Neutral lipid fluxes, sediment trap samples collected from the 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/2622
Version: December 7, 1995
Version Date: 1995-12-07

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

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

Contributors	Affiliation	Role
Wakeham, Stuart	Skidaway Institute of Oceanography (SkIO)	Principal Investigator
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Dataset Description

Neutral lipid fluxes, Indented Rotary Sphere (IRS) **Moored** sediment trap samples

Methods & Sampling

PI: Stuart Wakeham
of: Skidaway Institute of Oceanography
dataset: Neutral lipid fluxes, Moored Indented Rotary Sphere sediment trap samples
dates: February 3, 1992 to December 13, 1992
location: N: 9 S: 0 W: -140 E: -140
project: EqPac
cruise/ship: R/V Wecoma W9201B, Sediment trap mooring deployment

Methodology: Sediment trap material was filtered onto 90 mm glass fiber filters (A/E) and frozen. Filters with trap material and sediments were Soxhlet extracted with methylene chloride-methanol (2:1) and the extracts partitioned into the organic phase with 5% NaCl. The "lipid extracts" were saponified with 0.5N KOH/methanol, with "neutral lipids" extracted out of basic solution and "acids" extracted out of acidic solution. Neutral lipids were silylated with BSTFA and fatty acids were methylated with diazomethane. Anaylsis was by gas chromatography and gas chromatography-mass spectrometry.

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Data Files

File
IRS_lipids.csv (Comma Separated Values (.csv), 1.80 KB) MD5:4de667a9bc80f051a5c93d354eb376e8 Primary data file for dataset ID 2622

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Parameters

Parameter	Description	Units
Neutral_lipids	fluxes of neutral lipids	ng/m^2/d
14ROH	C14-alcohol	
2,6,10-TMP-one	2,6,10-trimethylpentadecanone	
15ROH	C15-alcohol	
16ROH	C16-alcohol	
17ROH	C17-alcohol	
18ROH	C18-alcohol	
phytol	phytol	
19ROH	C19-alcohol	
20ROH	C20-alcohol	
21ROH	C21-alcohol	
22ROH	C22-alcohol	
23ROH	C23-alcohol	
27HC	C27-alkane	
24ROH	C24-alcohol	
28HC	C28-alkane	
squalene	squalene	
25ROH	C25-alcohol	
29HC	C29-alkane	
26ROH	C26-alcohol	
30HC	C30-alkane	
27ROH	C27-alcohol	
31HC	C31-alkane	
27(5,22)	cholesta-5,22-dien-3B-ol	
27(22)	cholest-22-en-3B-ol	
28ROH	C28-alcohol	
27(5)	choles-5-en-3B-ol	
27(0)	cholestan-3B-ol	
bisnorhopane	bisnorhopane	

28(5,22)	24-methylcholesta-5,22-dien-3B-ol	
28(22)	24-methylcholest-22-en-3B-ol	
27(4-en-3-one)	cholest-4-en-3-one	
28(5,24(28))	24-methylcholesta-5,24(28)-dien-3B	
28(5)	24-methylcholest-5-en-3B-ol	
28-diol	C28-alkane-diol	
29(5,22)	24-ethylcholesta-5,22-dien-3B-ol	
DM-29(5,22)	23,24-dimethylcholesta-5,22-dien-3	
29(5)	24-ethylcholest-5-en-3B-ol	
29(0)	24-etylcholestan-3B-ol	
29(5,24(28))	24-ethylcholesta-5,24(28)E-dien-3B	
30(22)	4,23,24-trimentylcholest-22-en-3B-	
30(0)	4,23,24-trimethylcholestan-3B-ol	
30-diol	C30-alkane-diol	
30-keto-ol	C30-alkane keto-ol	
homohopane	homohopane	
37:2 alkenone	C37:2 alkenone	
38:2 alkenone	C38:2 ethyl-alkenone	
n9_S	Nominal latitude (north 9) of the mooring array along 140W, (S)hallow IRS trap at 1070 m below water surface.	
n9_D	Nominal latitude (north 9) of the mooring array along 140W, (D)eep IRS trap at 4200 m below water surface.	
n5_S	Nominal latitude (north 5) of the mooring array along 140W, (S)hallow IRS trap at 1020 m below water surface.	
n5_D	Nominal latitude (north 5) of the mooring array along 140W, (D)eep IRS trap at 3600 m below water surface.	
eq_S	Nominal latitude (0N) of the mooring array along 140W, (S)hallow IRS trap at 955 m below water surface.	
eq_D	Nominal latitude (0N) of the mooring array along 140W, (D)eep IRS trap at 3460 m below water surface.	

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Instruments

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 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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