

# CFC saturation along the US GEOTRACES East Pacific Zonal Transect from the R/V Thomas G. Thompson TN303 cruise in the tropical Pacific from Peru to Tahiti during 2013 (U.S. GEOTRACES EPZT project)

Website: <https://www.bco-dmo.org/dataset/528989>

Data Type: Cruise Results

Version: 1

Version Date: 2014-10-30

## Project

» [U.S. GEOTRACES East Pacific Zonal Transect \(GP16\)](#) (U.S. GEOTRACES EPZT)

## Program

» [U.S. GEOTRACES](#) (U.S. GEOTRACES)

Contributors	Affiliation	Role
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## Abstract

CFC saturation along the US GEOTRACES East Pacific Zonal Transect from the R/V Thomas G. Thompson TN303 cruise in the tropical Pacific from Peru to Tahiti during 2013.

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## Coverage

**Spatial Extent:** N:-10.25018 E:-77.37617 S:-16.00033 W:-152.00033

**Temporal Extent:** 2013-10-29 - 2013-12-16

## Dataset Description

Saturation values for CFCs

## Methods & Sampling

(tbd)

## Data Processing Description

(tbd)

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## Data Files

File
<b>CFC_Sat_v30Oct2014.csv</b> (Comma Separated Values (.csv), 11.90 KB) <small>MD5:a543eedd9c8f5b1f6c57e44ba00e1284</small>
Primary data file for dataset ID 528989

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## Parameters

Parameter	Description	Units
EXPOCODE	expedition code assigned by the CCHDO: NODCSHIPCodeYearMonthDay	text
SECT_ID	cruise section identification number	text
GEOTRC_EVENTNO	GEOTRACES Event Number	dimensionless
Station	Station Number	dimensionless
Sample_Num	CFC Sat Sample Number	dimensionless
GEOTRC_SAMPNO	GEOTRACES Sample Number	dimensionless
DATE	Station Date (GMT) in the format YYYYMMDD	unitless
TIME	Station Time (GMT)	HHMM
LATITUDE	Station Latitude (South is negative)	decimal degrees
LONGITUDE	Station Longitude (West is negative)	decimal degrees
pressure	pressure	decibars
salinity	salinity	PSS-78
theta	theta	(tbd)
f11spc	f11spc	(tbd)
f12spc	f12spc	(tbd)
f113spc	f113spc	(tbd)
ccl4spc	ccl4spc	(tbd)
sf6spc	sf6spc	(tbd)
ISO_DATETIME	Date/Time (ISO formatted)	YYYY-MM-DDTHH:MM:SS[.xx]Z

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## Deployments

### TN303

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/499719">https://www.bco-dmo.org/deployment/499719</a>
<b>Platform</b>	R/V Thomas G. Thompson
<b>Report</b>	<a href="http://dmoserv3.whoi.edu/data_docs/GEOTRACES/EPZT/GT13_EPZT_ODFReport_All.pdf">http://dmoserv3.whoi.edu/data_docs/GEOTRACES/EPZT/GT13_EPZT_ODFReport_All.pdf</a>
<b>Start Date</b>	2013-10-25
<b>End Date</b>	2013-12-20
<b>Description</b>	A zonal transect in the eastern tropical South Pacific (ETSP) from Peru to Tahiti as the second cruise of the U.S.GEOTRACES Program. This Pacific section includes a large area characterized by high rates of primary production and particle export in the eastern boundary associated with the Peru Upwelling, a large oxygen minimum zone that is a major global sink for fixed nitrogen, and a large hydrothermal plume arising from the East Pacific Rise. This particular section was selected as a result of open planning workshops in 2007 and 2008, with a final recommendation made by the U.S.GEOTRACES Steering Committee in 2009. It is the first part of a two-stage plan that will include a meridional section of the Pacific from Tahiti to Alaska as a subsequent expedition. Figure 1. The 2013 GEOTRACES EPZT Cruise Track. [click on the image to view a larger version] Additional cruise information is available from the Rolling Deck to Repository (R2R): <a href="http://www.rvdata.us/catalog/TN303">http://www.rvdata.us/catalog/TN303</a>

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## Project Information

### U.S. GEOTRACES East Pacific Zonal Transect (GP16) (U.S. GEOTRACES EPZT)

**Website:** <http://www.geotraces.org/>

**Coverage:** Eastern Tropical Pacific - Transect from Peru to Tahiti (GP16)

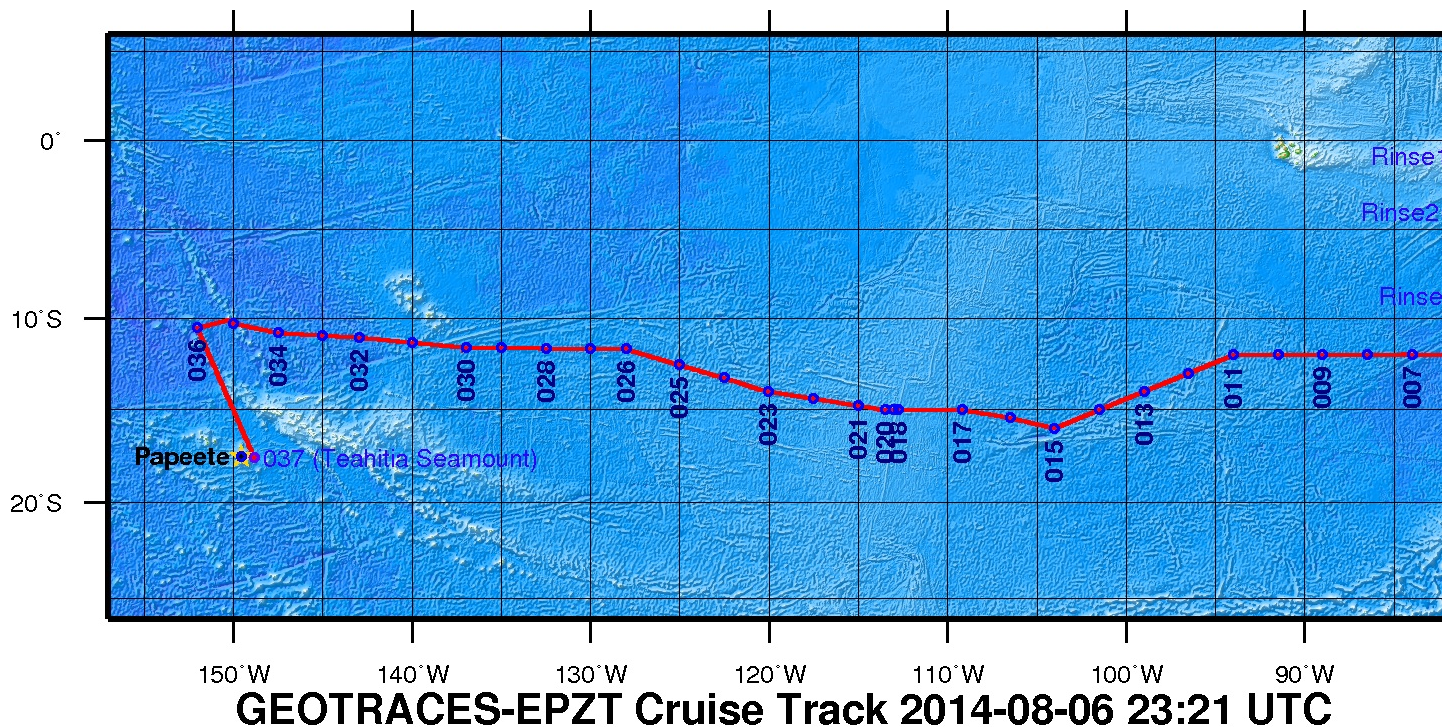
#### From the NSF Award Abstract

The mission of the International GEOTRACES Program (<https://www.geotraces.org/>), of which the U.S. chemical oceanography research community is a founding member, is "to identify processes and quantify fluxes that control the distributions of key trace elements and isotopes in the ocean, and to establish the sensitivity of these distributions to changing environmental conditions" (GEOTRACES Science Plan, 2006). In the United States, ocean chemists are currently in the process of organizing a zonal transect in the eastern tropical South Pacific (ETSP) from Peru to Tahiti as the second cruise of the U.S.GEOTRACES Program. This Pacific section includes a large area characterized by high rates of primary production and particle export in the eastern boundary associated with the Peru Upwelling, a large oxygen minimum zone that is a major global sink for fixed nitrogen, and a large hydrothermal plume arising from the East Pacific Rise. This particular section was selected as a result of open planning workshops in 2007 and 2008, with a final recommendation made by the U.S.GEOTRACES Steering Committee in 2009. It is the first part of a two-stage plan that will include a meridional section of the Pacific from Tahiti to Alaska as a subsequent expedition.

This award provides funding for management of the U.S.GEOTRACES Pacific campaign to a team of scientists from the University of Southern California, Old Dominion University, and the Woods Hole Oceanographic Institution. The three co-leaders will provide mission leadership, essential support services, and management structure for acquiring the trace elements and isotopes samples listed as core parameters in the International GEOTRACES Science Plan, plus hydrographic and nutrient data needed by participating investigators. With this support from NSF, the management team will (1) plan and coordinate the 52-day Pacific research cruise described above; (2) obtain representative samples for a wide variety of trace metals of interest using conventional CTD/rosette and GEOTRACES Sampling Systems; (3) acquire conventional JGOFS/WOCE-quality hydrographic data (CTD, transmissometer, fluorometer, oxygen sensor, etc) along with discrete samples for salinity, dissolved oxygen (to 1 uM detection limits), plant pigments, redox tracers such as ammonium and nitrite, and dissolved nutrients at micro- and nanomolar levels; (4) ensure that proper QA/QC protocols are followed and reported, as well as fulfilling all GEOTRACES Inter-calibration protocols; (5) prepare and deliver all hydrographic-type data to the GEOTRACES Data Center (and US data centers); and (6) coordinate cruise communications between all participating investigators, including preparation of a hydrographic report/publication.

**Broader Impacts:** The project is part of an international collaborative program that has forged strong partnerships in the intercalibration and implementation phases that are unprecedented in chemical oceanography. The science product of these collective missions will enhance our ability to understand how to interpret the chemical composition of the ocean, and interpret how climate change will affect ocean chemistry. Partnerships include contributions to the infrastructure of developing nations with overlapping interests in the study area, in this case Peru. There is a strong educational component to the program, with many Ph.D. students carrying out thesis research within the program.

Figure 1. The 2013 GEOTRACES EPZT Cruise Track. [click on the image to view a larger version]



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### Program Information

**U.S. GEOTRACES (U.S. GEOTRACES)**

**Website:** <http://www.geotraces.org/>

**Coverage:** Global

**GEOTRACES** is a [SCOR](#) sponsored program; and funding for program infrastructure development is provided by the [U.S. National Science Foundation](#).

GEOTRACES gained momentum following a special symposium, S02: Biogeochemical cycling of trace elements and isotopes in the ocean and applications to constrain contemporary marine processes (GEOSECS II), at a 2003 Goldschmidt meeting convened in Japan. The GEOSECS II acronym referred to the Geochemical Ocean Section Studies To determine full water column distributions of selected trace elements and isotopes, including their concentration, chemical speciation, and physical form, along a sufficient number of sections in each ocean basin to establish the principal relationships between these distributions and with more traditional hydrographic parameters;

\* To evaluate the sources, sinks, and internal cycling of these species and thereby characterize more completely the physical, chemical and biological processes regulating their distributions, and the sensitivity of these processes to global change; and

\* To understand the processes that control the concentrations of geochemical species used for proxies of the past environment, both in the water column and in the substrates that reflect the water column.

GEOTRACES will be global in scope, consisting of ocean sections complemented by regional process studies. Sections and process studies will combine fieldwork, laboratory experiments and modelling. Beyond realizing the scientific objectives identified above, a natural outcome of this work will be to build a community of marine scientists who understand the processes regulating trace element cycles sufficiently well to exploit this knowledge reliably in future interdisciplinary studies.

Expand "Projects" below for information about and data resulting from individual US GEOTRACES research projects.

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### Funding

Funding Source	Award
<a href="#">NSF Division of Ocean Sciences (NSF OCE)</a>	<a href="#">OCE-1235248</a>
<a href="#">NSF Division of Ocean Sciences (NSF OCE)</a>	<a href="#">OCE-1130870</a>

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