Radionuclides, moored sediment trap samples collected from the U.S. JGOFS EqPac Sediment Trap Array in the Equatorial Pacific in 1992 during the U.S. JGOFS Equatorial Pacific (EqPac) project

Website: https://www.bco-dmo.org/dataset/2607
Version: April 22, 2002
Version Date: 2002-04-22

Project
» U.S. JGOFS Equatorial Pacific (EqPac)

Program
» U.S. Joint Global Ocean Flux Study (U.S. JGOFS)

Contributors	Affiliation	Role
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Dataset Description

Radionuclides, moored sediment trap samples

Methods & Sampling

PI: Bob Anderson
of: Lamont-Doherty Earth Observatory
dataset: Radionuclides, moored sediment trap samples

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Data Files

File
rad_sed_trap.csv (Comma Separated Values (.csv), 3.13 KB) MD5:a4089aade676a81d571ff20229139dcb Primary data file for dataset ID 2607

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Parameters

Parameter	Description	Units
sta_name	station name	
lat_n	latitude, nominal, minus means South	degrees
lon_n	longitude, nominal, minus means West	degrees
depth_trap	depth of sediment trap	meters
cup	cup number(s) from which sample was collected	
date_begin	date sampling begins, as YYYYMMDD	
date_end	date sampling ends, as YYYYMMDD	
Pb210_part_lt1mm	lead-210, particulate	dpm/gram
Pb210_err	lead-210 error, plus/minus 1 sigma	dpm/gram
Th230_part_lt1mm	thorium-230, particulate	dpm/gram
Th230_err	thorium-230 error, plus/minus 1 sigma	dpm/gram
Pa231_part_lt1mm	protactinium-231 particulate	dpm/gram
Pa231_err	protactinium-231 error, plus/minus 1 sigma	dpm/gram
Be10_part_lt1mm	beryllium-10, particulate	atoms/gram
Be10_err	beryllium-10 error, plus/minus 1 sigma	atoms/gram

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Instruments

Dataset-specific Instrument Name	Accelerator Mass Spectrometer
Generic Instrument Name	Accelerator Mass Spectrometer
Generic Instrument Description	An AMS measures "long-lived radionuclides that occur naturally in our environment. AMS uses a particle accelerator in conjunction with ion sources, large magnets, and detectors to separate out interferences and count single atoms in the presence of 1x1015 (a thousand million million) stable atoms, measuring the mass-to-charge ratio of the products of sample molecule disassociation, atom ionization and ion acceleration." AMS permits ultra low-level measurement of compound concentrations and isotope ratios that traditional alpha-spectrometry cannot provide. More from Purdue University: http://www.physics.purdue.edu/primelab/introduction/ams.html

Dataset-specific Instrument Name	Sediment Trap
Generic Instrument Name	Sediment Trap
Generic Instrument Description	Sediment traps are specially designed containers deployed in the water column for periods of time to collect particles from the water column falling toward the sea floor. In general a sediment trap has a jar at the bottom to collect the sample and a broad funnel-shaped opening at the top with baffles to keep out very large objects and help prevent the funnel from clogging. This designation is used when the specific type of sediment trap was not specified by the contributing investigator.

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Deployments

EqPac-Array

Website	https://www.bco-dmo.org/deployment/57749
Platform	JGOFS Sediment Trap
Start Date	1992-01-12
End Date	1992-02-08
Description	Sediment Trap Deployments at 140°W that relate to seven locations between 9°N and 12°S **Processing Description** January 8, 2002 Bob Anderson Lamont-Doherty Earth Observatory It was necessary to composite individual time-series sediment trap samples to obtain sufficient material for radionuclide analysis. In the spreadsheet we indicate the cup numbers, as presented by Honjo et al., 1995, used to prepare each composite sample. The EqPac sediment trap samples were analyzed by isotope dilution alpha spectrometry for the U- and Th-series. The Th-232 content of the trap samples was so low that we were unable to resolve the Th-232 peak above the tail of the Th-230 peak, so no Th-232 data are reported. Be-10 was measured by accelerator mass spectrometry. The reference that best described the methods followed for measuring Th, Pa and 10Be in sediment trap samples is: Y. Lao, R.F. Anderson, W.S. Broecker, H.J. Hofmann and W. Wolfli, Particulate fluxes of 230Th, 231Pa, and 10Be in the Northeastern Pacific Ocean, Geochimica Cosmochimica Acta 57(1), 205-217, 1993. The reference that best described the method followed for measuring Pb-210 in sediment trap samples is: Anderson, R. F., S. L. Schiff and R. H. Hesslein (1987). Determining sediment accumulation and mixing rates using 210Pb, 137Cs, and other tracers: problems due to post depositional mobility or coring artifacts. Can. J. Fish. Aquat. Sci., Vol. 44, Supplement No. 1: 231-250.

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Project Information

U.S. JGOFS Equatorial Pacific (EqPac)

Website: http://usjgofs.whoi.edu/research/eqpac.html

Coverage: Equatorial Pacific

The U.S. EqPac process study consisted of repeat meridional sections (12°N -12°S) across the equator in the

central and eastern equatorial Pacific from 95°W to 170°W during 1992. The major scientific program was focused at 140° W consisting of two meridional surveys, two equatorial surveys, and a benthic survey aboard the R/V Thomas Thompson. Long-term deployments of current meter and sediment trap arrays augmented the survey cruises. NOAA conducted boreal spring and fall sections east and west of 140°W from the R/V Baldridge and R/V Discoverer. Meteorological and sea surface observations were obtained from NOAA's in place TOGA-TAO buoy network.

The scientific objectives of this study were to determine the fluxes of carbon and related elements, and the processes controlling these fluxes between the Equatorial Pacific euphotic zone and the atmosphere and deep ocean. A broad overview of the program at the 140°W site is given by Murray et al. (Oceanography, 5: 134-142, 1992). A full description of the Equatorial Pacific Process Study, including the international context and the scientific results, appears in a series of Deep-Sea Research Part II special volumes:

Topical Studies in Oceanography, A U.S. JGOFS Process Study in the Equatorial Pacific (1995), Deep-Sea Research Part II, Volume 42, No. 2/3.

Topical Studies in Oceanography, A U.S. JGOFS Process Study in the Equatorial Pacific. Part 2 (1996), Deep-Sea Research Part II, Volume 43, No. 4/6.

Topical Studies in Oceanography, A U.S. JGOFS Process Study in the Equatorial Pacific (1997), Deep-Sea Research Part II, Volume 44, No. 9/10.

Topical Studies in Oceanography, The Equatorial Pacific JGOFS Synthesis (2002), Deep-Sea Research Part II, Volume 49, Nos. 13/14.

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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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