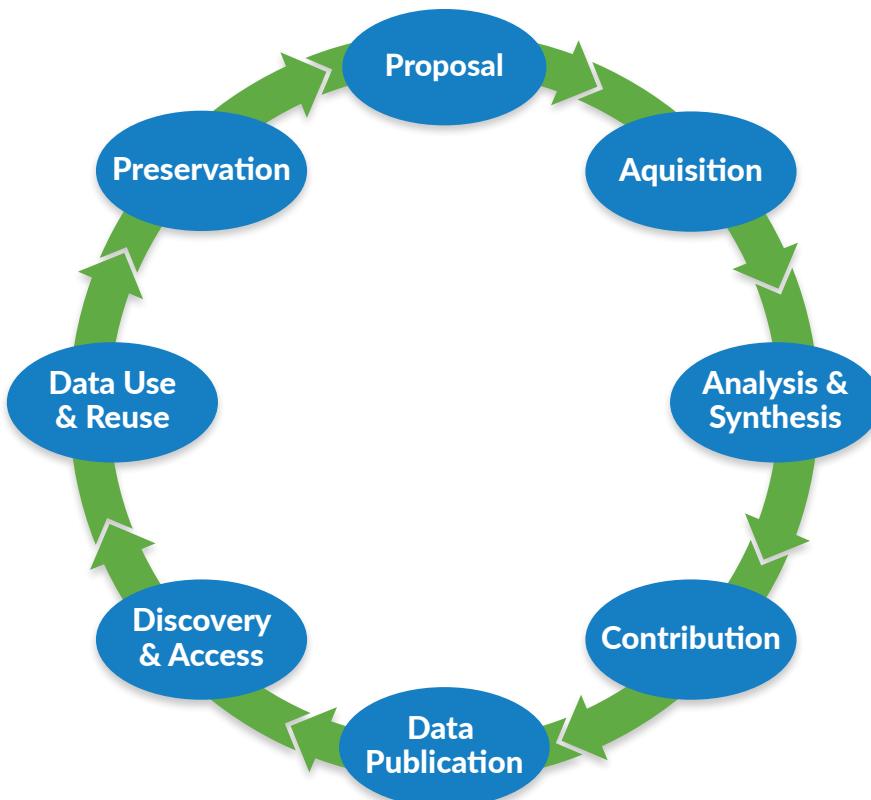


— BCO-DMO Quick Guide —

BCO-DMO



The Data Life Cycle



Curating and providing open access to research data is a collaborative process. This process may be thought of as a life cycle with data passing through various phases. Each phase has its own associated actors, roles, and critical activities. Good data management practices are necessary for all phases, from proposal to preservation.

BCO-DMO, a repository funded by the National Science Foundation (NSF), supports the oceanographic research community's data needs throughout the entire data life cycle. This guide describes the services available from BCO-DMO from proposal to preservation and highlights phases where researchers engage significantly with the office.

Data management services are provided free of charge for projects funded via:

- NSF-OCE Biological Oceanography Section
- NSF-OCE Chemical Oceanography Section
- Division of Polar Programs' Antarctic Organisms & Ecosystems Program

Not funded from the programs above? We can assist in determining the appropriate repository for your project data. See a list of other data management centers¹. Under certain circumstances, we may negotiate services for data not covered by these NSF sections.

BCO-DMO provides the following services:

- Proposal: Help with your NSF Data Management Plan (see page 2).
- Acquisition: Advice on collecting good metadata and data.
- Contribution: Submission to the database, ensuring compliance with NSF OCE Sample and Data Policy² (NSF 17-037). One-on-one assistance with your data submission (see page 4).
- Data Publication: Datasets are published online at BCO-DMO³; citations in just one click; DOIs available (see page 8).
- Discovery & Access: BCO-DMO search tools (see page 9).
- Data Use & Reuse: Data are freely accessible*; many types of data are available for new and collaborative research/modelling/synthesis projects.
- Preservation: BCO-DMO works with the appropriate national data center for long-term archiving (see page 13).

* If you need a limited additional period of time while manuscripts are prepared for publication before your data are publicly available at BCO-DMO, have a conversation with your Program Manager.

¹ https://www.bco-dmo.org/how-get-started#other_data_centers

² NSF 17-037; <https://nsf.gov/pubs/2017/nsf17037/nsf17037.jsp?org=NSF>

³ <https://www.bco-dmo.org>

BCO-DMO Data Management Plan Template

Proposals submitted to NSF must include a supplementary document of no more than two pages labeled “Data Management Plan” (DMP). This supplementary document should describe how the proposal will conform to NSF’s policy on the dissemination and sharing of research results.

Investigators working under awards granted by the NSF Division of Ocean Sciences (OCE) have additional conditions to which they must adhere, as described in the Division of Ocean Sciences Sample and Data Policy¹.

How BCO-DMO can help

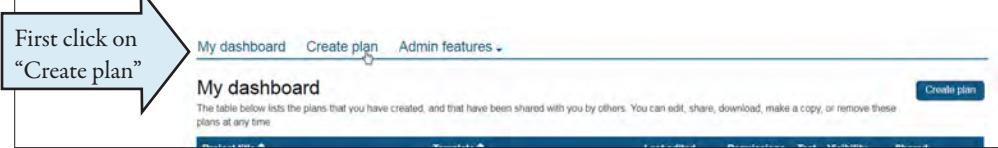
BCO-DMO has developed a Data Management Plan template to assist investigators in submission of plans that meet the NSF OCE Sample and Data Policy requirements. The template can be found and completed on the DMPTool website.



Image from BCO-DMO’s “Getting Started with DMPTool” guide.

Find the BCO-DMO Template:

First click on “Create plan”



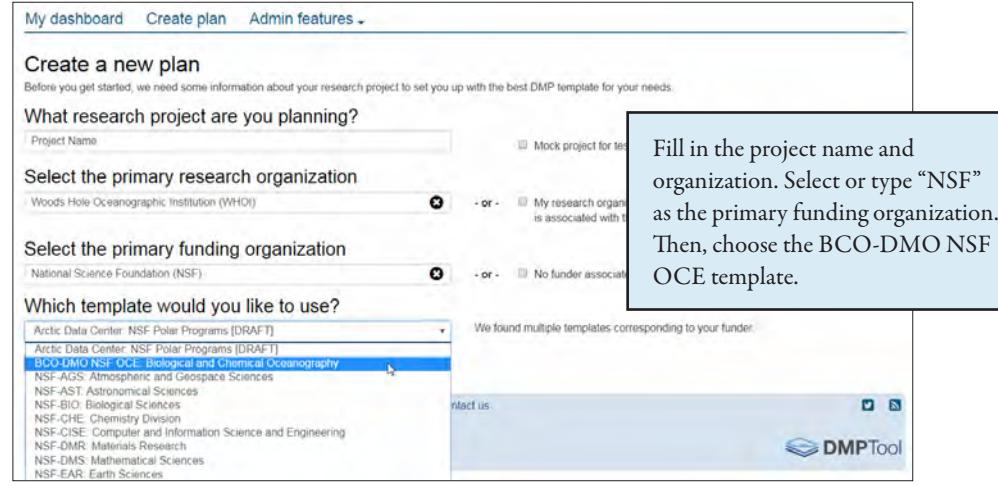
My dashboard Create plan Admin features ▾

My dashboard

The table below lists the plans that you have created, and that have been shared with you by others. You can edit, share, download, make a copy, or remove these plans at any time.

Create plan

Fill in the project name and organization. Select or type “NSF” as the primary funding organization. Then, choose the BCO-DMO NSF OCE template.



My dashboard Create plan Admin features ▾

Create a new plan

Before you get started, we need some information about your research project to set you up with the best DMP template for your needs.

What research project are you planning?

Project Name

Select the primary research organization

Woods Hole Oceanographic Institution (WHOI)

Select the primary funding organization

National Science Foundation (NSF)

Which template would you like to use?

Arctic Data Center: NSF Polar Programs (DRAFT)

Arctic Data Center: NSF Polar Programs (DRAFT)

BCO-DMO NSF OCE: Biological and Chemical Oceanography

NSF-AGS: Atmospheric and Geospace Sciences

NSF-AST: Astronomical Sciences

NSF-BIO: Biological Sciences

NSF-CHE: Chemistry Division

NSF-CISE: Computer and Information Science and Engineering

NSF-DMR: Materials Research

NSF-DMS: Mathematical Sciences

NSF-EAR: Earth Sciences

We found multiple templates corresponding to your funder!

Contact us

DMPTool

¹ <https://www.nsf.gov/pubs/2017/nsf17037/nsf17037.jsp>

² <https://dmptool.org/>

³ <https://www.bco-dmo.org/nsf-two-page-data-management-plan>

⁴ https://www.bco-dmo.org/sites/default/files/page_les/BCODMO_Getting_Started_with_DMPTool.pdf

About DMPTool

DMPTool² is a free, open-source, online application that helps researchers create data management plans. The DMPTool provides detailed guidance and links to informational resources and walks researchers through the process of generating comprehensive plans tailored to specific DMP requirements, in this case, the NSF OCE requirements.

If you are a researcher from one of the DMPTool partner institutions, you can log in using your institutional credentials. If your institution is not a partner, you can create your own account using any email address. In each section of the DMP template, you will see instructions containing the question or a description of information that should be provided to meet the specific requirement. Each question/requirement also has an example answer and links to additional guidance. The plan may be saved at any point, and can also be shared with collaborators. Once complete, your DMP can be exported in several different formats for inclusion in your NSF proposal.

Additional Resources

More information on NSF’s data management requirements is available on BCO-DMO’s website³. Detailed instructions on how to use BCO-DMO’s DMPTool template are also available in our “Getting Started with DMPTool” guide⁴.

Contributing Data to BCO-DMO

By depositing your project information and data into BCO-DMO, your data become shareable, citable resources available for community reuse. We are continually striving to make this process more efficient and streamlined, and welcome your feedback.



1 Register a Project

- Search BCO-DMO to see if your award is already in our system. If not,
- Complete a Project Metadata Form¹ to provide information about projects that are not already registered at BCO-DMO.
 - A project oversees a collection of one or more datasets.
 - There is usually one project per NSF award with the exception of Collaborative Research awards where one project is funded by multiple award numbers. Some time-series projects may contain multiple awards as well.
 - If you do not yet know the NSF award number, please provide as much information as possible including the project title and investigator contact information.
- Submit your NSF Data Management Plan² with the Project Metadata Form.

2 Prepare Data and Metadata

- Prepare the data files, including error checking and formatting. Understand what is meant by a 'dataset' relative to BCO-DMO (see page 4).
- Complete a Dataset Metadata Form³ to provide information about each unique dataset. See 'Preparing and contributing metadata' (page 4).
- If data were collected from a research vessel, mooring, glider, or other unique deployment, complete a Deployment Metadata Form⁴.
 - Complete this form only if it is applicable to the dataset(s) you are submitting.
 - Deployments help describe the geographic and temporal scale of datasets and provide context for mapping the associated data.
 - The Rolling Deck to Repository, R2R⁵, provides cruise data for vessels in the UNOLS fleet. For data on these cruises, you need only reference the R2R cruise identifier and BCO-DMO does the rest.

3 Submit

Send applicable metadata forms and data files to info@bco-dmo.org.

- You will receive a reply from one of our Data Managers confirming receipt of your forms and data files, if applicable.
- If a data set is too large to send as an email attachment, please contact us for instructions on the best way to contribute your data.
- NOTE: We strongly encourage you to submit data at least one month in advance of any pressing deadlines (e.g. NSF reports, manuscript publication) to provide adequate data processing time.

4 Collaborate

A Data Manager will begin the process of making the data available online. We strive to develop robust metadata that will ensure the data are easily discoverable and reusable. Your Data Manager will contact you with follow-up questions or requests for more information to ensure that the metadata is complete. This may be an iterative process, so your patience and cooperation are greatly appreciated.

5 Validate

Once your datasets are online, you'll be asked to review the data and metadata for completeness and accuracy. This validation stage is the final step in the process, and necessary for assignment of DOIs and long-term archive.

Once datasets are reviewed and validated by the contributor, BCO-DMO ensures that the data are archived properly at the appropriate National Data Center (e.g. National Centers for Environmental Information, NCEI⁶).

¹ <http://www.bco-dmo.org/les/bcodmo/PROJECT.rtf>

² http://www.bco-dmo.org/nsf-two-page-data-management-plan#DMP_Template

³ <http://www.bco-dmo.org/les/bcodmo/DATASET.rtf>

⁴ <http://www.bco-dmo.org/les/bcodmo/DEPLOYMENT.rtf>

⁵ <http://www.rvdata.us/>

⁶ <https://www.ncei.noaa.gov/>

Preparing Data and Metadata

You should submit data in the format most appropriate for your community. If this format is proprietary or non-tabular, Data Managers will create a tabular version of your data to import into the BCO-DMO data system. If the most appropriate format is not one of the various output formats provided by the BCO-DMO data system (e.g. .csv, .tsv, .nc, .mat), we will work with you to arrive at the best data representation possible.

Data before and after submission

Before

These are plain text files of the same type (e.g. one file per cast) so they can be combined into one dataset

```
1 unix_timestamp,lat,lon,ch1,CDOM,phycoer
2 UTC,degrees_north,degrees_east,RFU,RFU,
3 2015-05-20T21:32:40Z,20.0382,-155.83077
4 2015-05-20T21:42:40Z,20.03822,-155.8307
5 2015 1 unix_timestamp,lat,lon,ch1,CDOM,phycoer
6 2015 2 UTC,degrees_north,degrees_east,RFU,RFU,
7 2015 3 2015-05-20T21:32:40Z,20.0382,-155.83077
8 2015 4 2015-05-20T21:42:40Z,20.03822,-155.8307
9 2015 5 2015-05-20T21:32:40Z,20.0382,-155.83077
10 2015 6 2015-05-20T21:42:40Z,20.03822,-155.83077
11 2015 7 2015-05-20T21:32:40Z,20.0382,-155.83077
12 1970 8 2015-05-20T21:42:40Z,20.03822,-155.8307
13 2015 9 2015-05-20T21:52:40Z,20.03821,-155.8307
14 2015 10 2015-05-20T23:41:22Z,20.03819,-155.8307
15 2015 11 2015-05-20T23:51:22Z,20.03821,-155.8307
16 2015 12 2015-05-21T00:01:22Z,20.03819,-155.8308
17 2015 13 2015-05-21T00:11:22Z,20.03821,-155.83077
18 2015 14 2015-05-21T00:21:22Z,20.03821,-155.8307
19 2015 15 2015-05-21T00:31:22Z,20.03822,-155.8307
20 2015 16 2015-05-21T00:00:00Z,,0,0,0
21 2015 17 2015-05-21T01:20:18Z,20.03823,-155.8307
22 2015 18 2015-05-21T01:30:18Z,20.03825,-155.8307
23 2015 19 2015-05-21T01:40:18Z,20.03824,-155.8307
```

Excel file

Different data types cannot be combined; these are split into separate datasets.

	trial	date_local	time_local	site	lat	lon	survivors
2	1	2007-05-18	11:55	Rocas_Gordon	-0.56596	-90.14065	3
3	1	2007-05-18	11:56	Rocas_Gordon	-0.56596	-90.14065	3
4	1	2007-05-18	11:57	Rocas_Gordon	-0.56596	-90.14065	3
5	1	2007-05-18	11:58	Rocas_Gordon	-0.56596	-90.14065	3
6	1	2007-05-18	11:59	Rocas_Gordon	-0.56596	-90.14065	3
7	1	2007-05-18	12:00	Rocas_Gordon	-0.56596	-90.14065	3
8	1	2007-05-18	12:01	Rocas_Gordon	-0.56596	-90.14065	3
9	1	2007-05-18	12:02	Rocas_Gordon	-0.56596	-90.14065	3
10	1	2007-05-18	12:03	Rocas_Gordon	-0.56596	-90.14065	3
11	1	2007-05-18	12:04	Rocas_Gordon	-0.56596	-90.14065	3
12	1	2007-05-18	12:05	Rocas_Gordon	-0.56596	-90.14065	3
13	1	2007-05-18	12:06	Rocas_Gordon	-0.56596	-90.14065	3
14	1	2007-05-19	12:07	Rocas_Gordon	-0.56596	-90.14065	3



After

Imported into BCO-DMO's data system

```
/BCO-DMO/MAGI/c3 ---- Level 0 Download various formats
Plain text (csv, tsv)
.mat (MATLAB)
netcdf

Directory Documentation Download & Other Operations
Level 0 Next Level Flat Listing

# Fluorescence (C3) data from the Honey Badger (G3) Wave Glider
# P.I. Tracy Villareal
# version 7 Jul 2017
=====
ISO_DateTime_UTC    lat      lon      ch1      CDOM      phycoerythrin
2015-05-20T21:32:40Z 20.03820 -155.83077 40.51     49.11     334.0
2015-05-20T21:42:40Z 20.03822 -155.83077 30.89     1186.51    224.5
2015-05-20T21:42:40Z 20.03821 -155.83076 29.58     1198.79    223.83
2015-05-20T21:42:41Z 20.03819 -155.83073 74.4      70.0      95.2
2015-05-20T23:51:22Z 20.03821 -155.83080 10.32     29.96     50.32
2015-05-21T00:01:22Z 20.03819 -155.83080 9.48      32.36     53.56
2015-05-21T00:11:22Z 20.03820 -155.83077 10.36     35.64     53.52
2015-05-21T00:21:22Z 20.03821 -155.83079 10.8      34.4      58.08
2015-05-21T00:31:22Z 20.03822 -155.83077 11.16     35.84     57.6
2015-05-21T01:20:18Z 20.03823 -155.83070 77.6      74.4      95.2
2015-05-21T01:30:18Z 20.03825 -155.83078 11.04     35.72     52.0
2015-05-21T01:40:18Z 20.03824 -155.83076 10.28     31.88     52.0
2015-05-21T01:50:18Z 20.03822 -155.83077 10.2     33.04     53.64
2015-05-21T02:00:18Z 20.03831 -155.83079 11.2      34.72     53.6
=====
```



```
/BCO/Trophic_Cascades/urchin_survivorship
=====
Directory Documentation Download & Other Operations
Level 0 Next Level Flat Listing

# survivors from sea urchin tethering experiments
# J. Witman, F. Smith (Brown U)
# version: 2016-01-15
=====
trial date_local year mon_local day_local site      lat      lon
1 2007-05-18 2007 05      18      Rocas_Gordon -0.56596 -90.14065
=====
time_local yrday_local ISO_DateTime_Local      survivors
1155 1156 1156 1138.4965 2007-05-18T11:55:00.00 3
1157 1157 1157 1138.4972 2007-05-18T11:56:00.00 3
1158 1158 1158 1138.4980 2007-05-18T11:58:00.00 3
1159 1159 1159 1138.4983 2007-05-18T12:00:00.00 3
1200 1200 1200 1138.5000 2007-05-18T12:00:00.00 3
1201 1201 1201 1138.5007 2007-05-18T12:01:00.00 3
1202 1202 1202 1138.5011 2007-05-18T12:02:00.00 3
1203 1203 1203 1138.5014 2007-05-18T12:03:00.00 3
1204 1204 1204 1138.5021 2007-05-18T12:04:00.00 3
1205 1205 1205 1138.5035 2007-05-18T12:05:00.00 3
1206 1206 1206 1138.5042 2007-05-18T12:06:00.00 3
1207 1207 1207 1138.5049 2007-05-18T12:07:00.00 3
1208 1208 1208 1138.5056 2007-05-18T12:08:00.00 3
1209 1209 1209 1138.5062 2007-05-18T12:09:00.00 3
=====
```

Data Preparation Tips

General tips:

- Round your data to the appropriate number of decimal places.
- Make sure all flags and codes are documented in your metadata.
- Submit measured or observed values, not just statistical and calculated values.

Excel files:

- Remove formatting that will not be preserved when exported as a plain text file (e.g. color, merged cells, plots, etc.)
- Only include one tabular dataset (i.e. table) per Excel sheet.
- Ensure cells contain intended values. Check formula results, references to other sheets, hyperlinks, etc.

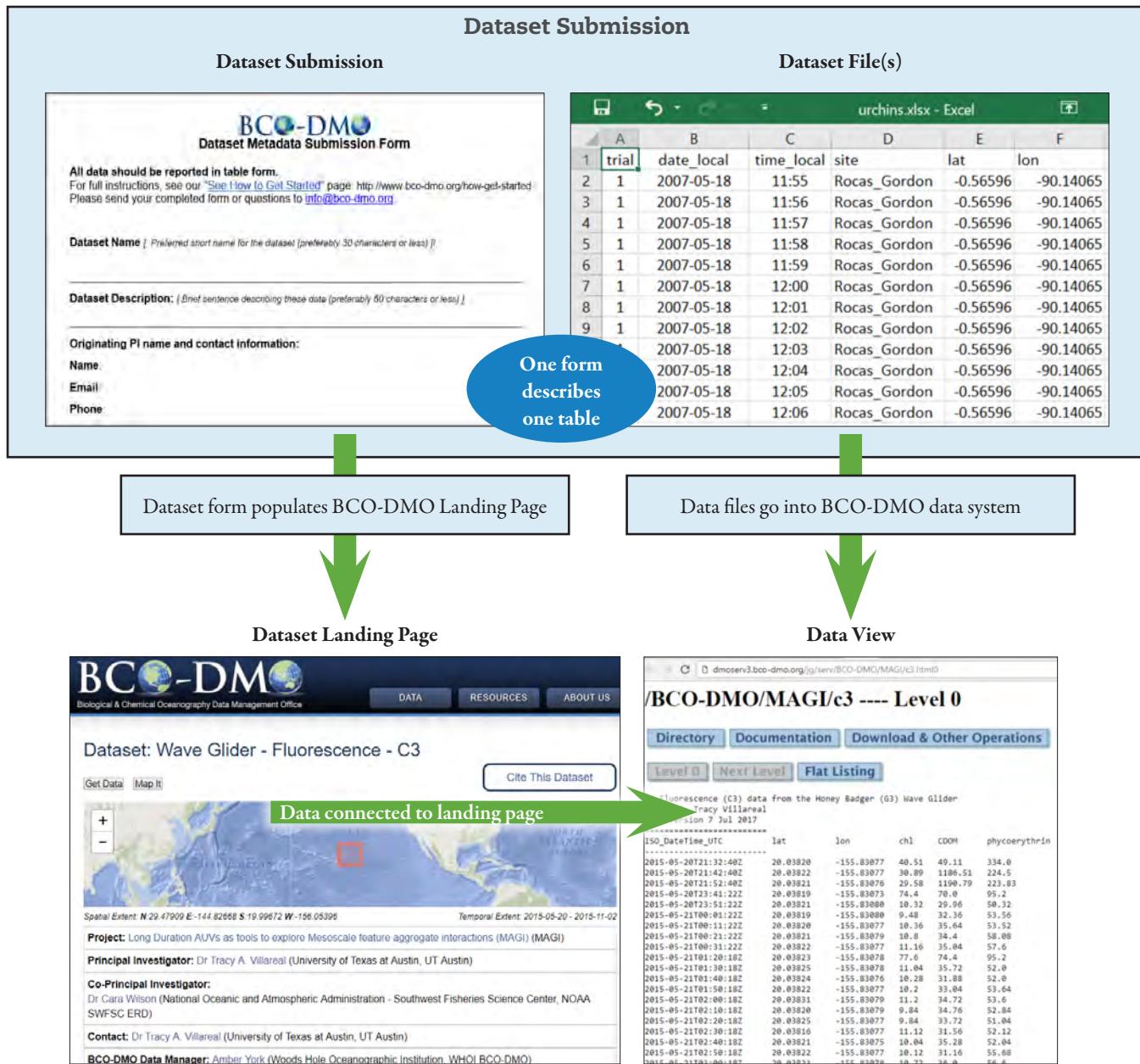
Error checking:

- QA/QC your data before submitting.
- Check species name for correct spelling and use taxonomically accepted names.

Dates & locations:

- Document your time and date format including time zone (e.g. UTC, UTC+02, local EST).
- Check for inconsistent date/time formatting.
- In-situ data: include date/time and lat/lon.
- Experimental data: include date/time of experiments if applicable.

Connecting Data and Metadata



Metadata

BCO-DMO uses a form to capture important information about your dataset, such as where and how it was collected, analysis methods, and funding sources. This information is known as "metadata". The metadata you provide about your data through the form should be thorough, complete, and publication ready. The contents of your metadata form are directly used to populate the public Dataset Landing Page.

The screenshot shows the BCO-DMO Dataset Landing Page. At the top, there's a navigation bar with links for DATA, RESOURCES, and ABOUT US. Below the navigation is a map showing the spatial extent of the dataset (N 29.47909 E-144.82668 S 19.99672 W-156.05396). A red box highlights a specific location in the North Pacific Ocean. To the right of the map is a 'Cite This Dataset' button. The main content area is titled 'Dataset: Wave Glider - Fluorescence - C3'. It includes sections for 'Project', 'Principal Investigator', 'Co-Principal Investigator', 'Contact', 'BCO-DMO Data Manager', 'Version Date', 'Restricted', 'Validated', 'Current State', and 'Data URL'. A large green arrow points from the 'Dataset Name' field in the 'Dataset Metadata Form' to the 'Dataset Name' section on this page. Another green arrow points from the 'Methodology' section in the 'Dataset Metadata Form' to the 'Methodology' section on this page. A third green arrow points from the 'Sampling and analytical procedures' section in the 'Dataset Metadata Form' to the 'Sampling and analytical procedures' section on this page. A fourth green arrow points from the 'Acquisition Description' section in the 'Dataset Metadata Form' to the 'Acquisition Description' section on this page. A fifth green arrow points from the 'Processing Description' section in the 'Dataset Metadata Form' to the 'Processing Description' section on this page.

Dataset Metadata Form

The screenshot shows the BCO-DMO Dataset Metadata Submission Form. At the top, it says 'BCO-DMO Dataset Metadata Submission Form'. It includes fields for 'Dataset Name' (with a note: 'All data should be reported in table form. For full instructions, see our "See How To Get Started" page: <http://www.bco-dmo.org/how-get-started>. Please send your completed form or questions to info@bco-dmo.org'), 'Dataset Description' (with a note: 'Brief sentence describing these data (preferably 60 characters or less)'), and 'Originating PI name and contact information: Name'. Below these are sections for 'Methodology', 'Sampling and analytical procedures', 'Instruments', and 'Data processing'. A large green arrow points from the 'Dataset Name' field on the Dataset Landing Page to the 'Dataset Name' field here. Another green arrow points from the 'Methodology' section on the Dataset Landing Page to the 'Methodology' section here. A third green arrow points from the 'Sampling and analytical procedures' section on the Dataset Landing Page to the 'Sampling and analytical procedures' section here. A fourth green arrow points from the 'Acquisition Description' section on the Dataset Landing Page to the 'Acquisition Description' section here. A fifth green arrow points from the 'Processing Description' section on the Dataset Landing Page to the 'Processing Description' section here.

Dataset Name: [Short name for the dataset]

Dataset Description: [Brief abstract describing these data]

Methodology: [In the following methodology sections, if referencing a paper, please provide a brief summary only including methods for submitted data. Also, include any changes from published methodology.]

Sampling and analytical procedures: [Provide detailed methods for sampling and analyses including references. Consider filter types, pore size, wash protocols, storage of sample before determination (time, conditions), sample preparation, treatment descriptions, specific changes from published methodology.]

Fluorescence data (C3) collected by the AUV Honey Badger (Wave Glider) in the (MAGI project)

Expand/Collapse All

▼ Description

This dataset includes chlorophyll, phycoerythrin, and CDOM data collected from the AUV Honey Badger (V2) during a 2015 deployment in the North Pacific Ocean.

For more information on project MAGI and a description of Honey Badger, see: <http://oceanview.pfeg.noaa.gov/MAGI/>

Additional support was provided by the AcX Challenge from Liquid Robotics, Inc.

▼ Acquisition Description

Data were collected at the surface by the AUV Honey Badger (a Wave Glider(R) model SV2 from Liquid Robotics). This deployment in the North Pacific Ocean was part of Project MAGI. For more details about the Honey Badger and project MAGI please see project page.

<http://oceanview.pfeg.noaa.gov/MAGI/>

Chlorophyll, phycoerythrin, and CDOM data were acquired from two float-mounted Turner Designs' C3™ Submersible Fluorometers. Biofouling is a big issue for any long deployment vehicle, and having two sensors provided the redundancy needed for data quality assurance. No calibration was deemed useful due to the duration of the mission and nature of the questions asked.

▼ Processing Description

No calibration was deemed useful due to the duration of the mission and nature of questions asked. Sensors returned only RFU.

BCO-DMO Data Manager Processing Notes:

* added a conventional header with dataset name, PI name, version date

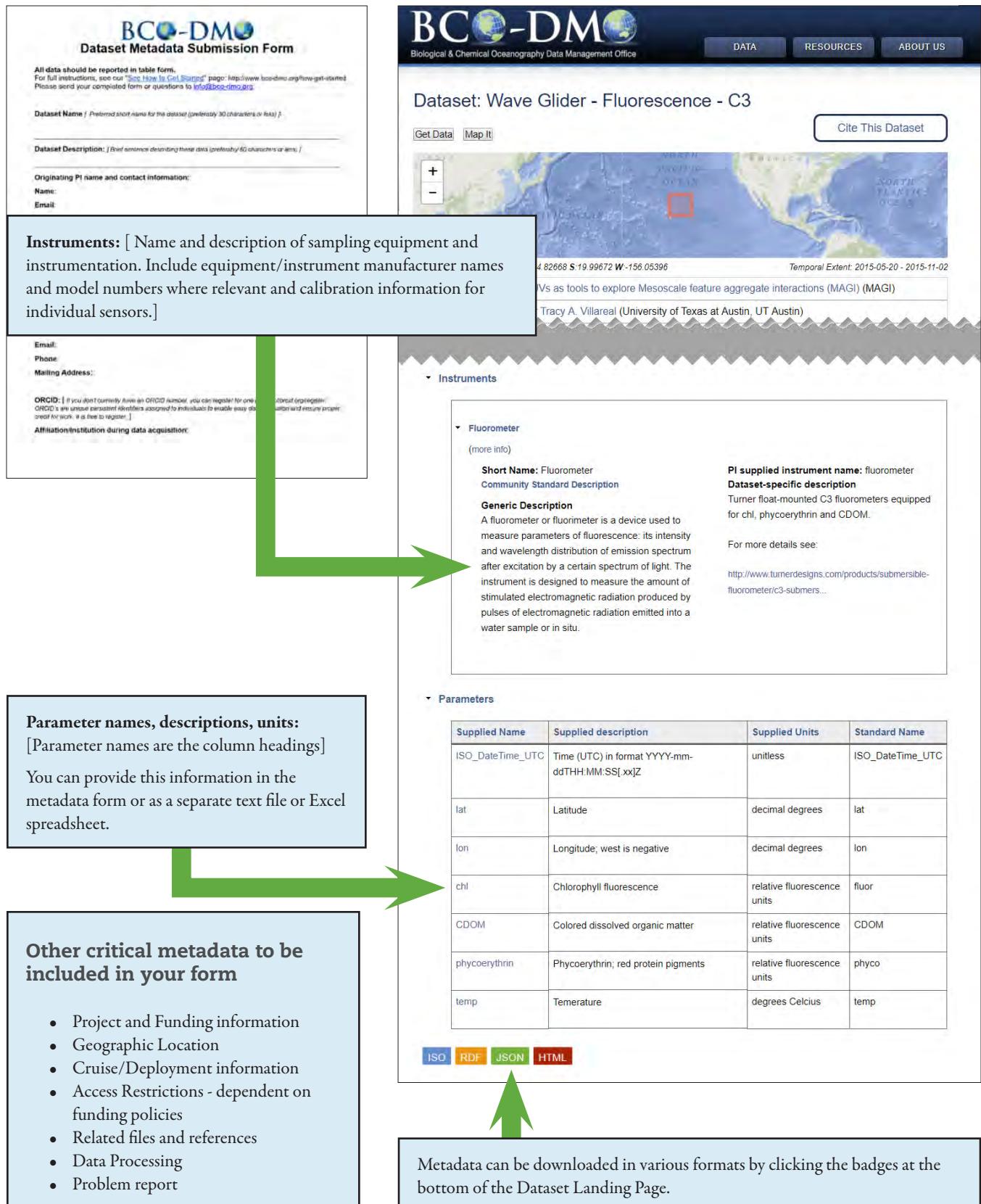
* modified parameter names to conform with BCO-DMO naming conventions

* blank values replaced with no data value 'nd'

* values of "NaN" and "nan" changed to "nd"

Metadata

Dataset Metadata Form



Data Publication

- 1 BCO-DMO publishes data and metadata, fostering data discoverability, access, reuse, and attribution.
- 2 DOIs are generated for every dataset and will be assigned for all submissions. All datasets must be final and validated before a DOI is assigned.
- 3 We provide a recommended citation, so that users can properly cite each dataset.
- 4 All datasets available at BCO-DMO are licensed under a Creative Commons Attribution 4.0 International license, ensuring that each data contributor will receive proper credit.
- 5 All DOIs are minted for archive by the WHOI Open Access Server (WHOAS), and resolve to WHOAS landing pages.

Dataset: Rainfall and temperature data

Get Data 1

Cite This Dataset 2
DOI:10.1575/1912/bco-dmo.664755

Data Citation: 3
Edmunds, P., Tsounis, G. (2016) Rainfall and seawater temperature in St. John, USVI in 1987–2013 (St. John LTREB project, VI Octocorals project). Biological and Chemical Oceanography Data Management Office (BCO-DMO). Dataset version 2016-11-08 [if applicable, indicate subset used]. doi:10.1575/1912/bco-dmo.664755 [access date]

Terms of Use: 4
All data sets are licensed under a Creative Commons Attribution 4.0 International License (CC BY 4). Per the CC BY license it is understood that any use of the individual(s) listed above using the data set will properly acknowledge the suggested data citation. If you wish that you contact the original principal investigator(s) listed above using the data set, it is highly recommended that you contact the original principal investigator(s) (PI). Should the relevant PI be unavailable, please contact BCO-DMO (info@bco-dmo.org) for additional guidance. For general guidance please see the BCO-DMO Terms of Use document.

Spatial Extent: N:-18.298056 E:64.803611 S:-18.376667 W:64.668056

Temporal Extent: 1987-2013

Project: LTREB Long-term coral reef community dynamics in St. John, USVI: 1987-2013 (St. John Ecology and functional biology of octocoral communities (VI Octocorals))

Principal Investigator: Dr Peter J Edmunds (California State University Northridge, CSU-Northridge)

Co-Principal Investigator: Dr Georgios Tsounis (California State University Northridge, CSU-Northridge)

BCO-DMO Data Manager: Hannah Ake (Woods Hole Oceanographic Institution, WHOI BCO-DMO)

Version Date: 2016-11-08

Restricted: No

Validated: Yes

Current State: Final no updates expected

Data URL: <https://www.bco-dmo.org/dataset/664254/data>

Rainfall and seawater temperature in St. John, USVI in 1987–2013 (St. John LTREB project, VI Octocorals project).

5 WHOAS: Woods Hole Open Access Server
a repository for the Woods Hole scientific community

Rainfall and seawater temperature in St. John, USVI in 1987–2013 (St. John LTREB project, VI Octocorals project).

	Citable URI https://hdl.handle.net/1912/8520
Date Created 2016-11-08	Location St. John, U.S. Virgin Islands; California State University Northridge St. John, US Virgin Islands: 18.3185, 64.7242 westlimit: 64.668056; southlimit: -18.376667; eastlimit: 64.803611; northlimit: -18.298056
View/Open data_rainfall-and-temperature-data.tsv (1.050Kb) ISO19115-2.xml (77.78Kb) Field_names.pdf (12.03Kb) Dataset_description.pdf (23.19Kb)	DOI 10.1575/1912/bco-dmo.664755
	Keyword Rainfall; seawater temperature

Discovery and Access

Once data are processed and published online, the BCO-DMO website enables data discovery via text and geospatial search interfaces, making it easy for users to find datasets of choice. Through text-based searches, the database can be searched by cruise, project, person, or any keyword provided in metadata upon submission. Access to data is made possible from the Dataset Landing pages, and data

may be subsetted, plotted, and reformatted prior to download. The BCO-DMO database encompasses the full range of oceanographic measurement types from limnological, physical, chemical, biological and/or ecological, and biogeochemical sub-domains.

<http://bco-dmo.org/>

The screenshot shows the BCO-DMO homepage with several key features highlighted:

- SEARCH BAR:** A search bar at the top right labeled "Enter search terms" with a magnifying glass icon.
- RECENT DATASETS:** A sidebar on the right lists recent datasets, such as "Species Key" (06/07/2018), "Alvin Dive Plans - Reports - Sample Sheets" (06/04/2018), and "Alvin Dive Sites" (06/04/2018).
- FEATURED RESOURCES:** A sidebar on the right lists featured resources, including the "NSF Two Page Data Management Plan" and "Data Management Best Practices".
- DATA BROWSE TABS:** At the top, there are tabs for "DATA", "RESOURCES", and "ABOUT US".
- SEARCH EXAMPLE:** A callout box on the right indicates that the search bar can be used to search for keywords like "HOT" (Hawaiian Ocean Time-series) or "niskin bottle".
- DATA FIELDS:** A callout box on the left indicates that the search bar can be used to search for specific data fields like "Programs", "Projects", or "Parameters".

The following example searches for the project HOT (the acronym for Hawaiian Ocean Time-series) and downloads the niskin bottle data.

Discovery and Access

BCO-DMO
Biological & Chemical Oceanography Data Management Office

DATA **RESOURCES** **ABOUT US** **HOT**

SEARCH

DATABASE

Programs	39
Projects	927
Deployments	2,750
Platforms	582
Datasets	9,197
Instruments	469
Parameters	1,414
People	2,507
Affiliations	561
Funding	87
Awards	1,758

Search

Hawaii Ocean Time-Series (HOT): Sustaining Ocean Ecosystem And Climate Observations In The North Pacific Subtropical Gyre

... Since October 1988, the Hawaii Ocean Time-series (HOT) program has investigated temporal dynamics in biology, physics, and ... in the oligotrophic North Pacific Subtropical Gyre (NPSG). HOT conducts near monthly ship-based sampling and makes continuous observations ...

TYPE: PROJECT

Fish Aggregations And Biogeochemical Hot Spots Across Regional Environmental Gradients

... supply from consumers result in distinct biogeochemical hot spots in seagrass beds? and (2) How do consumer effects on ecosystem ... beds. Caribbean Fish aggregations and biogeochemical hot spots across regional environmental gradients Fish aggregations and

If your search does not return the result of interest, try to filter the search. In this case, we can filter by the type "Project" since we know it's a project in our system.

BCO-DMO
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DATA **RESOURCES** **ABOUT US** **Enter search terms**

SEARCH

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Project: Hawaii Ocean Time-series (HOT): Sustaining ocean ecosystem and climate observations in the North Pacific Subtropical Gyre

Acronym/Short Name: HOT
Project URL: Project Web Site
Data URL: Data
Start Date: 1988-07
End Date: 2014-12
Geolocation:
North Pacific Subtropical Gyre; 22 deg 45 min N, 158 deg W
Datasets: 13
Collections: 10
Deployments: 5
Cruises: 4
Platform: 1

GEOSPATIAL ACCESS

CONTRIBUTE DATA

Getting started

- How-to Guide
- FAQs

Metadata Forms (.rtf files)

- Program Metadata Form
- Project Metadata Form
- Deployment Metadata Form
- Dataset Metadata Form

Dataset Collections

Additional data for this site are managed by and directly available from the project data site: <http://hahana.soest.hawaii.edu/hot/hot-dogs/interface.html>

Dataset Short Name	Full Dataset Title
Cruise Track - C-MORE and HOT Cruises	Cruise Tracks from R/V Kilo Moana, R/V Kai'Imikai-O-Kanaloa KM0325, KOK0220, KM0608, KM0627 near Hawaii (22.75 N, 158 W) from 2002-2006 (C-MORE project, HOT project)
CTD Profiles	Two decibar-averaged CTD profiles from the Hawaii Ocean Time-Series cruises from 1988-2016 (HOT project)
DNA Extracts	DNA extracts from the vicinity of Station ALOHA (22.75 N, 158.0 W) just north of Hawaii from 2007-2015 (C-MORE project, HOT project)
DNA Time Series	DNA metagenomic library statistics from HOT cruises from 2007-2009 (C-MORE project, HOT project)
Methane concentrations at Station ALOHA	Methane concentrations (depths of 5-175 m) at Station ALOHA collected during Hawaii Ocean Time-Series cruises between 2008 and 2016 (HOT project)
Niskin bottle samples	Niskin bottle water samples and CTD measurements from the Hawaii Ocean Time-Series cruises from 1988-2016 (HOT project)
Nitrous oxide concentrations at Station ALOHA	Nitrous oxide concentrations (depths of 5-175 m) at Station ALOHA collected during Hawaii Ocean Time-Series cruises between 2008 and 2016 (HOT project)

Clicking on the title will take you to the metadata page for the type of record you select (defined in grey here, as TYPE: PROJECT). There you can see various metadata elements describing the record. This includes individual datasets associated with that record.

The Dataset Collections section of the Project metadata page provides links to datasets associated with this specific project.

The Dataset Short Name link will take you to the Dataset Landing page for that dataset.

Discovery and Access

BCO-DMO
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DATA **RESOURCES** **ABOUT US** Enter search terms

DATABASE

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GEOSPATIAL ACCESS

Spatial Extent: N:23.4375 E:-157.4567 S:21.2283 W:-158.8575 **Temporal Extent:** 1988-10-30 - 2016-11-28

Project: Hawaii Ocean Time-series (HOT): Sustaining ocean ecosystem and climate observations in the North Pacific Subtropical Gyre (HOT)

Principal Investigator: Dr David M. Karl (University of Hawaii at Manoa, SOEST)

Contact: Lance A Fujiki (University of Hawaii at Manoa, SOEST)

BCO-DMO Data Manager: Mathew Biddle (Woods Hole Oceanographic Institution, WHOI BCO-DMO)

Version Date: 2018-04-18

Restricted: No

Validated: Yes

Current State: Final with updates expected

Data URL: <https://www.bco-dmo.org/dataset/3773/data>

CONTRIBUTE DATA

Getting started

- » How-to Guide
- » FAQs

Metadata Forms (.rtf files)

- » Program Metadata Form
- » Project Metadata Form
- » Deployment Metadata Form
- » Dataset Metadata Form

[Expand/Collapse All](#)

- ▼ **Description**
Monthly measurements of the thermohaline structure, water column chemistry, and primary production were collected at station ALOHA as part of the HOT program.
- ▼ **Processing Description**
- ▼ **Related Publications**
- ▼ **More Information about this dataset**
 - ▶ **Funding Sources**
 - ▶ **Deployments**
 - ▶ **Instruments**
 - ▶ **Parameters**

[ISO](#) [RDF](#) [JSON](#) [HTML](#)

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@BCODMO
 View profile

The “Get Data” button allows you to look at all of the data values submitted to BCO-DMO.

Discovery and Access

This page displays data values in a hierarchical view (beginning at "Level 0"). Blue text indicates clickable values that expand to uncover more data.

Download and Other Operations Menu

Current object is: /dmoserv3.bco-dmo.org:80/BCO-DMO/HOT/niskin(ISO_DateTime eq 1988-10-31T00:56:00)

- **Listing data**
 - [List at this level](#)
 - [Other data listing formats](#)
 - **Downloading data**
 - [Matlab file format](#) of all data at this level and further in. (Download will also 'do' matlab) [Help](#)
 - [netcdf file format](#)
 - [ODV file format](#) [Help](#)
 - [Download utility](#) [Help](#)
 - [Download inquiry/data pickup](#) [Help](#)

This allows direct download.
 - **Manipulating data**
 - [Math operations](#) for calculating values from existing parameters. [Help](#)
 - [Join 2 objects](#) having at least 1 parameter in common. [Help](#)
 - [Time field splitting](#) [Help](#)
 - [Time conversions](#)
 - [Statistics](#)

This allows statistical determination.
 - **Plotting data**
 - [Simple X-Y plot](#)

This allows simple plotting.
 - **Persistent objects**
 - [Directory of available objects](#)
 - [Save/remove current object](#)
 - **Subsetting data** [Help](#)

*otheropt version 2.2h 9 Mar 13
server: production-Apr17*

Preservation

Preservation marks a maturity level that allows data to begin the data life cycle again in new research endeavors. BCO-DMO serves as a domain specific, intermediate data repository, and as such does not function as a long-term archive for data preservation. BCO-DMO provides data management support throughout a project award's period of performance which, prepares project output for reuse and reanalysis by the community. Once a project's data and metadata are published online at BCO-DMO, they are then submitted to an appropriate national data center for long-term preservation (e.g., the National Centers for Environmental Information).

FAQ's

Many Frequently Asked Questions are also addressed on our website at <https://www.bco-dmo.org/faq-page>. Still have questions? Feel free to contact the office at info@bco-dmo.org and a team member will respond.

Acknowledgements

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