HABs Data Submission Protocol

Introduction

This document is intended to provide information on methods, conventions and procedures related to submitting Harmful Algal Blooms (HABs) data to the California Harmful Algal Bloom Monitoring and Alert Program (CalHABMAP) data portal maintained by SCCOOS for addition to our publicly accessible data repository. HABs data are currently provided by CalHABMAP monitoring stations at several pier locations along the California coast. These stations monitor HAB species and algal toxins, as well as water temperature, salinity and nutrients.

How to get your HABs data submitted to SCCOOS

Provide information to SCCOOS

The lists below detail the minimum amount of information needed to make your data available through our ERDDAP server. Email this information to sccoos-admin@sccoos.org .

Tell us about your data

Frequency_of_change - Some datasets get new data frequently. Some datasets will never be changed. How often will this data be changed?

Title - This is a short (<=80 characters) description of the dataset. For example, "Spray Gliders, Scripps Institution of Oceanography"

Summary - This is a paragraph describing the dataset. (<=500 characters) The summary should answer these questions:

- Who created the dataset?
- What information was collected?
- When was the data collected?
- Where was it collected?
- Why was it collected?
- How was it collected?

Creator_name - This is the name of the primary person, group, institution, or position that created the data. For example, "John Smith"

creator_typefrequency_of_change - Some datasets get new data frequently. Some datasets will never be changed. How often will this data be changed?

title - This is a short (<=80 characters) description of the dataset. For example, "Spray Gliders, Scripps Institution of Oceanography"

summary - This is a paragraph describing the dataset. (<=500 characters) The summary should answer these questions:

- Who created the dataset?
- What information was collected?
- When was the data collected?
- Where was it collected?

- Why was it collected?
- How was it collected?

creator_name - This is the name of the primary person, group, institution, or position that created the data. For example, "John Smith"
creator_type - (one of: person, group, institution or position)
creator_email - This is the best contact email address for the creator of this data. Use your judgment - the creator_email might be for a different entity than the creator_name. For example, "your.name@yourOrganization.org"
institution - This is the short/abbreviated form of the name of the primary organization that created the data. For example, "NOAA NMFS SWFSC"
infoUrl - This is a URL with information about this dataset. For example, "http://spray.ucsd.edu" If there is no URL related to the dataset, provide a
(person, group, institution or position)
creator_email - This is the best contact email address for the creator of this data. Use your judgment - the creator_email might be for a different entity than the creator_name. For example, "your.name@yourOrganization.org"
institution - This is the short/abbreviated form of the name of the primary organization that created the data. For example, "NOAA NMFS SWFSC"
infoUrl - This is a URL with information about this dataset. For example, "http://spray.ucsd.edu" If there is no URL related to the dataset, provide a

Tell us who should have access to your data uploads

You will upload your data to a Google Drive Folder we create for this purpose. You will need to provide *Google linked email addresses*[1] for personnel on your side who will need access to this folder in order to upload the data. NOTE: This folder must be shared with sccoos-admin@sccoos.org

Tell us how your site(s) name(s) should be abbreviated

Each dataset is assigned a short acronym, usually 3 characters, that will be used programmatically to identify that dataset/site. See File Name and Type for examples. This acronym must be unique. See Approved Acronyms and Filenames

Data File Requirements

File Name and Type

REQUIRED: **Same filename every time**

<SiteID>_upload.csv which includes all available data

- **CPP_upload.csv** - for Cal Poly Pier
- **MW_upload.csv** - for Monterey Wharf

[1] You will need to be logged into google using this email address in order to upload data to your folder.

- **NBP_upload.csv** - for Newport Beach Pier
- **SCW_upload.csv** - for Santa Cruz Wharf
- **SMP_upload.csv** - for Santa Monica Pier
- **SP_upload.csv** - for Scripps PIer
- **SW_upload.csv** - for Stearns Wharf

REQUIRED: **File must be in .csv format**
REQUIRED: **Column headers must match** those shown below *EXACTLY*.
REQUIRED: **Submit all data**, including previously submitted and new data in the same file. If there is a significant change in the sensor(s) you have deployed, or for some other reason you want to start a new file for data from some point in time, just let us know by emailing sccoos-admin@sccoos.org.
REQUIRED: Use the string "NA" (without quotes), meaning "Not Available" as the value of a parameter whose value is temporarily or permanently not collected/measured/determined. It should still be included in the uploaded file. See **Data Entry Conventions**

Data Column Headers

Please note that there have been a few changes from what was entered in the past, e.g. standardization of how Date, Time, etc. are entered, separate columns for pDA, dDA and tDA, "Lingulodinium polyedrum" to "Lingulodinium polyedra" and a few others.

A few other things to remember

1. **COLUMNS CAN BE MISSING -** With the exception of date and time info, if you don't have data for a column, you can simply omit the entire column from your submission.
2. **COLUMNS CAN BE IN ANY ORDER -** If at a later time you get data that was previously omitted, just add the column for it anywhere in the spreadsheet, and start submitting it.
3. **HEADERS MUST BE EXACTLY AS PRESCRIBED**

My intent here is to facilitate the submission of any data that has been, or might be, submitted in the near future.

In other words, if you have the data, I want you to be able to submit it, and would love for you to do so. However, if you don't, or it isn't easy for you to get it into your .csv file right away, then please submit whatever you can.

IMPORTANT: Do not insert carriage returns in headers.

Approved Column Headers as of 2019-04-26

Latitude (dec deg N)

Longitude (dec deg E)
Depth (m)
SampleID <= Site specific, ties back to site lab codes, etc.
Location Code <= Same as before, e.g. CPP, MW, NP, SCW, SMP, SP, SW.
New codes will be added as necessary
Day of Year (1-365)
Week of Year (1-52)
Date Collected (YYYY_MM_DD)
Local Time Collected (hh:mm PT)
Temp (deg C)
Salinity (PSU 1e-3)
Chl Volume Filtered (mL)
Chl1 (mg/m3)
Chl2 (mg/m3)
Avg Chloro (mg/m3)
Phaeo1 (mg/m3)
Phaeo2 (mg/m3)
Avg. Phaeo (mg/m3)
Phosphate (uM)
Silicate (uM)
Nitrite (uM)
Nitrite+Nitrate (uM)
Ammonium (uM)
Nitrate (uM)
DA Volume Filtered (mL)
pDA (ng/mL)
tDA (ng/mL)
dDA (ng/mL)
Volume Settled for counting (mL)
Akashiwo sanguinea (cells/L)
Alexandrium spp. (cells/L)
Dinophysis spp. (cells/L)
Lingulodinium polyedra (cells/L)
Prorocentrum spp. (cells/L)
Pseudo-nitzschia delicatissima group (cells/L)
Pseudo-nitzschia seriata group (cells/L)
Ceratium spp.(cells/L)
Cochlodinium/Margalefidinium spp. (cells/L)
Gymnodinium spp. (cells/L)

Other Diatoms (cells/L)
Other Dinoflagellates (cells/L)
Total Phytoplankton (cells/L)

Proposed Additional Column Headers as of 2019-04-26

~~Relative Abundance Index~~
RAI-Akash
RAI-Alex
RAI-Dino
RAI-Ling
RAI-Proro
RAI-PNd
RAI-PNs
RAI-Cera
RAI-Coch_Marg
RAI-Gymno
RAI-Diatoms
RAI-Dinos
RAI-Phyto

Data Entry Conventions

Missing Data - fill in "NA"

You should include the column in your submission and enter "NA" (without quotes) in the following situations:

- When a sample is not collected
- A value was not measured/calculated
- The results of an analysis that determines the value are not yet available

Do not "scrape" missing data from other sources

Missing values ***should not*** be filled in using other datasets. For example, if HABs data are collected from a pier where Automated Shore Station data are also acquired, data collected via the automated sensors should not be used to fill in values in the HABs data file.

The "NA" value should/will replace "NaN" and "-999"[2] wherever they have been used in the past to indicate missing data.

Quantity not detectable - use 0, not "bd"

Similarly, you may measure a value and have it come up as zero because it is below the level of detection (LOD) for that analysis In this case, you should enter the number "0" (without quotes). Because the metadata for each site will include the LOD for each item that has an LOD, this value makes sense. The "0" value should/will replace "bd" (below detection) wherever it was previously used.

Data Upload Procedure

Use of Google Drive

Google Drive was chosen as the new method for submitting HABs data, replacing the upload form in the old SCCOOS website. Using Google Drive provides several advantages:

- Fine-grained access control restrictions
  - **File must be shared with sccoos-admin@sccoos.org**
  - Each site determines who can upload their data
  - Email every year to request update to access list
- Programmatic access to upload/download the data
  - Sites can use Google File Stream to keep their local data synced with that used by SCCOOS
  - SCCOOS will automatically, periodically download data to grab new data and update the SCCOOS ERDDAP database, accordingly
- Version control of uploaded files tracked by Google
  - Same filename used everytime: <SiteID>_upload.csv
    - **CPP_upload.csv** - for Cal Poly Pier
    - **MW_upload.csv** - for Monterey Wharf
    - **NBP_upload.csv** - for Newport Beach Pier
    - **SCW_upload.csv** - for Santa Cruz Wharf
    - **SMP_upload.csv** - for Santa Monica Pier
    - **SP_upload.csv** - for Scripps PIer

[2] The value "-999" was discussed as a possibility, but it was felt that most processing tools would throw out "NA", but try to process "-999", forcing the researcher/programmer to handle this case explicitly. "NA" was chosen over "NaN" because "NA" to indicate "n/a, meaning not applicable, not available, or no answer", vs. "NaN", which means "Not a Number" to indicate "a numeric data type value representing an undefined or unrepresentable value, especially in floating-point arithmetic"

        - **SW_upload.csv** - for Stearns Wharf
    - **Upload ALL data every time** - previous and new (**NOT** just new)

As an alternative, in the event that Google Drive isn't possible for a site, or Google is temporarily down, an sFTP site will be made available.

Public Data Access

Availability via SCCOOS ERDDAP server

All data will be made publicly available via the SCCOOS ERDDAP server at https://erddap.sccoos.org/erddap

Types of Metadata

IMPORTANT: Since different HABs sites have different values for particular metadata items, there will need to be an ERDDAP dataset for each site.

Each site will provide three types of metadata; Standard, Level of Detection and Protocol Used.

Standard Metadata

Each site that supplies HABs data is required to fill out the 4-part form at http://erddap.sccoos.org/erddap/dataProviderForm.html. The example shown below summarizes the information collected by the form, including whether a particular parameter is required or optional. The values in the example are for the Scripps Institution of Oceanography. A detailed explanation of what information should be provided for each parameter can be found in the Detailed explanation of Provider Form in Appendix A.

Required		(This information must be provided for your dataset.)
frequency_of_changes		Weekly
title	?	CalHABMAP Data from Scripps Pier
summary	?	The California Harmful Algal Bloom Monitoring and Alert Program (CalHABMAP) collects weekly phytoplankton and water quality data at seven piers along the Central and

		Southern California coast. CalHABMAP provides updates on HAB events, and aids in understanding the timing, extent, and impact of these events on humans and the marine ecosystem.
creator_name	?	Scripps Institution of Oceanography
creator_type	?	institution
creator_email	?	info@sccoos.org
institution	?	SIO
infoUrl	?	http://scripps.ucsd.edu
license	?	[standard]
cdm_data_type	?	Point
Optional		(Please provide the information if it is available for your dataset.)
acknowledgement	?	This project receives funding and support from the California regional associations of the Integrated Ocean Observing System (IOOS)
history	?	Samples are manually taken from the SIO Pier Samples are analyzed for nutrient and phytoplankton types and quantities Data from analysis are sent to Southern California Coastal Ocean Observing System (SCCOOS) SCCOOS makes data publicly available
id	?	DOI for the dataset
naming_authority	?	https://ezid.cdlib.org/
product_version	?	API version 2.0
references	?	**EXAMPLE:** "Hu, C., Lee Z., and Franz, B.A. (2012). Chlorophyll-a algorithms for oligotrophic oceans: A novel approach based on three-band reflectance difference, J. Geophys. Res., 117, C01011, doi:10.1029/2011JC007395."
comment		

Sample Metadata

Each site will provide metadata information (LOD and Sample Collection and Data Acquisition) for each of the following:

- Chl (mg/m3)
- Quantitative Cell Counts (cells/L)
- Phosphate (uM)
- Silicate (uM)
- Nitrite (uM)
- Nitrite+Nitrate (uM)
- Ammonium (uM)
- Nitrate (uM)
- pDA (ng/mL)

- tDA (ng/mL)
- dDA (ng/mL)

Level of Detection Metadata

The example shown below, would provide information on the Level of Detection (LOD) for chlorophyll.

Level of Detection	
sourceName	ChlLOD
destinationName	chl_level_of_detection
long_name	Chl Level of Detection
standard_name	From CF Conventions first, then IOOS Ontology Registry
dataType	float
_FillValue	**"NA"**
units	mg/m3
range	
ioos_category	Other
comment	A recorded value of "0" indicates the actual amount was somewhere below this value.

The IOOS Ontology Registry contains entries for both biological and Ocean Acidification (OA) related data. However, if an appropriate entry does not already exist, a request can be made for a new entry.

Data Acquisition Protocol Metadata

Each site will provide information on how samples are collected and processed. This information can be given directly as a string, with more detailed information provided by referencing a URL in the comments section, i.e.

Acquisition Protocol	
sourceName	ChlProtocol
destinationName	chl_protocol
long_name	Chl Protocol
standard_name	from IOOS Ontology Registry
dataType	string
_FillValue	**"NA"**
units	
range	
ioos_category	Other
comment	See http://protocols.io/….

Quality Control and Extreme Event Information

In the future, additional metadata can be added to indicate the quality of a particular parameter or highlight extreme events. For example, a flag could be set when a parameter is measured to be 2 sigma or more from the mean.

As an example of how such flags are determined, the example below shows how primary and secondary flags can be set to indicate the validity/quality of water temperature data.


```
<dataVariable>
    <sourceName>temperature</sourceName>
    <destinationName>temperature</destinationName>
    <dataType>float</dataType>
    <!-- sourceAttributes>
      <att name="_ChunkSizes" type="int">1024</att>
      <att name="cell_methods">time: point longitude: point latitude: point</att>
      <att name="comment">The following QC tests were done on salinity.</att>
      <att name="coordinates">time lat lon depth</att>
      <att name="data_max" type="float">18.9533</att>
      <att name="data_min" type="float">13.8508</att>
      <att name="grid_mapping">crs</att>
      <att name="instrument">instrument1</att>
      <att name="long_name">sea water temperature</att>
      <att name="platform">platform1</att>
      <att name="references">https://github.com/ioos/qartod</att>
      <att name="source">insitu observations</att>
      <att name="standard_name">sea_water_temperature</att>
      <att name="units">celsius</att>
    </sourceAttributes -->
    <addAttributes>
      <att name="_ChunkSizes">null</att>
      <att name="colorBarMaximum" type="double">32.0</att>
      <att name="colorBarMinimum" type="double">0.0</att>
      <att name="coordinates">null</att>
      <att name="ioos_category">Temperature</att>
    </addAttributes>
  </dataVariable>
  <dataVariable>
    <sourceName>temperature_flagPrimary</sourceName>
    <destinationName>temperature_flagPrimary</destinationName>
    <dataType>byte</dataType>
    <!-- sourceAttributes>
      <att name="_ChunkSizes" type="int">4096</att>
      <att name="_FillValue" type="byte">-1</att>
      <att name="_Unsigned">true</att>
      <att name="comment">Quality Control test are based on IOOS&#39;s Quality Control of
Real-Time Ocean Data (QARTOD))</att>
      <att name="flag_meanings">GOOD_DATA UNKNOWN SUSPECT BAD_DATA
MISSING</att>
      <att name="flag_values" type="byteList">1 2 3 4 9</att>
      <att name="long_name">sea water temperature, qc primary flag</att>
      <att name="source">QC results
```

```
        <att name="standard_name">sea_water_temperature status_flag</att>
      </sourceAttributes -->
      <addAttributes>
        <att name="_ChunkSizes">null</att>
        <att name="colorBarMaximum" type="double">10.0</att>
        <att name="colorBarMinimum" type="double">0.0</att>
        <att name="ioos_category">Quality</att>
      </addAttributes>
    </dataVariable>
    <dataVariable>
      <sourceName>temperature_flagSecondary</sourceName>
      <destinationName>temperature_flagSecondary</destinationName>
      <dataType>byte</dataType>
      <!-- sourceAttributes>
        <att name="_ChunkSizes" type="int">4096</att>
        <att name="_FillValue" type="byte">-1</att>
        <att name="_Unsigned">true</att>
        <att name="comment">Quality Control test are based on IOOS&#39;s Quality Control of
Real-Time Ocean Data (QARTOD))</att>
        <att name="flag_meanings">UNSPECIFIED RANGE FLAT_LINE SPIKE</att>
        <att name="flag_values" type="byteList">0 1 2 3</att>
        <att name="long_name">sea water temperature, qc secondary flag</att>
        <att name="source">QC results</att>
        <att name="standard_name">sea_water_temperature status_flag</att>
      </sourceAttributes -->
      <addAttributes>
        <att name="_ChunkSizes">null</att>
        <att name="colorBarMaximum" type="double">4.0</att>
        <att name="colorBarMinimum" type="double">0.0</att>
        <att name="ioos_category">Quality</att>
      </addAttributes>
    </dataVariable>
```

APPENDIX A

Detailed explanation of Provider Form

frequency_of_change ? Some datasets get new data frequently. Some datasets will never be changed. How often will this data be changed?

title ? This is a short (<=80 characters) description of the dataset. For example, "Spray Gliders, Scripps Institution of Oceanography"

summary ? This is a paragraph describing the dataset. (<=500 characters) The summary should answer these questions:

- Who created the dataset?
- What information was collected?
- When was the data collected?
- Where was it collected?
- Why was it collected?
- How was it collected?

creator_name ? This is the name of the primary person, group, institution, or position that created the data. For example, "John Smith"

creator_type ? (person, group, institution or position)

creator_email ? This is the best contact email address for the creator of this data. Use your judgment - the creator_email might be for a different entity than the creator_name. For example, "your.name@yourOrganization.org"

institution ? This is the short/abbreviated form of the name of the primary organization that created the data. For example, "NOAA NMFS SWFSC"

infoUrl ? This is a URL with information about this dataset. For example, "http://spray.ucsd.edu" If there is no URL related to the dataset, provide a URL for the group or organization.

license ? This is the license and disclaimer for use of this data. ERDDAP has a standard license, which you can use via "[standard]" You can either add to that or replace it. (<=500 characters) The text of the standard license is: "The data may be used and redistributed for free but is not intended for legal use, since it may contain inaccuracies. Neither the data Contributor, ERD, NOAA, nor the United States Government, nor any of their employees or contractors, makes any warranty, express or implied, including warranties of merchantability and fitness for a particular purpose, or assumes any legal liability for the accuracy, completeness, or usefulness, of this information." [standard]

cdm_data_type ? CDM is Unidata's Common Data Model, a way of categorizing datasets based on the geometry of the dataset. Pick the cdm_data_type which is most appropriate:

- Use "Grid" for all gridded datasets.
- Use "Point" for a dataset with unrelated points. Example: whale sightings, or stranded marine mammal sightings.

- Use "Profile" for data from multiple depths at one or more longitude, latitude locations. Example: CTD's if not associated with a TimeSeries or Trajectory.
- Use "TimeSeries" for data from a set of stations with fixed longitude, latitude(,altitude). Examples: moored buoys, or stations.
- Use "TimeSeriesProfile" for profiles from a set of stations. Examples: stations with CTD's.
- Use "Trajectory" for data from a set of longitude,latitude(,altitude) paths called trajectories. Examples: ships, surface gliders, or tagged animals.
- Use "TrajectoryProfile" for profiles along trajectories. Examples: ships + CTD's, or profiling gliders.
- Use "Other" if the dataset doesn't have latitude,longitude data or if no other type is appropriate. Examples: laboratory analyses, or fish landings by port name (if no lat,lon).

Optional (Please provide the information if it is available for your dataset.)

acknowledgement ? Optional: This is the place to acknowledge various types of support for the project that produced this data. (<=350 characters) For example, "This project received additional funding from the NOAA Climate and Global Change Program."

history ? Optional: This is a list of the actions (one per line) which led to the creation of this data. Ideally, each line includes a timestamp and a description of the action. (<=500 characters) For example, "Datafiles are downloaded ASAP from https://oceandata.sci.gsfc.nasa.gov/MODISA/L3SMI/ to NOAA NMFS SWFSC ERD. NOAA NMFS SWFSC ERD (erd.data@noaa.gov) uses NCML to add the time dimension and slightly modify the metadata."

id ? Optional: This is an identifier for the dataset, as provided by its naming authority. The combination of "naming authority" and the "id" should be globally unique, but the id can be globally unique by itself also. IDs can be URLs, URNs, DOIs, meaningful text strings, a local key, or any other unique string of characters. The id should not include white space characters. For example, "CMC0.2deg-CMC-L4-GLOB-v2.0"

naming_authority ? Optional: This is the organization that provided the id (above) for the dataset. The naming authority should be uniquely specified by this attribute. We recommend using reverse-DNS naming for the naming authority; URIs are also acceptable. For example, "org.ghrsst"

product_version ? Optional: This is the version identifier of this data. For example, if you plan to add new data yearly, you might use the year as the version identifier. For example, "2014"

references ? Optional: This is one or more published or web-based references that describe the data or methods used to produce it. URL's and DOI's are recommend. (<=500 characters) For example, "Hu, C., Lee Z., and Franz, B.A. (2012). Chlorophyll-a algorithms for oligotrophic oceans: A novel approach based on three-band reflectance difference, J. Geophys. Res., 117, C01011, doi:10.1029/2011JC007395."

comment Optional: This is miscellaneous information about the data, not captured elsewhere. (<=350 characters) For example, "No animals were harmed during the collection of this data."

Variable #1

sourceName This is the name of this variable currently used by the data source. For example, "wt". This is case-sensitive.

destinationName Optional: You can specify a new, different name for this variable. This new name is the one that will be shown to users in ERDDAP. For example, "waterTemp" This is case-sensitive. This MUST start with a letter (A-Z, a-z) and MUST be followed by 0 or more characters (A-Z, a-z, 0-9, and _).

- Use "latitude" for the main latitude variable.
- Use "longitude" for the main longitude variable.
- Use "altitude" if the variable measures height above sea level.
- Use "depth" if the variable measures distance below sea level.
- Use "time" for the main date/time variable.
- Otherwise, it is up to you. If you want to use the sourceName as the destinationName, leave this blank.

long_name This is a longer, written-out version of the destinationName. For example, "Water Temperature" Among other uses, it will be used as an axis title on graphs. Capitalize each word in the long_name. Don't include the units. (ERDDAP will add units when creating an axis title.)

standard_name Optional: This is the name from the CF Standard Name Table, which is most appropriate for this variable. For example, "sea_water_temperature". If you don't already know, or if no CF Standard Name is appropriate, just leave this blank. We'll fill it in.

dataType (unknown) String boolean byte short int long float double This is the data type and precision of this variable. If the data file uses a specific type (for example, in a .nc file), specify that type here. If the data file doesn't use a specific type (for example, in a .csv file), specify the type that should be used in ERDDAP. Use

- "(unknown)" if you don't know.
- "String" is a series of characters. (For databases, ERDDAP treats all non-numeric data types as Strings.)
- "boolean" is either true or false. ERDDAP will convert these to bytes, 1 or 0.
- "byte" is an 8 bit signed integer, +/-127
- "short" is a 16 bit signed integer, +/-32,767
- "int" is a 32 bit signed integer, +/-2,147,483,647

- "long" is a 64 bit signed integer, +/- ~1e19
- "float" is a 32 bit floating point number (up to 7 significant digits)
- "double" is a 64 bit floating point number (up to 17 significant digits)

_FillValue

For numeric variables, this is the value that is used in the data file to indicate a missing value for this variable. For example, "-999" . If the _FillValue is NaN, use "NaN". For String variables, leave this blank.

units

These are the units of this variable. For example, "degree_C" This is **required** for numeric variables, but not used for most String variables.

- For temperature, use "degree_C" or "degree_F" .
- For counts of things, use "count" .
- For latitude variables, use "degrees_north" .
- For longitude variables, use "degrees_east" .
- For String date/time variables, paste a sample date/time value here. We'll convert it to UDUnits.
- For numeric date/time variables, describe the values as "*units* since *basetime*", for example, "days since 2010-01-01"
- For all other variables, use UDUNITs unit names if you know them; otherwise, use whatever units you already know.

range

minimum = maximum =

For numeric variables, this specifies the typical range of values. For example, "minimum=32.0" and "maximum=37.0" . The range should include about 98% of the values. These should be round numbers. This isn't precise. If you don't know the typical range of values, leave this blank.
For String variables, leave this blank.

ioos_category

Pick the ioos_category which is most appropriate for this variable.

- Use "Location" for place names and for longitude, latitude, altitude, and depth.
- Use "Time" for date/time.
- Use "Taxonomy" for species names.
- Use "Identifier" for cruise names, ship names, line names, station names, equipment types, serial numbers, etc.
- Use "Ocean Color" for chlorophyll.
- Use "Other" if no other category in the list is close.
- Use "Unknown" if you really don't know.

Bathymetry Biology Bottom Character Colored Dissolved Organic Matter Contaminants Currents Dissolved Nutrients Dissolved O2 Ecology Fish Abundance Fish Species Heat Flux Hydrology Ice Distribution Identifier Location Meteorology Ocean Color Optical Properties Other Pathogens pCO2 Phytoplankton Species Pressure Productivity Quality Salinity Sea Level Statistics Stream Flow Surface

	Waves Taxonomy Temperature Time Total Suspended Matter Unknown Wind Zooplankton Species Zooplankton Abundance
comment	Optional: This is miscellaneous information about this variable, not captured elsewhere. For example, "This is the difference between today's SST and the previous day's SST."

Appendix B

Approved acronyms and filenames

- **CPP** **CPP_upload.csv** - for Cal Poly Pier
- **MW** **MW_upload.csv** - for Monterey Wharf
- **NBP** **NBP_upload.csv** - for Newport Beach Pier
- **SCW** **SCW_upload.csv** - for Santa Cruz Wharf
- **SMP** **SMP_upload.csv** - for Santa Monica Pier
- **SP** **SP_upload.csv** - for Scripps PIer
- **SW** **SW_upload.csv** - for Stearns Wharf