

# Inorganic Sediment Chemistry data from R/V Thomas G. Thompson U.S. JGOFS cruise in the Equatorial Pacific (EqPac project)

**Website:** <https://www.bco-dmo.org/dataset/3940>

**Version:** 13 May 2013

**Version Date:** 2013-05-13

## 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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## Table of Contents

- [Dataset Description](#)
- [Data Files](#)
- [Parameters](#)
- [Instruments](#)
- [Deployments](#)
- [Project Information](#)
- [Program Information](#)
- [Funding](#)

## Dataset Description

Accumulation of Fe, calcium carbonate (CaCO<sub>3</sub>), Ba, Al, P, Ti and ratios from Piston Core (PC) 72.

Relevant references:

[Links between iron input and opal deposit in the Pleistocene equatorial Pacific Ocean.](#)

[Supplemental Information: Links between iron input and opal deposit in the Pleistocene equatorial Pacific Ocean.](#)

Murray R. W., Knowlton C., Leinen M., Mix A. C., and Polsky C. H., 2000, Export production and carbonate dissolution in the central equatorial Pacific Ocean over the past 1 Ma. *Paleoceanography*, 15, 570-592.

Murray R. W., Leinen M., Murray D. W., Mix A. C., and Knowlton, C. W., 1995, Terrigenous Fe input and biogenic sedimentation in the glacial and interglacial Equatorial Pacific Ocean. *Global Biogeochemical Cycles*, 9, 667-684.

[ [table of contents](#) | [back to top](#) ]

## Data Files

File
<b>InorgSedChem_PC72.csv</b> (Comma Separated Values (.csv), 41.26 KB) MD5:29eaa7d43bd73f982d19fad1b0059d90
Primary data file for dataset ID 3940

[ [table of contents](#) | [back to top](#) ]

## Parameters

Parameter	Description	Units
event	event number from event log	dimensionless
sta	sta number from event log	dimensionless
lat	latitude, negative denotes South	decimal degrees
lon	longitude, negative denotes West	decimal degrees
depth_w	depth of water	meters
core_type	core type	dimensionless
depth_core	depth in core, mid-point of interval sampled	centimeters
CaCO3	Calcium Carbonate	weight per cent
d18O	Oxygen Isotope	
Opal	opal	weight in percent
sed_rate_linear	linear sedimentation rate	centimeters/kiloyear
TOC	Total Organic Carbon	weight in percent
Fe	Fe (Iron)	parts per million
Al	Al (Aluminum)	parts per million
P	P (Phosphorus)	parts per million

Ti	Ti (Titanium)	parts per million
Ba	Ba (Barium)	parts per million
Ba_Ti_ratio	Barium to Titanium ratio	parts per million
Al_Ti_ratio	Aluminum Titanium ratio	parts per million
P_Ti_ratio	Phorphorus to Tin ratio	parts per million
mass_acc_rate_d18O	delta 18O-based Mass Accumulation Rate = (Dry Bulk Density) x (delta 18O-based Linear Sedimentation Rate)	parts per million
mass_acc_rate_230Th	230Th-based Mass Accumulation Rate	parts per million
density_dry_bulk	Dry Bulk Density of sediment calculated from CaCO3 (weight %)	micrograms/centimeter <sup>3</sup>

[ [table of contents](#) | [back to top](#) ]

## Instruments

<b>Dataset-specific Instrument Name</b>	Piston Corer
<b>Generic Instrument Name</b>	Piston Corer
<b>Generic Instrument Description</b>	The piston corer is a type of bottom sediment sampling device. A long, heavy tube is plunged into the seafloor to extract samples of mud sediment. A piston corer uses a "free fall" of the coring rig to achieve a greater initial force on impact than gravity coring. A sliding piston inside the core barrel reduces inside wall friction with the sediment and helps to evacuate displaced water from the top of the corer. A piston corer is capable of extracting core samples up to 90 feet in length.

[ [table of contents](#) | [back to top](#) ]

## Deployments

TT013

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57732">https://www.bco-dmo.org/deployment/57732</a>
<b>Platform</b>	R/V Thomas G. Thompson
<b>Start Date</b>	1992-10-30
<b>End Date</b>	1992-12-13
<b>Description</b>	Purpose: Benthic Survey, 12°N-12°S at 140°W TT013 was one of five cruises conducted in 1992 in support of the U.S. Equatorial Pacific (EqPac) Process Study. The five EqPac cruises aboard R/V Thomas G. Thompson included two repeat meridional sections (12°N - 12°S), 2 equatorial surveys, and a benthic survey (all at 140° W). The scientific objectives of this study were to observe the processes in the Equatorial Pacific controlling the fluxes of carbon and related elements between the atmosphere, euphotic zone, and deep ocean. As luck would have it, the survey window coincided with an El Nino event. A bonus for the research team.

[ [table of contents](#) | [back to top](#) ]

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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.

[ [table of contents](#) | [back to top](#) ]

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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).

[ [table of contents](#) | [back to top](#) ]

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## Funding

Funding Source	Award
<a href="#">NSF Division of Ocean Sciences (NSF OCE)</a>	<a href="#">OCE-9301097</a>

[ [table of contents](#) | [back to top](#) ]