SUBMISSION AGREEMENT
BETWEEN
THE AXIOM DATA SCIENCE
AND
THE NATIONAL CENTERS FOR ENVIRONMENTAL INFORMATION
FOR CENTRAL AND NORTHERN CALIFORNIA OCEAN OBSERVING SYSTEM
(CENCOOS) NON-FEDERAL BUOY

2023-12-13

Introduction

This document represents the agreement that the Axiom Data Science (Axiom) (the "Provider") and the National Centers for Environmental Information (NCEI) (the "Archive") have reached for submitting the Provider's data, Central and Northern California Ocean Observing System (CeNCOOS) non-Federal Buoy, to the Archive for long-term preservation. It represents a joint effort between the Provider and the Archive to accurately document the agreement and the expectations between the two groups.

In order to ensure that the quality and integrity of the archived data is not compromised, the Provider and the Archive agree to maintain this agreement with accurate and up-to-date information through the life of the data submission.

The Request to Archive was approved through the ATRAC project "AOOS/CeNCOOS/SECOORA non-Federal station data" (https://www.ncdc.noaa.gov/atrac/inputoptions.html?id=9494). The scope and size of the data holdings under
this agreement are the same as what was agreed to in the Request to Archive for ATRAC project "AOOS/CeNCOOS/SECOORA non-Federal station data"

Contacts

Persons included in all communications regarding the data submission.

Provider Contacts

Point of Contact, Axiom Technical Lead

Shane St Savage

Axiom Data Science

907-350-8526

sensors@axiomdatascience.com

preferred method: e-mail

Archive Contacts

Data Acquisition, NCEI-IOOS Point Of
Contact
Mathew Biddle
NCEI/CICS-MD
Faculty Research Assistant
301-713-4928
mathew.biddle@noaa.gov
preferred method: e-mail

Data Overview

Axiom will be acting as a Data Assembly Center to submit the non-Federal station assets from the following Regional Association :
CeNCOOS - Central and Northern California Coastal Ocean Observing System

There are 11 Regional Associations established nationwide through the NOAA Integrated Ocean Observing System (IOOS). IOOS coordinates the multi-agency, cooperative effort to routinely collect realtime data and manage historical information based on a continuously operating network of buoys, ships, satellites, underwater vehicles, and other platforms. These data are needed for many purposes which include rapid detection and prediction of changes in our nation's ocean and coastal waters.

Axiom will be starting the automation process with a group of non-federal in-situ data sets from each of the three RAs.

To collect realtime data and manage historical information based on a continuously operating network of buoys..

The transfer process will use the BagIt convention as documented by the Library of Congress.

Applicable and Reference Documents

Documents applicable to or referenced from this agreement.

1. http://www.nodc.noaa.gov/data/formats/netcdf/v2.0/index.html

Submission Scope

Active Submission Period

2017-06-27 - 2027-06-27

Data Types

Below is a summary of the data sizing and submission schedule by data type group. Enter information on at least one data type.

Data Type Name	Data Sizing	Submission Schedule
air_pressure	multiple files	Monthly
air_temperature	multiple files	Monthly
depth	multiple files	Monthly
direction_of_sea_water_velocity	multiple files	Monthly

fractional_saturation_of_oxygen_in_sea_water	multiple files	Monthly
mass_concentration_of_chlorophyll_a_in_sea_water	multiple files	Monthly
mass_concentration_of_oxygen_in_sea_water	multiple files	Monthly
mole_concentration_of_nitrate_in_sea_water	multiple files	Monthly
mole_concentration_of_phosphate_in_sea_water	multiple files	Monthly
photosynthetically_available_radiation	multiple files	Monthly
precipitation_amount	multiple files	Monthly
relative_humidity	multiple files	Monthly
sea_water_electrical_conductivity	multiple files	Monthly
sea_water_salinity	multiple files	Monthly
sea_water_speed	multiple files	Monthly
sea_water_temperature	multiple files	Monthly
sea_water_turbidity	multiple files	Monthly
volume_absorption_coefficient_of_radiative_flux_in_sea_water_due_to_dissolved_organic_matter	multiple files	Monthly
water_surface_height_above_reference_datum	multiple files	Monthly
wind_from_direction	multiple files	Monthly
wind_speed	multiple files	Monthly
wind_speed_of_gust	multiple files	Monthly
sea_surface_wave_significant_height	multiple files	Monthly
sea_surface_swell_wave_period	multiple files	Monthly

Reviews and Testing

None. Upload the data files, if replacements, with the same file naming convention as the old files. The differing checksums will initiate an revision. Axiom will notify NCEI of any changes to this established procedure.

Providing System

Identification of the system providing the data to NCEI.

System Name: ncei01
System Owner: Shane St Savage (shane@axiomdatascience.com)

| Physical Location: | The Pittock Internet Exchange, Portland, OR, USA |
| Additional Information: | Add comments as needed on applicable data types, etc. |

Transfer Interface

We will pull from Axiom's WAF and each directory therin. NCEI will archive the data from Axiom's http server on a monthly basis. The packages will follow the conventions described by the Library of Congress BagIt convention (http://www.digitalpreservation.gov/multimedia/videos/bagit0609.html).

Submission Information Packages will be organized into 'bags'. Each 'bag' will contain data, metadata, and manifest files which fully document the files intended to be submitted. The 'bags' will be folders on https://ncei.axiomdatascience.com/ which correspond to the name of the Regional Association (cencoos/). Within the Regional Association folder there will be a folder (or 'bag') with four standard files with the following names: bag-into.txt, bagit.txt, manifest-sha256.txt, and tagmanifest-sha256.txt as well as a data/ directory which will contain folders for all of the netCDF files to be submitted. Each of the folders within the data/ directory represent an instrument/instrument deployment.

Submission File Inventory

Information on each submitted file type from the Provider. Information on multiple file types can be added below.

File Type Name: manifest-sha256.txt

File Name Pattern:

manifest-sha256.txt

File Name Field Definitions:

Manifest file for the data files. Will always have the name "manifest-sha256.txt"

Example File Name:

manifest-sha256.txt

File Format: ASCII

File Compression: None

File Size Average: 26KB

File Size Range: 4KB to 48KB

File Count (Rate): 1 files per month

Data Volume (Rate): Total data volume and/or the data volume rate at which this file will be submitted

Submission Schedule: monthly

Additional Information:

Descriptive Information Attributes:

None: date/time fields are usually used as descriptive attributes for this file.

File Type Name: tagmanifest-sha256.txt

File Name Pattern:

tagmanifest-sha256.txt

File Name Field Definitions:

Manifest file for the metadata files and manifest-sha256.txt. Will always have the name "tagmanifest-sha256.txt"

Example File Name:

tagmanifest-sha256.txt

File Format: ASCII

File Compression: None

File Size Average: 4KB

File Size Range: 4KB to 4KB

File Count (Rate): 1 file per month

Data Volume (Rate): Total data volume and/or the data volume rate at which this file will be submitted

Submission Schedule: Every month.

Additional Information: Add comments as needed for this file type

Descriptive Information Attributes:

Attribute	Source	Use
Name of attribute	Source of attribute value, e.g., file name	For search, results display, and/or cross-referencing

File Type Name: Data File

File Name Pattern:

[standard_name].nc

File Name Field Definitions:

[standard_name] - the name of the type of data contained in the file.

Example File Name:

sea_water_temperature.nc

File Format: netCDF

File Compression: None

File Size Average: 1.2MB

File Size Range: 40KB to 9.5MB

File Count (Rate): 1

Data Volume (Rate): Total data volume and/or the data volume rate at which this file will be submitted

Submission Schedule: General time window for when this file will be submitted

Additional Information: The files will continuously added to, therefore each submission will have the exact same file name, just the checksum will vary.

Descriptive Information Attributes:

Attribute	Source	Use
keywords	global attribute	for compiling a list of keywords
institution	global attribute	for compiling a list of institutions
instrument:long_name	variable attribute	for compiling a list of instruments
platform:short_name	variable attribute	for compiling a list of platforms
sea_name	global attribute	for compiling a list of sea_names

Submission Manifest

A submission manifest file with a 32-character MD5 checksum value is required for each submitted file in order to ensure the integrity of the submitted data.

File Content Specification:

A submission manifest file contains a tab delimited list of submitted file names and associated checksums for submitted files. The submission manifest will be in a file named 'manifest-sha256.txt'. There will be one manifest file in each Submission Information Package. The sha256 algorithm will be used to calculate each files cryptographic hash digest value. As new data files are generated, the manifest file will be updated to include the relative path to the new file and the sha256 checksum for that file. NCEI will monitor the manifest file(s) for changes and conduct the appropriate ingest task as noted in the Transfer Interface section.

File Transmission:

Every month in congruence with the netCDF file updates.

File Name Pattern:

manifest-sha256.txt

File Name Definitions:

The file will always be named "manifest-sha256.txt"

<u>Example File Name:</u>

manifest-sha256.txt

Archive Ingest

Ingest processing steps at the Archive and communication with the Provider.

Receipt Verification:

The Archive will use the provided file name and SHA256 checksum value to verify the integrity of a delivered file.

Error Reconciliation:

The Archive will report any problems or errors with file integrity, file name, checksum validation, or other errors that inhibit the data ingest and archive to the Provider. A new corresponding submission manifest will be required for files re-submitted by the Provider.

Receipt Confirmation:

The Archive will provide a notification describing the datasets publication and archival. Appropriate links to the archived data sets will be provided in the e-mail correspondence.

Quality Assurance:

No quality checks on the submitted data are planned.

Archive File Packaging:

Submission Information Packages (SIP) will be organized into 'bags'. Each 'bag' will contain data, metadata, and manifest files which fully document the files intended to be submitted. The 'bags' will be folders on https://ncei.axiomdatascience.com/ which correspond to the name of the Regional Association (cencoos/). Within the Regional Association folder there will be a folder (or 'bag') with four standard files with the following names: bag-into.txt, bagit.txt, manifest-sha256.txt, and tagmanifest-sha256.txt as well as a data/ directory which will contain folders for all of the netCDF files to be submitted. Each of the folders within the data/ directory represent an instrument/instrument deployment.

Archive Storage

Archive attributes of each archived file type.

Archive File Type Name: Descriptive name for this archive file type
Archive File Attributes/IDs:

Attribute/ID Type	Value
none	Attribute/ID value

Archive Updates

New, never-before seen data files will be archived based on which station they are: each station will be assigned an accession number.

New, data from a previously submitted station: The AIP for that station will be updated (NCEI-MD's major-revision) with the new data file.

Revised, data that was previously submitted that needs to be updated: If the naming conventions match and the checksums do not match, then the most recent submission of that file will be assumed to be the latest and greatest submission and will replace the previous file.

Retention Schedule

The data will be retained in the Archive for long-term preservation in accordance with NOAA data management standards. Information on data usage and archive value may be used for making decisions on continuing the duration of the archive.

(Notional) Disposition: Unknown/TBD

Constraints

No constraints apply or will apply to the archived data.

User Community

Oceanographers. Integrated Ocean Observing System affiliates.

User Documentation and Metadata

The Provider will supply information to the Archive for writing and maintaining standard archive metadata, which includes data discovery information, references and data archive access links for users. The following published documents and archived items will be referenced from the metadata and made available to users.

Representation Information Items

For data to be useful to users, present and future, its format specification and characteristics must be documented and preserved with the data. Representation Information provides users with syntax (structure) and/or semantics (meaning) to decode the encoded data.

Item	Description
Item name or citation	Item description or intended use

Preservation Descriptive Information Items

Preservation Descriptive Information items contain context, provenance, and/or quality information for the data.

Item	Description
Item name or citation	Item description or intended use

Access and Dissemination

The Archive will provide access services for the data and supporting information to the designated user community.

Additional Terms

None.