

#### Introduction

The U.S. GEOTRACES program seeks to identify processes controlling the distribution of trace elements and isotopes in the world's oceans. Quantifying marine trace elements and understanding their role in biogeochemical cycles is important for predicting the ocean's response to environmental changes, such as a changing climate and the release of elements into the ocean due to human activities. This research program is collaborative in nature and only one component within the broader International GEOTRACES program. An important part of the collaborative scientific process is having access to trustworthy, welldocumented data from colleagues. The Biological and Chemical Oceanography Data Management Office (BCO-DMO) serves as the U.S. GEOTRACES Data Assembly Center, and facilitates the management, sharing, and long-term preservation of trace element and isotope data not only from U.S. GEOTRACES researchers, but from NSF-funded marine biogeochemists across the United States. The BCO-DMO data managers work closely with investigators contributing their data to ensure quality and completeness of documentation to foster data discovery and re-use by potential collaborators. The BCO-DMO system provides free and open access to data and tools for discovery, mapping, visualization, and download. Trace element and isotope datasets from the recent U.S. GEOTRACES North Atlantic Transect and Eastern Pacific Zonal Transect cruises, as well as other GEOTRACES-related projects are freely available from BCO-DMO. Related data from legacy programs, including the U.S. Joint Global Ocean Flux Study (JGOFS), are also available for use by investigators seeking to further the understanding of trace metal cycling in the oceans.

## Data Management Process

#### Data are collected, processed, & analyzed



BCO-DMO can accommodate a variety of data types, including those collected from instruments deployed at sea from research vessels, moored instruments, laboratory and field experiments, and model output.









# **BCO-DMO:** Supporting the Management and Sharing of Marine Trace Metal Data

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# Trace Metal Data Available from BCO-DMO

More than 100 datasets are available from 9 U.S. GEOTRACES and GEOTRACES-related cruises.



The map above shows the 9 U.S GEOTRACES cruises, including CoFeMUG and the GEOTRACES intercalibration cruises. Dots represent sampling stations.

## Data are contributed to BCO-DMO

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Programs	34	Dataset: GT10-11 - Pb Dissolved												
Projects	611	Get Data Map It												
Deployments	2241	Project: U.S. GEOTRACES North Atlantic Transec	t (U.S. GEOTR	ACES NAT)			BC	BCO-DMO metadata page						
Datasets	7742	<sup>2</sup> Lead Principal Investigator: Dr Edward A. Boyle (Massachusetts Institute of Technology, MIT-EAPS)						<b>n</b> o T	iou	oftho				
Instruments	386	Co-Principal Investigator: Yolanda Echegoven-Sanz (Massachusetts Institute of Technology, MIT-EAPS)					_  (ie	ILJ a			ne v	Iew	orthe	
Parameters	1365	Abigail Noble (Massachusetts Institute of Technology, MIT-EAPS)						dataset (below). Data can be						
People	1961	BCO-DMO Data Manager: Shannon Rauch (Woods Hole Oceanographic Institution, WHOI BCO-DMO)												
Affiliations	457	Validated: Yes Viewed online and												
Funding	77	Data version: 07 Jan 2013						i be	n va	rioi	15			
Awards	1266	Version Date: 06/21/2013												
		Data URL: http://www.bco-dmo.org/dataset/3850/da	ita 🕑				for	ma	ts.					
EOSPATIAL ACC	CESS	Current State: Final no updates expected												
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		Brief Description: Dissolved lead (Pb), less the	Directory	Documenta	tion Dow	nload & Othe	r Operations	_						
ONTRIBUTE DA	ТА	Dissolved lead (Pb), the Pb passing through a 0.	Level 0	Next Level	Flat Listing	1								
etting started		seawater. (The sample size was quantified volun		Here Lever	inter Listing	1								
FAOr		assuming a density of 1.027 g/cc.) Samples were	<pre># Dissolved Pb # from 2010 an</pre>	(passed through a d 2011 GEOTRACES of	0.2um Acropak ruises.	capsule filter)								
TAQS		Legs 1 and 2, in 2010 and 2011.	# PIs: Edward E	Soyle et al.										
letadata Forms ( rtf	files)		# Dataset Upda	ted: 21 June 2013	(current versi	on)								
Program Metadata F	Form	Please note that some US GEOTRACES data ma	<pre># Original ver # Note: coordin</pre>	ates for sample #5	622 (KN199-04	sta 9) added from								
Project Metadata Fo	rm	If you are interested in following changes to US C	# G. Cutter's	Nanomolar Surface	Nutrients data	set.								
Deployment Metada	ta Form	BCO-DMO US GEOTRACES project page (scrol	cruise_id crui	.se_name expo_code	•									
Dataset Metadata Fo	orm		KN199-04 GT10	316N20101	.015									
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		grade HCl to be heated in an oven at 60 degrees	nd 20		)14 nd 38.2	668 -9.7212 nd								
		pure distilled water. The bottles were then filled v	press depth	depth GEOTRC CTD	sample GEOTRC	sample bottle GE	OTRC bottle GEOTRC	Pb diss	Pb diss flag	no reps	Pb diss sd	bot flag	BTL ISO DateTime UTC	
		the oven for one day on either end. Clean sample			5157		-	43.3	1	3	1.0			
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			68.5 68.0	68 135 5	5058 5060	17	GF-8 GF-11	30.7	1	3	0.4	2	2010-10-16T20:36:00.0	
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BCO-DMO data managers work with contributing investigators, ensuring quality and completeness of data and metadata.



	KN192-05	6 (CoFeMUG)	
-	KN193-05	GEOTRACES IC1)	
	KN193-06	GEOTRACES IC1)	
-	KN195-08	GEOTRACES IC2)	
	KN199-04	4 (GT10)	
	KN199-05	5 (GT10)	
	KN204-01	(GT11)	
	SO202		
	TN303 (G	EOTRACES EPZT)	
Ð	✓ ●	GT10 - CTD - GT-C Bottle (19) @ K	N199-0
± [	<b>V</b> O	GT11 - CTD - GT-C Bottle (40) @ K	N204-0
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Ð	<b>V</b> O	GT11 - CTD - ODF/SIOR Bottle (65)	@ KN
Ð	<b>V</b>	CTD - ODF Bottle (139) @ TN303	
± [	<b>7</b> •	nutrients and metals (28) @ KN192-	05

event log - IC1 (63) @ KN193-0



### Data are freely available and discoverable through text and geospatial interfaces



Dissolved Pb dataset contributed by E. Boyle

website: www.bco-dmo.org email: info@bco-dmo.org



#### **GEOTRACES** data are transferred to the **International GEOTRACES Data Assembly Center at BODC**



Products such as the IDP2014 and forthcoming IDP2017 integrate data from researchers around the globe.

#### U.S. data are submitted to NCEI for long-term preservation.



#### Acknowledgements:

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