

# 0.1 percent light depths from R/V Thomas G. Thompson cruise TT007 in the Equatorial Pacific in 1992 during the U.S. JGOFS Equatorial Pacific (EqPac) project

Website: <https://www.bco-dmo.org/dataset/2667>

Version: July 22, 1993

Version Date: 1993-07-22

## 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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## Table of Contents

- [Dataset Description](#)
  - [Methods & Sampling](#)
- [Data Files](#)
- [Parameters](#)
- [Deployments](#)
- [Project Information](#)
- [Program Information](#)

## Dataset Description

0.1 Percent Light Depths  
nominal longitude is 140W

## Methods & Sampling

**PI:** Chuck Trees  
**of:** San Diego State University  
**dataset:** 0.1 Percent Light Depths  
**dates:** February 4, 1992 to March 8, 1992  
**location:** N: 12 S: -12 W: -140.0 E: -140.0  
**project/cruise:** EQPAC/TT007 - Spring Survey  
**ship:** Thomas Thompson

PI Notes:

Enclosed are the depths of the 0.1% light levels as calculated from scalar PAR (broadband detector, 400-700 nm, Biospherical Instruments). As some of you remember from the Spring Survey Cruise, I was trying to get the PI's to use percent light level depths based on downwelling vector irradiance at 488 nm, instead of the PAR values. All near-surface downwelling optical measurements are noisy and it is difficult to extrapolate to the surface. One method which helps in fitting this data near the surface is to plot it in log space and for many wavelengths the irradiance is linear. Downwelling irradiance at 488nm has this near-surface attribute. Unfortunately, a PAR profile is curved near the surface (enhanced attenuation in the red). making extrapolation difficult and introducing errors in estimating light depths. Quoting Gordon and McCluney (1975, Appl.

Opt. 14,2) "Furthermore, for broadband sensing systems, z90 can be determined only from spectral irradiance measurements..". z90 is the depth at which 90% of the diffusely reflected irradiance originates that a satellite can observe, which is also the 37% light level. With this disclaimer I hope you have fun with the data.

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

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## Data Files

File
<b>PAR_pt1.csv</b> (Comma Separated Values (.csv), 432 bytes) MD5:28b4467d7b7a174d546d18bb44313b11 Primary data file for dataset ID 2667

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

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## Parameters

Parameter	Description	Units
date	day and month of year 1992 (local time)	
time	time reported in local time	
lat	nominal latitude along 140W	whole degrees
PARdepth	depth of 0.1% PAR	meters

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

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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>	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.

[ [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](#) ]