

Station locations for the global metaproteomic dataset from R/V Kilo Moana cruise KM1128, the METZYME expedition in the tropical North Pacific in 2011.

Website: <https://www.bco-dmo.org/dataset/730891>

Data Type: Cruise Results

Version: 2

Version Date: 2019-02-27

Project

» [Connecting Trace Elements and Metalloenzymes Across Marine Biogeochemical Gradients \(MetZyme\)](#)

Program

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

Contributors	Affiliation	Role
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Abstract

Station locations for the global metaproteomic dataset from R/V Kilo Moana cruise KM1128, the METZYME expedition in the tropical North Pacific in 2011.

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Coverage

Spatial Extent: N:20.6372 E:175.9503 S:-15.7878 W:153.2745

Temporal Extent: 2011-10-01 - 2011-10-25

Dataset Description

Station locations and sampling depths for the global metaproteomic dataset from KM1128 the METZYME expedition.

These station locations are associated with the dataset:

[METZYME Proteins](#)

Acquisition Description

Station locations for the global metaproteomic dataset from KM1128 the METZYME expedition.

Processing Description

BCO-DMO Processing Notes:

Data version 1 (2018-03-13):

- Spaces were replaced with underscores in column headers and in data
- The first column in the original file was unnamed and so was renamed as "Station_ID"
- The "Station #" column was renamed to "Station_number"
- Units were removed from column names
- Added McLane_cast, McLane_time_local, and cruise columns to provide additional metadata for each station location and sampling event.

Data version 2 (2019-02-27) replaced data version 1 (2018-03-13):

- Notes for data version 1 above also apply to data version 2.
- Split McLane_time_local into date local and time local columns.
- Added UTC_offset column and ISO_DateTime_UTC.
- lat/lons corrected to decimal degrees lat and lon between -180 to 180 degrees. Previously the degrees exceeded this.

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Parameters

Parameter	Description	Units
station_ID	Station ID; a combination of station number and depth at the station	unitless
station_number	Station number	unitless
depth	Depth at station	meters
lon	Longitude	decimal degrees
lat	Latitude	decimal degrees
cruise	Cruise deployment identification	unitless
McLane_cast	McLane cast ID number	unitless
McLane_date_local	Date Local (HST) in format yyyy-mm-dd	unitless
McLane_time_local	Time Local (HST) in format hh:mm	unitless
ISO_DateTime_UTC	Timestamp (UTC) in standard ISO 8601:2004(E) format YYYY-mm-ddTHH:MMZ	unitless

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Deployments

KM1128

Website	https://www.bco-dmo.org/deployment/59053
Platform	R/V Kilo Moana
Start Date	2011-10-01
End Date	2011-10-25
Description	This is a MetZyme project cruise. The original cruise data are available from the NSF R2R data catalog.

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Project Information

Connecting Trace Elements and Metalloenzymes Across Marine Biogeochemical Gradients (MetZyme)

Coverage: tropical North Pacific along 150 degrees West from 18 degrees North to the equator

MetZyme project researchers will determine the role of enzymatic activity in the cycling of trace metals. Specifically the research will address the following questions: (1) degradation of sinking particulate organic material in the Tropical North Pacific can be influenced by the ability of microbes to synthesize zinc proteases, which in turn is controlled by the abundance or availability of zinc, and (2) methylation of mercury is controlled, in part, by the activity of cobalt-containing enzymes, and therefore the supply of labile cobalt to the corrinoid-containing enzymes or co-factors responsible for methylation. To attain their goal, they will collect dissolved and particulate samples for trace metals and metalloenzymes from three stations along a biogeochemical gradient in the Tropical North Pacific (along 150 degrees West from 18 degrees North to the equator). Sinking particles from metal clean sediment traps will also be obtained. The samples will also be used to carry out shipboard incubation experiments using amendments of metals, metal-chelators, B12, and proteases to examine the sensitivity and metal limitation of heterotrophic, enzymatic degradation of organic matter within the oceanic "Twilight Zone" (100-500 m). This study will result in a novel metaproteomic/metalloenzyme datasets that should provide insights into the biogeochemical cycling of metals, as well as co-limitation of primary productivity and controls on the export of carbon from the photic zone. In addition to the final data being contributed to BCO-DMO, an online metaproteomic data server will be created so the community has access to the raw data files generated by this research.

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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-1260233
Gordon and Betty Moore Foundation (Moore)	GBMF3782

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