

**Overview**

The NOAA National Centers for Environmental Information (NCEI) mission is to serve as steward of the Nation’s environmental information. NCEI constitutes the official NOAA archive and is a designated NARA Agency Records Center<sup>1</sup>. NCEI maintains, processes, distributes, and provides long-term stewardship for most of NOAA’s environmental and geospatial data, and provides a broad range of user services. NCEI is operated by NESDIS but performs data preservation and stewardship on behalf of the entire agency. NCEI supports U.S. and international environmental, societal, and economic well-being through stewardship of the Nation’s treasure of weather, climate, coastal, oceanic, and geophysical information.

This summary-level data management plan discusses handling and stewardship of NCEI’s entire data archive, irrespective of source and archival storage system.

**1. General Description of Data to be Managed**

- 1.1. Name of the Data, data collection Project, or data-producing Program: All data and products archived and stewarded by NCEI
- 1.2. Summary description of the data: According to the NCEI Environmental Data Collecting Policy draft Aug 2017)<sup>2</sup>:

NCEI seeks to ensure that environmental data collected by NOAA observing systems at a significant cost to the American public are preserved for future use. In addition, NCEI acquires data that directly complements these data, including data, metadata, and products (and their inputs) produced by NCEI. To this end, NCEI enters into agreements to archive and steward data to meet its mission and to preserve the global environmental data record. Taken together, the data collected at NCEI informs user communities and the general public, benefitting an array of scientific disciplines and sectors of the U.S. economy.

NCEI recognizes that other Federal agencies are responsible for data collection and research in various environmental disciplines. Seeking to complement the archives and missions of other agencies rather than provide redundant archival and information services to the public, NCEI will acquire observations, forecasts, and information products pertaining to the following general categories:

Cryospheric	Geomagnetic	Geothermal
Marine ecosystems	Marine geology	Paleoclimatology
Solar terrestrial	Soil Moisture	Space weather observations
Surface characterization	Surface water observations	Tropical cyclones
Upper air observations	Vegetation index	Volcanic events

- 1.3. Is this a one-time data collection, or an ongoing series of measurements? NCEI preserves both one-time data collections and ongoing series of data
- 1.4. Actual or planned temporal coverage of the data: Varies from Paleoclimate to current satellite measurements

<sup>1</sup> [www.archives.gov/files/foia/directives/nara1310.pdf](http://www.archives.gov/files/foia/directives/nara1310.pdf)

<sup>2</sup> <https://docs.google.com/document/d/1gcNG5r94f4hXhuJ559xQOeBcRk-OMtozr-czfaCs9hU>

- 1.5. Actual or planned geographic coverage of the data: global as well as space weather
- 1.6. Type(s) of data: (*e.g., digital numeric data, imagery, photographs, video, audio, database, tabular data, etc.*). NCEI preserves digital and analog data in many formats including images, videos and numeric data.
- 1.7. Data collection method(s): (*e.g., satellite, airplane, unmanned aerial system, radar, weather station, moored buoy, research vessel, autonomous underwater vehicle, animal tagging, manual surveys, enforcement activities, numerical model, etc.*) Collection mechanisms vary with the data from remotely-sensed (satellite, radar) to in situ (buoys, aircraft, weather station, weather balloons) to numerical model output.
- 1.8. If data are from a NOAA Observing System of Record<sup>3</sup>, indicate name of system: NCEI provides archival stewardship for data from numerous NOAA in situ, remote sensing, terrestrial and space-based observing systems, including but not limited to JPSS, GOES, COSMIC-2, NEXRAD, ASOS, COOP, USCRN, Rawinsonde, DART and others.
  - 1.8.1. If data are from another observing system, please specify: NCEI also provides archival stewardship for data from a broad variety of sources beyond NOAA's Observing Systems of Record, subject to data appraisal and archival guidelines and based on written agreements with partners and data providers.

## 2. Point of Contact for this Data Management Plan (author or maintainer)

- 2.1. Name: Kenneth Casey
- 2.2. Title: Deputy Chief, Data Stewardship Division
- 2.3. Affiliation or facility: NCEI
- 2.4. E-mail address: kenneth.casey@noaa.gov
- 2.5. Phone number: 301-713-4849

## 3. Responsible Party for Data Management

*Program Managers, or their designee, shall be responsible for assuring the proper management of the data produced by their Program. Please indicate the responsible party below.*

- 3.1. Name: Nancy Ritchey
- 3.2. Position Title: Chief, Archive Branch

## 4. Resources

*Programs must identify resources within their own budget for managing the data they produce.*

- 4.1. Have resources for management of these data been identified? NCEI's archival activities are funded through a combination of base budget and project-associated funding, which varies year to year.
  - 1.1. Approximate percentage of the budget for these data devoted to data management (specify

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<sup>3</sup> [https://docs.google.com/spreadsheets/d/1uC\\_FxYYP9LYvY6ofhXRPplxiP9sZl3bhCpkKtwDsk3o/edit#gid=1462893252](https://docs.google.com/spreadsheets/d/1uC_FxYYP9LYvY6ofhXRPplxiP9sZl3bhCpkKtwDsk3o/edit#gid=1462893252)

percentage or "unknown"): N/A

5. Data Lineage and Quality

NOAA has issued *Information Quality Guidelines*<sup>4</sup> for ensuring and maximizing the quality, objectivity, utility, and integrity of information which it disseminates.

5.1. Processing workflow of the data from collection or acquisition to making it publicly accessible:

NCEI uses a well-defined end-to-end data stewardship process to manage data to be archived throughout its lifecycle, shown in Figure 1.

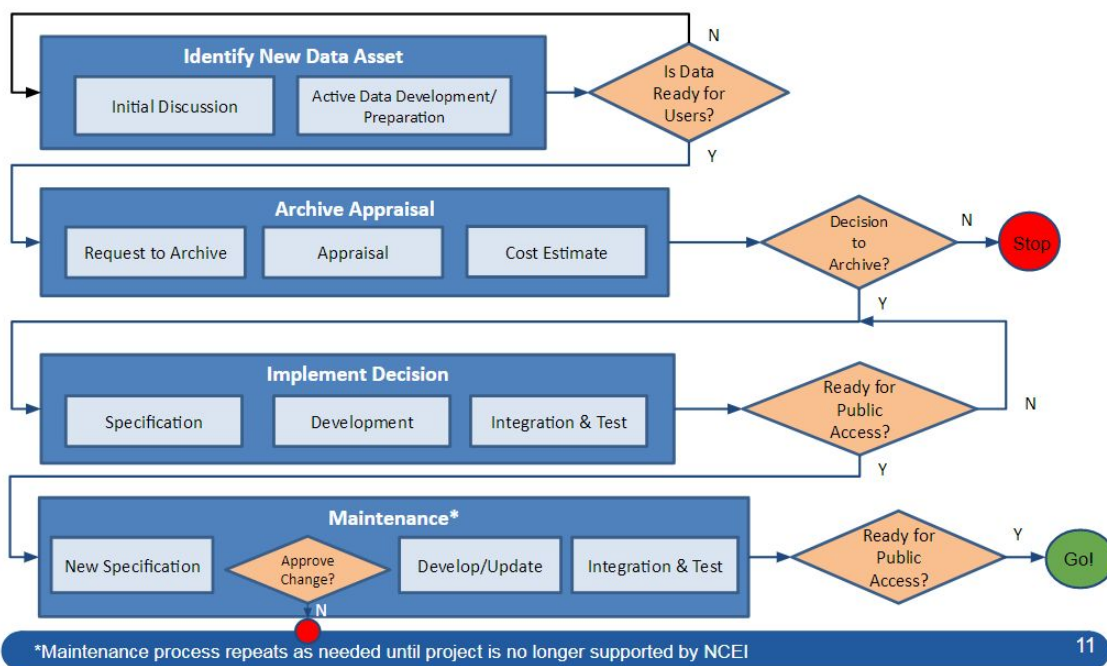


Figure 1. NCEI’s process for supporting data through development and preservation

5.2. Quality control procedures employed (describe or provide URL of description): Data stewardship, including quality control, is dependent upon the datasets and the tier of stewardship applied to the data. To help identify the activities required at each tier of stewardship, NCEI developed the Tiers of Data Stewardship shown in Figure 2, ranging from basic long-term preservation and access (Tier 1) to the broader scoped rigor of National Services and International Leadership (Tier 6).

<sup>4</sup> [http://www.cio.noaa.gov/services\\_programs/IQ\\_Guidelines\\_030414.html](http://www.cio.noaa.gov/services_programs/IQ_Guidelines_030414.html)

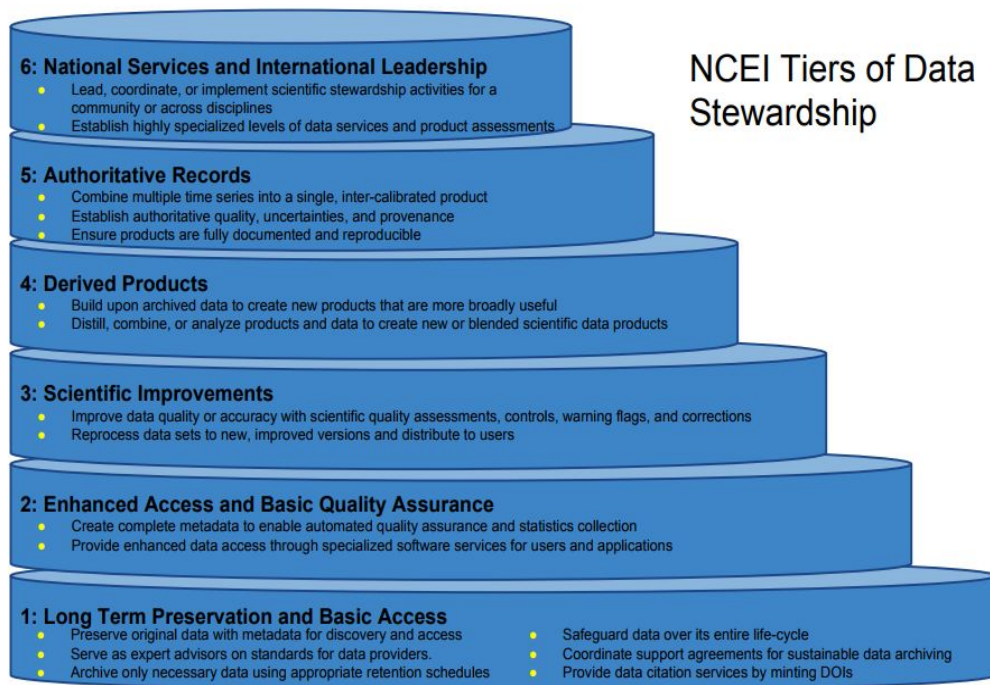


Figure 2. NCEI's Tiers of Data Stewardship

## 6. Data Documentation

*The EDMC Data Documentation Procedural Directive<sup>5</sup> requires that NOAA data be well documented, specifies the use of ISO 19115 and related standards for documentation of new data, and provides links to resources and tools for metadata creation and validation.*

6.1. Does metadata comply with EDMC Data Documentation directive<sup>6</sup>? The majority of NCEI's holdings, and all recently acquired data, include metadata compliant with the EDMC Data Documentation directive. NCEI offers tools, such as the Advanced Tracking and Resource tool for Archive Collections (ATRAC) and Send2NCEI systems, to assist data providers in creating such ISO-compliant metadata for their products.

6.1.1. If metadata are non-existent or non-compliant, please explain: NCEI has been preserving data for many decades, prior to the emergence of metadata and standards. Some older NCEI data lack adequate metadata. To help address this shortcoming, NCEI instituted the Master Archive Collection Inventory (MACI) project to ensure that older data are well documented with ISO-19115 compliant metadata. In many cases the effort also resulted in follow-on actions to consolidate, further partition, or review retention schedule for these legacy metadata.

6.2. Name of organization or facility providing metadata hosting:

Metadata are hosted by NCEI via a combination Web Accessible Folders (WAFS), Geoportals and

<sup>5</sup> <https://www.nosc.noaa.gov/EDMC/PD.DD.php>

<sup>6</sup> <https://nosc.noaa.gov/EDMC/documents/DataDocumentationPD-v2.0.0.signed.pdf>

the nascent OneStop system.

6.2.1. If service is needed for metadata hosting, please indicate: n/a

6.3. URL of metadata folder or data catalog, if known: Currently: <https://www.ncdc.noaa.gov/onestop>. Please note this URL will change over the coming year and will be updated in the next update to this DMP.

6.4. Process for producing and maintaining metadata (*describe or provide URL of description*): NCEI has a robust process for developing metadata. Data stewards develop standards, best practices and implementation strategies in alignment with the EDMC Procedural Directives. Technology stewards develop tools to assist in metadata development and verification. The Science stewards are trained in these best practices and tools. Both Science and Data stewards develop and maintain metadata.

## 7. Data Access

*NAO 212-15<sup>7</sup> states that access to environmental data may only be restricted when distribution is explicitly limited by law, regulation, policy (such as those applicable to personally identifiable information or protected critical infrastructure information or proprietary trade information) or by security requirements. The EDMC Data Access Procedural Directive<sup>8</sup> contains specific guidance, recommends the use of open-standard, interoperable, non-proprietary web services, provides information about resources and tools to enable data access, and includes a Waiver to be submitted to justify any approach other than full, unrestricted public access.*

7.1. Do these data comply with the Data Access directive? Yes. As part of basic Tier 1 stewardship (fig. 2), NCEI provides access to the data it archives, except in cases where such access is precluded by agreement with the provider (as might be the case for some commercial or international data), contains Personally Identifiable Information, or is otherwise procedurally restricted, as might be the case during test phases of new observing systems or satellites. These situations are relatively rare, and the vast majority of the NCEI archives are freely and openly accessible without restriction.

7.1.1. If the data are not to be made available to the public at all, or with limitations, has a Waiver (Appendix A of Data Access directive) been filed? N/A

7.1.2. If there are limitations to public data access, describe how data are protected from unauthorized access or disclosure: For restricted data, only users identified by the data provider or program are given permission to search, view and access the data. All access permissions are verified through the data provider/program.

7.2. Name of organization of facility providing data access: NCEI

7.2.1. If data hosting service is needed, please indicate: N/A

7.2.2. URL of data access service, if known: <https://www.ncei.noaa.gov>

7.3. Data access methods or services offered: HTTPS, THREDDS, LAS, ArcGIS Server, OPeNDAP Hyrax Server, ERDDAP, FTP download, project-specific interfaces, Customer service

7.4. Approximate delay between data collection and dissemination: The delay between receipt of data at NCEI and its public accessibility varies, depending on agreements and technical

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<sup>7</sup> [https://nosc.noaa.gov/EDMC/documents/NAO\\_212-15\\_Signed\\_4pg.pdf](https://nosc.noaa.gov/EDMC/documents/NAO_212-15_Signed_4pg.pdf)

<sup>8</sup> <https://nosc.noaa.gov/EDMC/documents/EDMC-DataAccess-PD.v1.0.pdf>

connections in place with the data producer.

- 7.4.1. If delay is longer than latency of automated processing, indicate under what authority data access is delayed: Some data require manual processing to ensure preservation. These data may have a higher latency.

## 8. Data Preservation and Protection

*The NOAA Procedure for Scientific Records Appraisal and Archive Approval*<sup>9</sup> describes how to identify, appraise and decide what scientific records are to be preserved in a NOAA archive.

- 8.1. Actual or planned long-term data archive location: NCEI is both a NARA-designated Agency Records Center and a World Data Center for oceanography, geophysics, meteorology, and paleoclimatology. As NCEI's archival storage systems evolve, they will continue to comply with applicable Federal and Agency requirements, as well as community best-practices.

NCEI uses a well-defined process for data appraisal, evaluating each dataset requested to be archived. The process considers guidelines set forth in the NOAA Procedure for Scientific Records Appraisal, as well as NCEI-specific considerations, to determine whether the data are suitable for archival at NCEI. The requester is provided feedback on the request. In cases where that data are not suitable for archival at NCEI (ex. non-environmental data), NCEI attempts to provide suggestions on other approaches or archival hosts.

- 8.1.1. If World Data Center or Other, specify: NCEI is a World Data Center for oceanography, geophysics, meteorology, and paleoclimatology

- 8.2. Data storage facility prior to being sent to an archive facility (if any):

Individual data producers use various approaches to manage data prior to submission for archival. NCEI supports a variety of data submission and archival approaches, but is increasingly focused on standardized, enterprise-system approaches to data ingest and archival. One such system is Common Ingest, an extensible set of modular functions that manages data from initial receipt through archival.

- 8.3. Approximate delay between data collection and submission to an archive facility: While it can provide recommendations and help establish procedures as it works with data providers to develop submission agreements, NCEI has no control over individual providers pre-archival data management techniques. NCEI-produced data and products are archived with user community appropriate latency.
- 8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive? Discuss data back-up, disaster recovery/contingency planning, and off-site data storage relevant to the data collection: NCEI-produced data and products are produced/processed on FISMA-compliant systems with current system security measures and monitoring in place. Data processing systems are backed-up in order to support disaster recovery.

## 9. Additional Line Office or Staff Office Questions

*Line and Staff Offices may extend this template by inserting additional questions in this section.*

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<sup>9</sup> [https://nosc.noaa.gov/EDMC/documents/NOAA\\_Procedure\\_document\\_final\\_12-16-1.pdf](https://nosc.noaa.gov/EDMC/documents/NOAA_Procedure_document_final_12-16-1.pdf)