

Particulate Carbon, Nitrogen and carbohydrates from U.S. JGOFS Eqpac Moored 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/2617>

Version: June, 1996

Version Date: 1996-06-01

Project

» [U.S. JGOFS Equatorial Pacific](#) (EqPac)

Program

» [U.S. Joint Global Ocean Flux Study](#) (U.S. JGOFS)

Contributors	Affiliation	Role
Hedges, John	University of Washington (UW)	Principal Investigator
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Dataset Description

Particulate C, N and carbohydrates from moored sediment traps

Methods & Sampling

PI: John Hedges (Hedges/Lee/Wakeham)
of: University of Washington
dataset: Particulate C, N and carbohydrates from moored sediment traps
dates: February 3, 1992 to December 13, 1992
location: N: 9 S: 0 W: -140 E: -140
project/cruise: Mooring Deployment EQPAC-1 along 140 West W9201B
ship: R/V Wecoma

PI Notes

Note on Peter Hernes carbohydrate sediment trap data - EQPAC

IRS Traps refer to "Indented Rotating Sphere Traps".

The IRS traps had one poison diffuser with approximately 400 g NaCl and 400 mg mercuric chloride.

NVC Traps refer to "No Valve Control Traps", these traps did not have the indented rotating sphere valves. The NVC traps had two poison diffusers, each with approximately 400 g NaCl and 400 mg mercuric chloride.

For more detail on sediment trap arrays see:
Cruise Report, EQPAC - 1, The First Leg of A JGOFS Study
of the Equatorial Pacific, R/V Wecoma W9201B,
January 12, 1992 to February 8, 1992,
Chief Scientist: Jack Dymond, Oregon State University

[Sampling Protocols](#)

Reference: Wilford Gardner (Texas A&M University) report on the use of sediment traps in upper 200m of the water column originally written as minutes for the meeting on the subject at the First International JGOFS Symposium held in Villefranche-sur-Mer, France in May, 1995, and eventually published as:

Gardner, W. D., 2000. Sediment Trap Technology and Sampling in Surface Waters
In: Hanson, R. B., Ducklow, H.W., and Field, J.G., The Changing Ocean Carbon Cycle:
A midterm synthesis of the Joint Global Ocean Flux Study. pp 240-281.
Cambridge University Press, U.S. JGOFS Contribution No. 362.

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Data Files

File
sedtrapcarbos.csv (Comma Separated Values (.csv), 948 bytes) MD5:2a2c0193de6f44cb1f734433045fc882
Primary data file for dataset ID 2617

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Parameters

Parameter	Description	Units
mooring	mooring identification from Wecoma Cruise Report	
trap_type	sediment trap type, IRS or NVC (see PI Notes for more details)	
lat_n	nominal latitude of mooring in whole degrees (negative = south)	degrees
lon_n	nominal longitude of mooring in whole degrees (negative = west)	degrees
depth_t	position of trap in water column as measured from surface	meters
pm_f	total particulate mass flux defined as amount of sinking particulate matter passing through a depth level in the water column	mg/m ² /day
POC	weight percent of organic carbon in total particulates determined by aqueous acidification (salt-corrected wt.)	percent
N_p_tot	weight percent of total nitrogen in total particulates (salt-corrected wt.)	percent
PIC	weight percent of inorganic carbon in total particulates determined by deducting POC from total particulate carbon (salt-corrected)	percent
lyxose	weight percent lyxose monomer of total carbohydrates	percent
arabinose	weight percent arabinose monomer of total carbohydrates	percent
rhamnose	weight percent rhamnose monomer of total carbohydrates	percent
ribose	weight percent ribose monomer of total carbohydrates	percent
xylose	weight percent xylose monomer of total carbohydrates	percent
fucose	weight percent fucose monomer of total carbohydrates	percent
mannose	weight percent mannose monomer of total carbohydrates	percent
galactose	weight percent galactose monomer of total carbohydrates	percent
glucose	weight percent glucose monomer of total carbohydrates	percent
carb_tot_POC_ratio	weight ratio of mg total carbohydrates per 100mg of organic carbon in particulate matter	mg per 100mg

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Instruments

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.

Dataset-specific Instrument Name	IRS Sediment Trap
Generic Instrument Name	Sediment Trap - IRS
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. The Indented Rotating Sphere (IRS) Sediment Trap is described in Peterson et al. (Field evaluation of a valved sediment trap. 1993. Limnology and Oceanography, 38, pp. 1741-1761 and Novel techniques for collection of sinking particles in the ocean and determining their settling rates. 2005. Limnology and Oceanography Methods 3, pp. 520-532). The IRS trap consists of four cylindrical modules; a particle interceptor, an IRS valve; a skewed funnel, and an eleven sample carousel (designated IRSC trap). The key to the trap design is the patented IRS valve located between the particle interceptor and particle accumulator portions of the trap. The valve and carousel are regulated by a TattleTale IVA (manufactured by Onset Computer Corp.) microprocessor and custom software. The IRS sediment trap was specifically designed to exclude zooplankton (Trull et al. 2008. Deep-Sea Research II v.55 pp. 1684-1695).

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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

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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 Baldrige 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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