In situ prokaryotic and viral abundance from hydrothermal vent site Tica samples from R/V Falkor (too) cruise FKt230629, East Pacific Rise in July of 2023

Website: https://www.bco-dmo.org/dataset/962594
Data Type: Other Field Results
Version: 1
Version Date: 2025-05-27

Project
» The Underworld of Hydrothermal Vents (Vent Underworld)

Contributors	Affiliation	Role
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Abstract
The dataset contains data on in situ prokaryotic and viral abundance as sampled during the R/V Falkor (too) cruise FKt230629 in July of 2023. Samples were collected using a suction-sampler operated onboard the remotely-operated vehicle (ROV) SuBastian at the hydrothermal vent site Tica.

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Coverage

Location: Hydrothermal vent site Tica 9.840 N 104.291 W depth ~2515m
Spatial Extent: **N**:9.840335 **E**:-104.291555 **S**:9.839953 **W**:-104.291922
Temporal Extent: 2023-07-05 - 2023-07-22

Methods & Sampling

Samples were collected using a suction-sampler operated onboard the remotely-operated vehicle (ROV) SuBastian. Samples for the enumeration of prokaryotic cells and viruses were immediately fixed with glutaraldehyde at a final concentration of 0.5% at room temperature for 10 minutes, flash-frozen in liquid nitrogen, and stored at -80°C until analysis by flow cytometry (Brussaard et al. 2010). Upon thawing samples were stained with SYBR Green I for 10 minutes at room temperature for prokaryotes or at 80°C for viruses. The samples were then analyzed using a FACSAria III flow cytometer (Becton Dickinson), and prokaryotes and viruses were enumerated on cytograms of side scatter versus green fluorescence (Brussaard et al. 2010).

BCO-DMO Processing Description

* Sheet 1 of submitted file "insituAbundances.xls" was imported into the BCO-DMO data system for this dataset. Table will appear as Data File: 962594_v1_insitu_abundances.csv (along with other download format options).

* Column names adjusted to conform to BCO-DMO naming conventions designed to support broad re-use by a variety of research tools and scripting languages. [Only numbers, letters, and underscores. Can not start with a number]

* ISO DateTime with timezone (UTC) column added in ISO 8601 format.

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Data Files

File	
962594_v1_insitu_abundances.csv	(Comma Separated Values (.csv), 976 bytes) MD5:d2c006f4ff10831a320e091d2a2b1456
Primary data file for dataset ID 962594, version 1	

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Related Publications

Brussaard, C. P. D., Payet, J. P., Winter, C., & Weinbauer, M. G. (2010). Quantification of aquatic viruses by flow cytometry. Manual of Aquatic Viral Ecology, 102–109. https://doi.org/10.4319/mave.2010.978-0-9845591-0-7.102
Methods

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Parameters

Parameter	Description	Units
subsample_id	identification number of the sample during soi cruise	unitless
habitat	sample location, either surface vent, subsurface vent, or deep sea (vent, non vent, subvent)	unitless
latitude	geographic latitude, GPS position	decimal degrees
longitude	geographic longitude, GPS position	decimal degrees
date	date of sampling	unitless
time	sampling time (Time zone GMT-6)	unitless
ISO_DateTime_UTC	Datetime with timezone of sampling (ISO 8601 format)	unitless
depth	depth	meters (m)
prokaryotes	prokaryotic cell concentration	10000 prokaryotic cells per milliliter (10^4 mL^-1)
viruses	virus concentration	10000 viruses per milliliter (10^4 mL^-1)

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Instruments

Dataset-specific Instrument Name	FACSAria III flow cytometer (Becton Dickinson)
Generic Instrument Name	Flow Cytometer
Dataset-specific Description	FACS Aria III flow cytometer: The instrument was used to enumerate prokarytes and viruses after staining with the dsDNA-specific stain SYBR Green I.
Generic Instrument Description	Flow cytometers (FC or FCM) are automated instruments that quantitate properties of single cells, one cell at a time. They can measure cell size, cell granularity, the amounts of cell components such as total DNA, newly synthesized DNA, gene expression as the amount messenger RNA for a particular gene, amounts of specific surface receptors, amounts of intracellular proteins, or transient signalling events in living cells. (from: http://www.bio.umass.edu/micro/immunology/facs542/facswhat.htm)

Dataset-specific Instrument Name	
Generic Instrument Name	ROV SuBastian
Dataset-specific Description	ROV SuBastian and its Multi-Chamber Suction Sampler: Water samples were collected with ROV SuBastian suction sampler at the vent sites.
Generic Instrument Description	ROV SuBastian is operated from the research vessel Falkor and the R/V Falkor(too). The ROV is outfitted with a suite of sensors and scientific equipment to support scientific data and sample collection, as well as interactive research, experimentation, and technology development. More information available at https://schmidtocean.org/technology/robotic-platforms/4500-m-remotely-op...

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Deployments

FKt230629

Website	https://www.bco-dmo.org/deployment/923061
Platform	R/V Falkor (too)
Report	https://service.rvdata.us/data/cruise/FKt230629/doc/FKt230629_expedition_report.pdf
Start Date	2023-06-29
End Date	2023-07-28
Description	R/V Falkor (too) cruise to the East Pacific Rise (9°N 104°W) as part of the project "The Underworld of Hydrothermal Vents" which used the sub ROV SuBastian

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Project Information

The Underworld of Hydrothermal Vents (Vent Underworld)

Website: https://schmidtocean.org/cruise/underworld-of-hydrothermal-vents/

Coverage: East Pacific Rise

Since the discovery of deep-sea hydrothermal vents in 1977, scientists realize that life exists above and below the seafloor. The extent to which they are interconnected, however, remains poorly understood. We propose to characterize subsurface biosphere diversity, from viruses to animals, at deep-sea hydrothermal vents to elucidate the nature and extent of connectivity between the surficial and subsurface biospheres. We will test the hypotheses that 1) eukaryotic life is also an integral component of the subseafloor biosphere; 2) the subseafloor is inhabited by both cosmopolitan and endemic protists and fungi; and 3) the subseafloor habitats harbor larvae -and perhaps adult life stages- of vent endemic animals. This research will transform our understanding of the ecology/evolution of subseafloor habitats and our thinking about animal recruitment at deep-sea vents. Consistent with SOI's mission, we will expand our knowledge of limits of eukaryotic life. During a three-week cruise with R/V Falkor and ROV SuBastian to "East Pacific Rise" vents at the 9º50'N region, we will use in situ and lab experiments, molecular identification with amplicon sequencing, Illumina NextSeq 500 technology, 2bRAD population genetic analyses, and RT qPCR for functional analyses. Our data management plan includes deposition of metadata/samples to long-term repositories. Outreach includes inquiry-learning

telepresence programs for children from USA and Europe.

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Funding

Funding Source	Award
Schmidt Ocean Institute (SOI)	FKt230627

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