

# Multiple Unit Large Volume in situ Filtration System from R/V Thomas G. Thompson cruises TT007, TT011 in the Equatorial Pacific in 1992 during the U.S. JGOFS Equatorial Pacific (EqPac) project

**Website:** <https://www.bco-dmo.org/dataset/2629>

**Version:** December 7, 1998

**Version Date:** 1998-12-07

## 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

Multiple Unit Large Volume in situ Filtration System

## Methods & Sampling

See Platform deployments for cruise specific documentation

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## Parameters

Parameter	Description	Units
event	event number from event log	
sta	station number from event log	
cast	MULVFS cast number	
data_rev	data revision date per Bishop	YYMMDD
date_begin	local date filtration began	YYMMDD
time_begin	local time at start of filtration	HHmm
lat_begin	latitude at time of start of filtration negative numbers south	decimal degrees
lon_begin	longitude at time of start of filtration negative numbers west	decimal degrees
depth	corrected depth averaged over cast	meters
sample_no	originator assigned sample number	
vol_filt	volume of seawater filtered (at in-situ pressure) liters	
vol_adsorb	volume of seawater adsorbed by USC cartridges (see object thorium T.Ku data - TT011)	liters
od_grey	greater than 53um grey optical density	OD/m3
od_red	greater than 53um red optical density	OD/m3
od_blue	greater than 53um blue optical density	OD/m3
od_green	greater than 53um green optical density	OD/m3

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## Instruments

<b>Dataset-specific Instrument Name</b>	Multi Unit Large Volume Filtration System
<b>Generic Instrument Name</b>	Multiple Unit Large Volume Filtration System
<b>Dataset-specific Description</b>	MULVFS(Multiple Unit Large Volume in situ Filtration System) was used to collect water samples.
<b>Generic Instrument Description</b>	The Multiple Unit Large Volume Filtration System (MULVFS) was first described in Bishop et al., 1985 (doi: 10.1021/ba-1985-0209.ch009). The MULVFS consists of multiple (commonly 12) specialized particulate matter pumps, mounted in a frame and tethered to the ship by a cable (Bishop et al., 1985; Bishop and Wood, 2008). The MULVFS filters particulates from large volumes of seawater, although the exact protocols followed will vary for each project.

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## Deployments

TT007

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57728">https://www.bco-dmo.org/deployment/57728</a>
<b>Platform</b>	R/V Thomas G. Thompson
<b>Start Date</b>	1992-01-30
<b>End Date</b>	1992-03-13
<b>Description</b>	<p>Purpose: Spring Survey Cruise; 12°N-12°S at 140°W TT007 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.</p> <p><b>Methods &amp; Sampling</b>  PI: James K. Bishop of: University of Victoria dataset: Multiple Unit Large Volume in situ Filtration System (MULVFS) cast information/LaCie Optical Scanner results dates: February 08, 1992 to March 07, 1992 location: N: 8.9933 S: -12.035 W: -140.9418 E: -135.0167 project/cruise: EQPAC/TT007 - Spring Survey ship: Thomas Thompson Sampling and Analytical Protocol PI-Note Note: Optical density is a physically defined unit. Calibration is via a KODAK photographic reference grey scale. 0.0 means white; 0.6 is a dark grey. Note: all times are given as local time (Z time -10 hrs)</p>

#### TT011

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/57730">https://www.bco-dmo.org/deployment/57730</a>
<b>Platform</b>	R/V Thomas G. Thompson
<b>Start Date</b>	1992-08-05
<b>End Date</b>	1992-09-18
<b>Description</b>	<p>Purpose: Fall Survey; 12°N-12°S at 140°W TT011 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.</p> <p><b>Methods &amp; Sampling</b>  PI: James K. Bishop of: University of Victoria dataset: Multiple Unit Large Volume in situ Filtration System (MULVFS) cast information/LaCie Optical Scanner results dates: August 11, 1992 to September 14, 1992 location: N: 12.01 S: -11.8483 W: -141.3483 E: -134.9533 project/cruise: EQPAC/TT011 - Fall Survey ship: Thomas Thompson Sampling and Analytical Protocol PI-Note Note: Optical density is a physically defined unit. Calibration is via a KODAK photographic reference grey scale. 0.0 means white; 0.6 is a dark grey. Note: all times are given as local time (Z time -10 hrs)</p>

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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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