofs.whoi.edu/aesops/aboutrr8.html<br><br>**Methods & Sampling**<br>PI: Kenneth Coale and Ken Johnson of: Moss Landing Marine Laboratory (Johnson) Oregon State University (Coale) dataset: Trace metal concentrations from MLML TM-GoFlo Kevlar casts dates: January 16, 1998 to January 29, 1998 location: N: -60 S: -67.7872 W: -170.1133 E: -170.0833 project/cruise: AESOPS/KIWI08, APFZ Polar Front Survey cruise 2 ship: R/V Roger Reville Methodology: Johnson, K.S., R.M. Gordon and K.H. Coale, 1997. What contols dissolved iron concentrations in the worlds ocean? Marine Chemistry; 57:137-161 DMO Note: The event numbers in this dataset are NOT arranged in ascending order, from beginning to end of cruise, as is normally the case. The principal investigators have assembled the data into depth descending profiles at nominal geographic locations. As a result, each profile is a composite of several bottle casts (events). PI Notes: leachable particulate = two hour 25% Acetic acid digestion refractory particulate = total digestion of remaining material |

[ 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 ]

## 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 ]