Total carbon dioxide, delta13C and delta18O 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/2659
Version: July 29, 2002
Version Date: 2002-07-29

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

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

Contributors	Affiliation	Role
Quay, Paul	University of Washington (UW)	Principal Investigator
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Dataset Description

Total carbon dioxide, delta13C and delta18O

Methods & Sampling

See Platform deployments for cruise specific documentation

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Data Files

File
tco2_man_TT007.csv (Comma Separated Values (.csv), 1.57 KB) MD5:e70dbe7ebe7edee5c7c7063e7df1a220 version July 29, 2002 (original version June 19, 1997) Paul Quay, Univ. of Washington EqPac cruise TT007, Feb - Mar 1992 Total carbon dioxide, delta13C and delta18O
tco2_man_TT011.csv (Comma Separated Values (.csv), 1.27 KB) MD5:ebe6b670131f62a943086dfa4f7f7d66 version July 29, 2002 (original version June 19, 1997) Paul Quay, Univ. of Washington EqPac cruise TT011, Aug 5 - Sep 18, 1992 Total carbon dioxide, delta13C and delta18O

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Parameters

Parameter	Description	Units
event	event number from cruise logs	MMDDhhmm
sta	station number	
lat_n	nominal latitude of station, (- south indicator)	whole degrees
lon_n	nominal longitude of station, (- west indicator)	whole degrees
cast	CTD rosette cast number	
bot	rosette bottle number	
press	sample depth reported as pressure	decibars
TCO2_man	total carbon dioxide in seawater, manometric method	micromoles C/kilogram
delta13C	ratio carbon 12 to carbon 13 corrected to PDB standard	
delta18O	ratio oxygen 16 to oxygen 18 corrected to PDB standard, delta 18O are for the oxygen in CO2 converted from DIC.	
q_flag	quality flag, applies to all samples 2 means ok 3 indicates a questionable sample	

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Instruments

Dataset-specific Instrument Name	Niskin Bottle
Generic Instrument Name	Niskin bottle
Dataset-specific Description	CTD clean rosette (Niskin) bottles were used to collect water samples.
Generic Instrument Description	A Niskin bottle (a next generation water sampler based on the Nansen bottle) is a cylindrical, non-metallic water collection device with stoppers at both ends. The bottles can be attached individually on a hydrowire or deployed in 12, 24, or 36 bottle Rosette systems mounted on a frame and combined with a CTD. Niskin bottles are used to collect discrete water samples for a range of measurements including pigments, nutrients, plankton, etc.

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Deployments

TT007

Website	https://www.bco-dmo.org/deployment/57728
Platform	R/V Thomas G. Thompson
Start Date	1992-01-30
End Date	1992-03-13
Description	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. **Methods & Sampling** PI: Paul Quay and Jianrong Zhang of: University of Washington dataset: Dissolved Inorganic Carbon, delta13C and delta18O dates: February 04, 1992 to March 09, 1992 location: N: 11.9685 S: -12.1049 W: -140.4302 E: -134.7928 project/cruise: EQPAC/TT007 - Spring Survey ship: Thomas Thompson The methodology is described in the following literature: 1. Kroopnick P. M. (1974) The dissolved O2-CO2-13C system in the eastern equatorial Pacific. Deep-Sea Research, 21, 211-227. 2. Quay P. D., B. Tilbrook and C. S. Wong (1992) Oceanic uptake of fossil fuel CO2:Carbon-13 Evidence, Science, 256, 74-79. EqPac bottle quality review summary from DMO DMO cautionary note: The DMO suspects a misalignment of either bottle number or the corresponding depth/pressure for event number 03010354. Possible solutions are: bottle 19 at 54 meters or bottle 18 at 64 meters.

TT011

Website	https://www.bco-dmo.org/deployment/57730
Platform	R/V Thomas G. Thompson
Start Date	1992-08-05
End Date	1992-09-18
Description	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. **Methods & Sampling** PI: Paul Quay and Jianrong Zhang of: University of Washington dataset: Total carbon dioxide, delta13C and delta18O dates: August 10, 1992 to September 13, 1992 location: N: 12.005 S: -11.9033 W: -140.5467 E: -134.9433 project/cruise: EQPAC/TT011 - Fall Survey ship: Thomas Thompson The methodology is described in the following literature: 1. Kroopnick P. M. (1974) The dissolved O2-CO2-13C system in the eastern equatorial Pacific. Deep-Sea Research, 21, 211-227. 2. Quay P. D., B. Tilbrook and C. S. Wong (1992) Oceanic uptake of fossil fuel CO2:Carbon-13 Evidence, Science, 256, 74-79. EqPac bottle quality review summary from DMO

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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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