Scientific sampling event log associated with the US GEOTRACES East Pacific Zonal Transect cruise from R/V Thomas G. Thompson TN303 in the tropical Pacific from Peru to Tahiti during 2013 (U.S. GEOTRACES EPZT project)

Website: https://www.bco-dmo.org/dataset/502618
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
Moffett, James W.	University of Southern California (USC-HIMS)	Lead Principal Investigator, Contact
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Abstract
Scientific Sampling Event Log for TN303 (GEOTRACES EPZT). Station numbers, Events, Dates/Times, Lat/Lons and Event descriptions are provided for each station.

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Coverage

Spatial Extent: **N**:-4.0701 **E**:-77.376 **S**:-17.60917 **W**:-152.11975
Temporal Extent: 2013-10-26 - 2013-12-20

Dataset Description

Scientific Sampling Event Log for TN303 (GEOTRACES EPZT). Station numbers, Events, Dates/Times, Lat/Lons and Event descriptions are provided for each station.

Methods & Sampling

Generated aboard vessel by science party.

Event Description Codes:
Code = Event descripton
nd = unknown/not entered
30-ODF = 30L Niskin Rosette
Be-7 = Be-7
GT-C = GEOTRACES carousel
GeoF = GeoFish w/ Event # only; TM dissolved; unfiltered
mid-GeoF = GeoFish w/ GEOTRACES #; TM diss/uf; Nuts; nanoNuts; As; Alk Phosphatase
Super-GeoF = GeoFish Station sampling: TM diss/uf; Nuts; NanoNuts; As; Alk Phos; Se; WML; A. Shiller
RaPUW = Radium UW pump
MITv2 = MIT-vane
UAFv = UAF-vane
KnoR = Knorr rosette
MastUp = NASA solar reference mast UP
MastDown = NASA solar reference mast DOWN
McL-Ros = McLane pump rosette
McL-Prof = McLane pump profile
Aeros = Aerosol sampler
Argo = Argo Float deployment
AOP = Apparent Optical Properties cast
NASAsurf = NASA surface pump water sample
NEMO = NEMO Float Deployment
Ra/Th/Pig = Ra/Th/Pigment Niskin Cast
Surf Ra bag = Surface Ra bag
Rain = Rain sample

Codes for Samples Taken
nd = unknown/not recorded
diss = dissolved samples
diss+part = dissolved and particulate samples
unfilt = unfiltered seawater
filter = filter for particulates
diss+ UF = Dissolved TM, Mn; Unfiltered TM
Argo = Argo Float deployment
none = none

Data Processing Description

BCO-DMO Processing Notes
- Generated from original .xlsx file "EPZT_TGT303_Event_Log_ed.xlsx" contributed by MCJ

- Edits made by MCJ incorporated in v30Oct2014 version
- Corrections made to misc, obvious navigation errors using R2R cruisetrack navigation
- "nd" no data inserted into blank cells
- date reformatted to BCO-DMO standard of YYYYMMDD
- time reformatted to BCO-DMO standard of HHMM
- ISO date/time fields inserted
- latitude in decimal degrees generated from latitude degs, mins (latitude deg, mins preserved)
- longitude in decimal degrees generated from longitude degs, mins (longitude deg, mins preserved)
- commas "," in text columns converted to semicolons ";"
- misc reformatting of location column data for standardization (blanks removed)
- Parameter names edited to conform to BCO-DMO naming conventions.

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Data Files

File
EventLog_v30Oct2014.csv (Comma Separated Values (.csv), 87.60 KB) MD5:f11bd5414e8a92967588219cc1ac66f5 Primary data file for dataset ID 502618

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Parameters

Parameter	Description	Units
GEOTRC_EVENTNO	event number	integer
LOCATION	location descriptor (typically station id)	text
DATE_START	Start date (GMT) in the format YYYYMMDD	unitless
TIME_START	Start time (GMT) in the format HHMM	unitless
DATE_END	End date (GMT) in the format YYYYMMDD	unitless
TIME_END	End time (GMT) in the format HHMM	unitless
LATITUDE	Latitude (South is negative)	dec_degs
LONGITUDE	Longitude (West is negative)	dec_degs
LAT_DEG_S	Latitude Degrees South	degrees
LAT_MIN_S	Latitude Minutes South	dec_mins
LON_DEG_W	Longitude Degrees West	degrees
LON_MIN_W	Longitude Minutes West	dec_mins
DEPTH_MIN	Minimum depth	meters
DEPTH_MAX	Maximum depth	meters

EVENT_DESCRIPTION	**Event Description** Event Description Codes (Code = Event Description): nd = unknown/not entered 30-ODF = 30L Niskin Rosette Be-7 = Be-7 GT-C = GEOTRACES carousel GeoF = GeoFish w/ Event # only; TM dissolved; unfiltered mid-GeoF = GeoFish w/ GEOTRACES #; TM diss/uf; Nuts; nanoNuts; As; Alk Phosphatase Super-GeoF = GeoFish Station sampling: TM diss/uf; Nuts; NanoNuts; As; Alk Phos; Se; WML; A. Shiller RaPUW = Radium UW pump MITv2 = MIT-vane UAFv = UAF-vane KnoR = Knorr rosette MastUp = NASA solar reference mast UP MastDown = NASA solar reference mast DOWN McL-Ros = McLane pump rosette McL-Prof = McLane pump profile Aeros = Aerosol sampler Argo = Argo Float deployment AOP = Apparent Optical Properties cast NASAsurf = NASA surface pump water sample NEMO = NEMO Float Deployment Ra/Th/Pig = Ra/Th/Pigment Niskin Cast Surf Ra bag = Surface Ra bag Rain = Rain sample	text
SAMPLES_TAKEN	**Samples Taken** Codes for Samples Taken: nd = unknown/not recorded diss = dissolved samples diss+part = dissolved and particulate samples unfilt = unfiltered seawater filter = filter for particulates diss+ UF = Dissolved TM, Mn; Unfiltered TM Argo = Argo Float deployment none = none	text
GEOTRACES_ID_NUMBER_RANGE	GEOTRACES ID Number and Range	text
COMMENT	Event comment	text
ISO_DATETIME_START	Start date/time (ISO formatted)	yyyy-MM-dd'T'HH:mm:ss.SS'Z'
ISO_DATETIME_END	End date/time (ISO formatted) in the format YYYY-MM-DDTHH:MM:SS[.xx]Z	unitless

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Deployments

TN303

Website	https://www.bco-dmo.org/deployment/499719
Platform	R/V Thomas G. Thompson
Report	http://dmoserv3.whoi.edu/data_docs/GEOTRACES/EPZT/GT13_EPZT_ODFReport_All.pdf
Start Date	2013-10-25
End Date	2013-12-20
Description	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): http://www.rvdata.us/catalog/TN303

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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)

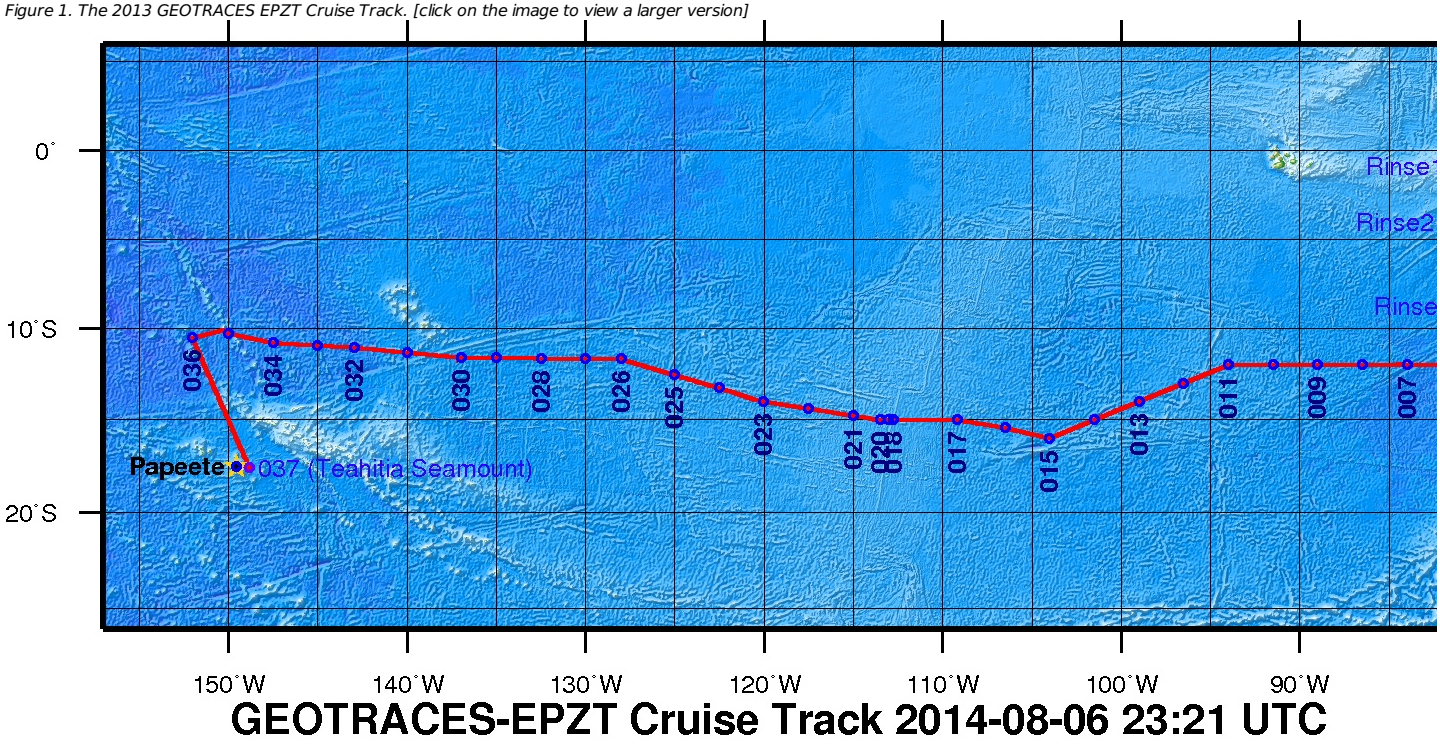
From the NSF Award Abstract
The mission of the International GEOTRACES Program (https://www.geotraces.org/), of which the U.S. chemical oceanography research community is a founding member, is "to identify processes and quantify fluxes that control the distributions of key trace elements and isotopes 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 Intercalibration 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
NSF Division of Ocean Sciences (NSF OCE)	OCE-1235248
NSF Division of Ocean Sciences (NSF OCE)	OCE-1130870

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