

CTD-GTC profiles from GEOTRACES-Arctic Section cruise HLY1502 in 2015 (U.S. GEOTRACES Arctic project)

Website: <https://www.bco-dmo.org/dataset/651599>

Data Type: Cruise Results

Version: 1

Version Date: 2016-07-12

Project

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

Program

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

Contributors	Affiliation	Role
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Abstract

CTD-GTC profiles from GEOTRACES-Arctic Section cruise HLY1502 in 2015

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Coverage

Spatial Extent: N:89.995 E:11.9102 S:60.1727 W:-147.8331

Temporal Extent: 2015-08-12 - 2015-10-07

Dataset Description

CTD profile data using the GEOTRACES Clean Carousel sampling system (GTC),
GEOTRACES-Arctic cruise HLY1502.

GTC CTD BOTTLE: version 20160609ODU

Processing Description

BCO-DMO Processing:

- added conventional header with dataset name; PI name; version date
- added cruise_id column plus information from headers: EXPCODE, SECT_ID, STNNBR, CASTNO, GEOTRC_EVENTNO, DATE, TIME, LATITUDE, LONGITUDE, BTMDEPTH, INSTRUMENT_ID
- reformatted time as HHMM

Parameters

Parameter	Description	Units
cruise_id	Cruise identification	text
EXPOCODE	expedition code assigned by the CCHDO: NODCSHIPCodeYearMonthDay	text
SECT_ID	cruise section identification number	text
GEOTRC_EVENTNO	GEOTRACES Event Number	dimensionless
STNNBR	Station Number	dimensionless
CASTNO	Cast Number	dimensionless
DATE	Station Date (GMT)	YYYYMMDD
TIME	Station Time (GMT)	HHMM
LATITUDE	Station Latitude (South is negative)	decimal degrees
LONGITUDE	Station Longitude (West is negative)	decimal degrees
BTMDEPTH	Multibeam bottom depth of the cast	meters
INSTRUMENT_ID	Instrument Id (from CTD profile data headers)	dimensionless
CTDPRS	CTD Pressure	DBARS
CTDPRS_FLAG_W	CTD pressure quality flag (see WOCE Hydrographic Program Quality Flags)	dimensionless
CTDTMP	CTD Temperature; ITS-90	degrees celsius
CTDTMP_FLAG_W	CTD temperature quality flag (see WOCE Hydrographic Program Quality Flags)	dimensionless
CTDSAL	CTD Salinity	PSS-78
CTDSAL_FLAG_W	CTD salinity quality flag (see WOCE Hydrographic Program Quality Flags)	dimensionless
CTDOXY	CTD Oxygen	UMOL/KG
CTDOXY_FLAG_W	CTD oxygen quality flag(see WOCE Hydrographic Program Quality Flags)	dimensionless

TRANSM	Light Transmission (0-5VDC)	volts
TRANSM_FLAG_W	Light Transmission quality flag (see WOCE Hydrographic Program Quality Flags)	dimensionless
FLUORM	Fluorescence (0-5VDC)	volts
FLUORM_FLAG_W	Fluorescence quality flag (see WOCE Hydrographic Program Quality Flags)	dimensionless
CTDNOBS	CTD Number of Observations	dimensionless
CTDETIME	CTD Elapsed Time	SECONDS
ISO_DateTime_UTC	Date/Time (ISO formatted)	YYYY-MM-DDTHH:MM:SS[.xx]Z
DEPTH	Sample depth	meters
DEPTH_FLAG_W	DEPTH_FLAG_W quality flag(see WOCE Hydrographic Program Quality Flags)	unitless

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Instruments

Dataset-specific Instrument Name	
Generic Instrument Name	CTD Sea-Bird SBE 911plus
Dataset-specific Description	The system included a Dynacon winch with 7300 m of Vectran cable with conductors, clean lab, and Seabird carousel/CTD with 24 12L GO-FLO bottles (and 14 spares), GO-FLO bottles.
Generic Instrument Description	The Sea-Bird SBE 911plus is a type of CTD instrument package for continuous measurement of conductivity, temperature and pressure. The SBE 911plus includes the SBE 9plus Underwater Unit and the SBE 11plus Deck Unit (for real-time readout using conductive wire) for deployment from a vessel. The combination of the SBE 9plus and SBE 11plus is called a SBE 911plus. The SBE 9plus uses Sea-Bird's standard modular temperature and conductivity sensors (SBE 3plus and SBE 4). The SBE 9plus CTD can be configured with up to eight auxiliary sensors to measure other parameters including dissolved oxygen, pH, turbidity, fluorescence, light (PAR), light transmission, etc.). more information from Sea-Bird Electronics

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Deployments

HLY1502

Website	https://www.bco-dmo.org/deployment/638807
Platform	USCGC Healy
Report	http://dmoserv3.whoi.edu/data_docs/GEOTRACES/Arctic/ARC01-report.pdf
Start Date	2015-08-09
End Date	2015-10-12
Description	US GEOTRACES Arctic cruise: The cruise began in Dutch Harbor, Alaska on 08 October 2015. After a station in the Bering Sea, Healy cruised to the North Pole on a westerly track before returning to the Canadian margin on an easterly track, returning to Dutch Harbor on 10 October 2015.

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Project Information

U.S. Arctic GEOTRACES Study (U.S. GEOTRACES Arctic)

Coverage: Arctic Ocean; Sailing from Dutch Harbor to Dutch Harbor

Description from NSF award abstract: In pursuit of its goal "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", in 2015 the International GEOTRACES Program will embark on several years of research in the Arctic Ocean. In a region where climate warming and general environmental change are occurring at amazing speed, research such as this is important for understanding the current state of Arctic Ocean geochemistry and for developing predictive capability as the regional ecosystem continues to warm and influence global oceanic and climatic conditions. The three investigators funded on this award, will manage a large team of U.S. scientists who will compete through the regular NSF proposal process to contribute their own unique expertise in marine trace metal, isotopic, and carbon cycle geochemistry to the U.S. effort. The three managers will be responsible for arranging and overseeing at-sea technical services such as hydrographic measurements, nutrient analyses, and around-the-clock management of on-deck

sampling activities upon which all participants depend, and for organizing all pre- and post-cruise technical support and scientific meetings. The management team will also lead educational outreach activities for the general public in Nome and Barrow, Alaska, to explain the significance of the study to these communities and to learn from residents' insights on observed changes in the marine system. The project itself will provide for the support and training of a number of pre-doctoral students and post-doctoral researchers. Inasmuch as the Arctic Ocean is an epicenter of global climate change, findings of this study are expected to advance present capability to forecast changes in regional and global ecosystem and climate system functioning. As the United States' contribution to the International GEOTRACES Arctic Ocean initiative, this project will be part of an ongoing multi-national effort to further scientific knowledge about trace elements and isotopes in the world ocean. This U.S. expedition will focus on the western Arctic Ocean in the boreal summer of 2015. The scientific team will consist of the management team funded through this award plus a team of scientists from U.S. academic institutions who will have successfully competed for and received NSF funds for specific science projects in time to participate in the final stages of cruise planning. The cruise track segments will include the Bering Strait, Chukchi shelf, and the deep Canada Basin. Several stations will be designated as so-called super stations for intense study of atmospheric aerosols, sea ice, and sediment chemistry as well as water-column processes. In total, the set of coordinated international expeditions will involve the deployment of ice-capable research ships from 6 nations (US, Canada, Germany, Sweden, UK, and Russia) across different parts of the Arctic Ocean, and application of state-of-the-art methods to unravel the complex dynamics of trace metals and isotopes that are important as oceanographic and biogeochemical tracers in the sea.

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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-1355913
NSF Division of Ocean Sciences (NSF OCE)	OCE-1355833
NSF Division of Ocean Sciences (NSF OCE)	OCE-1356008
NSF Division of Ocean Sciences (NSF OCE)	OCE-1455924

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