**Satellite Products and Services Review Board (SPSRB) Process and Improvement Working Group (SPIWG)**

**Guidance on NCEI Interaction**
**September 22, 2016**

# 1   General

These procedures provide guidance to NESDIS (National Environmental Satellite, Data and Information Service) STAR (Center for Satellite Applications and Research) and OSPO (Office of Satellite and Product Operations) personnel on the request-to-archive process for satellite data and higher-level products at the National Centers for Environmental Information (NCEI).  NCEI follows the *NOAA Procedure for Scientific Records Appraisal and Archive Approval*[1] , as mandated by the NOAA Observing System Council. NCEI utilizes multiple storage systems in which to archive data, including the Comprehensive Large Array-Data Stewardship System (CLASS), an archival storage resource jointly governed by NCEI, the Office of Satellite Ground Systems (OSGS), and the Office of Satellite and Product Operations (OSPO).

NCEI is the stewardship stakeholder, ensuring that archival storage meets NOAA standards as well as those of the wider federal and global community. NCEI also provides access and user services support, and manages ongoing stewardship activities. NCEI works toward adherence with the ISO (International Organization for Standards) standard for digital archives known as the *Reference Model for an Open Archival Information System (OAIS)[2]* .

NCEI's detailed implementation procedures for requesting archive of data are evolving.  As a result, these archive guidance procedures will be reviewed annually by the SPIWG and updated as needed.

# 2   The National Centers for Environmental Information

NCEI is NOAA's designated archive for environmental data and products. Geographically distributed, NCEI provides access to and stewardship of the Nation's global geophysical, oceanographic, and weather & climate data (http://www.ncei.noaa.gov). NCEI leverages

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[1] http://www.nosc.noaa.gov/docs/products/NOAA_Records_Brochure_4_pages_Dec_9.pdf

[2] ISO 14721 and CCSDS 650.0-B-1 Blue Book, January 2002

CLASS as well as several smaller archival storage systems as appropriate in order to ensure safe storage and effective stewardship of NOAA data.

NCEI represents the needs of the users and the user community. It ensures data are packaged and made available to the designated user communities by giving the archival storage systems owners guidance on archive preparation, implementation and representation of the datasets in the archive.

# 3 SPSRB Guidance

The SPSRB project leads should strive to accomplish archive tasks in a timely manner and encourage active participation by the NCEI Integrated Product Team (IPT) member. The NCEI IPT member should be involved in the annual updates to project plans, and to support the standard archive-related project milestones. Figure 1 below shows how archive-related milestones should be met, using a timeline mapped to the well-known project phases and gates .
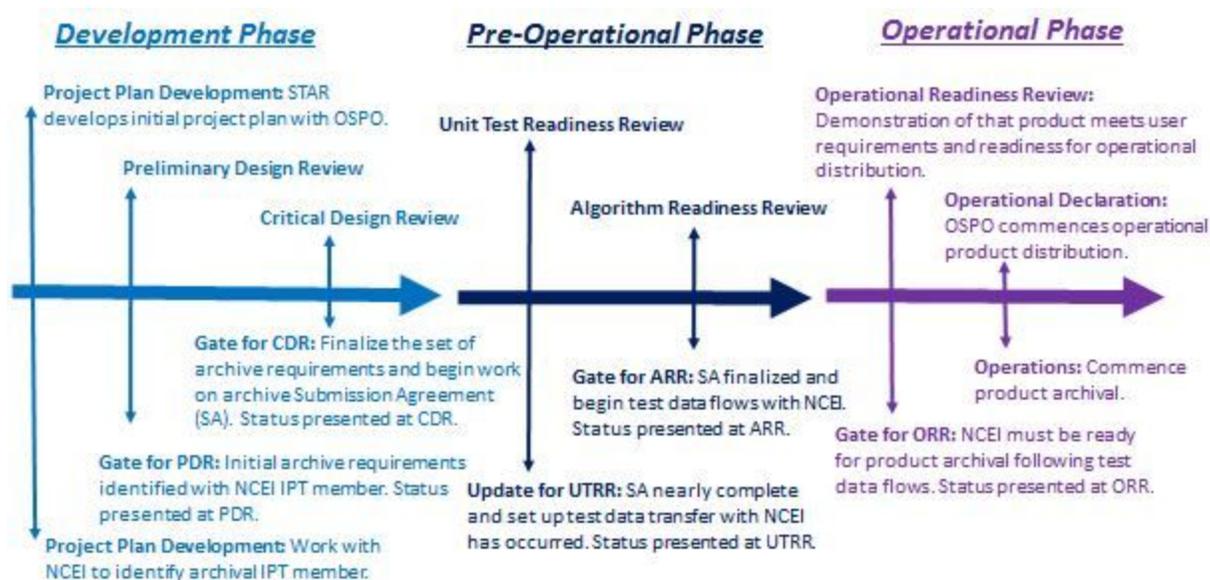


Figure 1: Timeline mapping archive milestones to project phases and reviews..

NCEI IPT members can provide specific resources, tools, experience, and guidance on appropriate procedures and standards. SPSRB policy guidance (http://projects.osd.noaa.gov/spsrb/standards_docs/SPSRB_NetCDF_Policy.pdf) has identified netCDF-4 with Climate and Forecast (CF) conventions as the default specification for file formats, and community best practice for metadata records is to use the following ISO metadata standards:

- ISO 19115:2003 (Geographic information - Metadata)

- ISO 19115-2:2009 (Geographic information - Metadata - Part 2 Extensions for imagery and gridded data)
- ISO 19139:2007 (Geographic information - Metadata - XML schema implementation)

These standards are available from the ISO Store at
http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_tc_browse.htm?commid=54
904. The NOAA metadata community has posted many examples and practices for ISO
metadata development at the NOSC wiki:
https://nosc.ngdc.noaa.gov/dmc/swg/wiki/index.php?title=Category:ISO_19115.

# 4 Overview of Request to Archive Procedures

The *NOAA Procedure for Scientific Records Appraisal and Archive Approval* establishes four
key phases in the process for determining what new data and/or products will be archived in a
NOAA data facility.  These phases are: Identify Records, Appraise Records,
Decision/Approval Process, and Implement the Decision. Following these phases and other
mandates of the *NOAA Procedure*, NCEI has established a formal
workflow for conducting requests-to-archive.  This workflow is shown below in Figure 2.
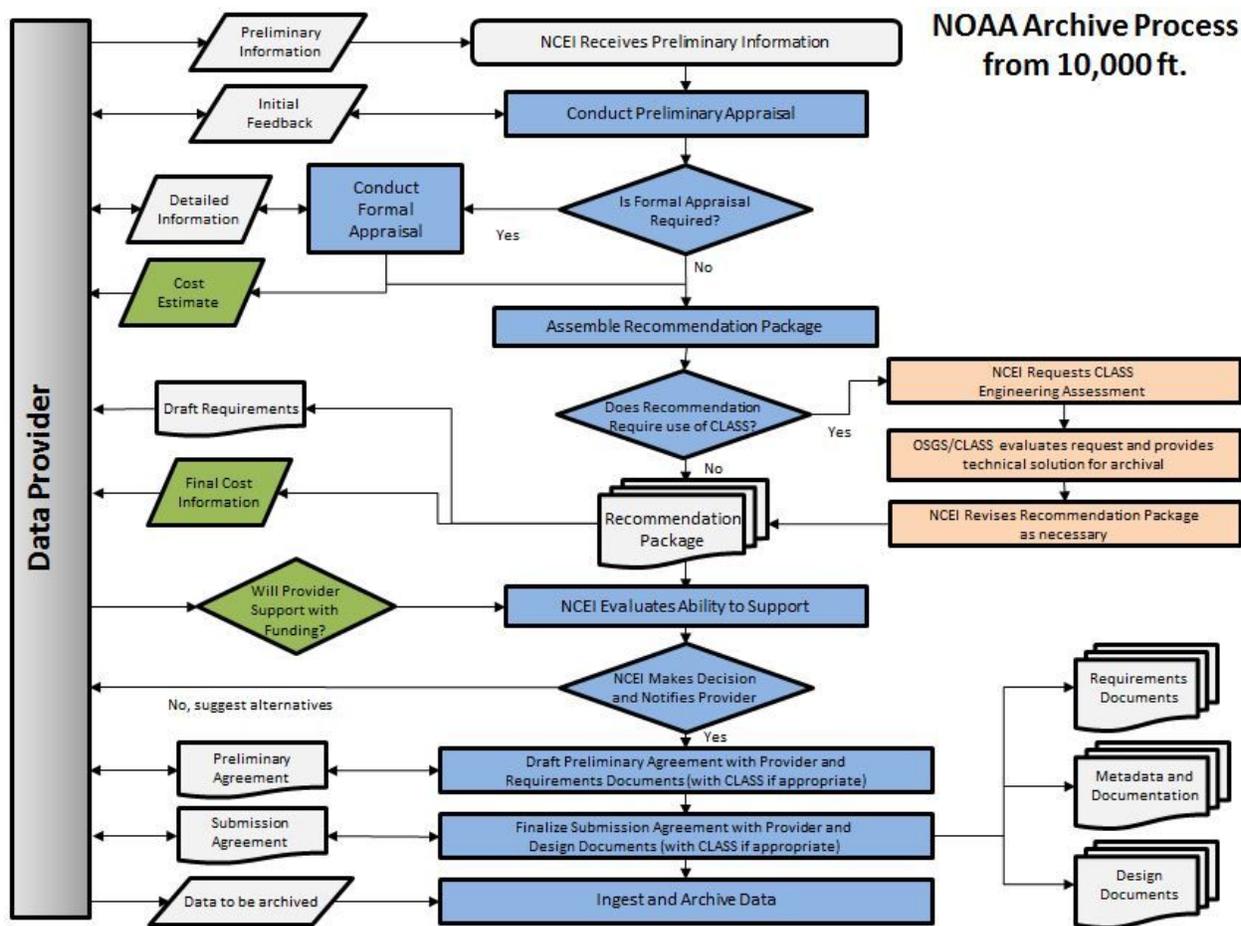
**Figure 2: NOAA archive approval procedure.**

# 5   Detailed Request to Archive Procedures

**Step 1 - Initial Request**: When NOAA agrees to develop or modify a product to meet a user request, alert NCEI. Recommend that the OSPO project lead perform this action.  If OSPO wants STAR to take the lead for submitting the initial request for archive, the OSPO lead should ensure that this responsibility is handed over to the STAR project lead.  If you have previously worked with NCEI, use your contact from this previous NCEI interaction. If you have not worked with NCEI in the past, or your previous contact is not available, please contact the NCEI Archive Branch at NCEI.Archive@noaa.gov. NCEI will refer your request to the appropriate personnel and establish a point of contact (POC) for your request. The POC will respond and guide you through the remaining steps.  This person will also generally participate in the technical assessment and serve as the NCEI IPT member.

**Step 2 - Archive Request**: Requests to archive large datasets or continuous data streams are initiated and tracked using the Advanced Tracking and Resource tool for Archive Collections

(ATRAC, https://www.ncdc.noaa.gov/atrac/index.html). Your NCEI POC will indicate when it is time to submit your request. If archive actions are already being performed for your project (e.g., a submission agreement), state all relevant background information in your ATRAC request. Also, include the name of the NCEI IPT member in the request.

**Step 3 - Preliminary Appraisal**: The NCEI POC will confirm your ATRAC request and may seek clarification of the information provided about the product, including what parameters are to be generated, levels of metadata and documentation anticipated, data formats, and any backlogged volumes and future daily volume rates. In addition, clarity on any restrictions to access of the data will be obtained. Using the information provided, the NCEI Archive Appraisal Committee will perform the *Preliminary Appraisal* step. NESDIS operational products will nearly always require a *Formal Appraisal* as well, according to the *NOAA Procedure for Scientific Records Appraisal and Archive Approval*.

If the data set is deemed inappropriate for long-term archival, alternative options will be presented to you. If there is agreement to proceed with the request to archive at NCEI, the Archive Appraisal Committee will initiate the more time intensive *Formal Appraisal* process.

**Step 4 - Formal Appraisal**: Your NCEI POC will contact you to collect any additional information needed to generate a formal appraisal. This step includes responding to the 28 Questions in the Appraisal Questionnaire of the *NOAA Procedure for Scientific Records Appraisal and Archive Approval* and includes cost estimations. The formal appraisal and related information is assembled into a *Recommendation Package*, for presentation to NCEI management. Cost information is shared with the IPT lead for use in Resource Identification.

**Step 5 - Recommendation Package Presented to NCEI Management**: The Archive Appraisal Committee will present this *Recommendation Package* to the NCEI Data Stewardship Division (DSD) Chief. The DSD Chief can approve, disapprove, or make other recommendations for data management, acquisition, storage and stewardship. If the request involves significant resources or additional agreements to ensure effective archival, the DSD Chief will refer the request and recommendation to the NCEI Director.

**Step 6 - Director Makes Decision**: The NCEI Director receives the recommendation from the DSD Chief and factors that into the final determination of whether to accept the archive request or not. You will be notified of the Director's decision via an official memo. If the decision is not to archive the data set, then alternative options will be provided. If the decision is to archive, the official memo will normally include language that indicates the archive request has been accepted *pending available resources.* This caveat separates the

decision to archive a particular data set from the sometimes more onerous process of finding resources to implement that decision.

**Step 7 - Implementing the Decision:** After approval, your NCEI POC will continue to work with you to complete any remaining questions, finalize a Submission Agreement, establish any other necessary documentation (e.g., provisions for metadata) and procedures, and to identify resources needed to complete the archive procedures.

To ensure proper documentation and error-free data archival, a data provider representative from the IPT must ensure the netCDF products are CF compliant so all users can open/read the data with standard netCDF applications. The IPT will work with the NCEI POC to meet CF compliance requirements and provide sufficient documentation for users. The data provider representative from the IPT must submit sample data and documentation to the NCEI POC for review and feedback no later than the Test Readiness Review (TRR).

# 6  Cost of Archive

For any project proposing the archive of data, NCEI will work with you to determine a cost estimate for establishing the archive processes and for maintaining those processes over time. NCEI understands that research to operations efforts reflected in SPSRB project plans are normally funded by the NESDIS office producing the product, and these funds support initial development costs and not long term maintenance costs, but these longer term costs will typically be estimated to help NCEI better assess the full costs associated with archiving any new data.  The NCEI Data Stewardship Division is finalizing common cost estimate models for the use of archive resources. Project leads should contact their NCEI POC as soon as possible for cost guidance so that archive costs can be included in project budgets.

If archive costs are not identified after a project plan is approved for execution, the project leads will identify unfunded archive requirements when they update their project plan during the Annual Review for Satellite Product Development process.