Levels of Service

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Date: 20 September 2018

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Change Log

1. Introduction

The National Snow and Ice Data Center (NSIDC) has a defined a Levels of Service (LoS) model for the data sets that it distributes and supports. Within this model, "service" refers to the spectrum of data management activities and outputs provided by NSIDC in support of the data it manages. The data set LoS model is an expression of the kinds of services that are provided and the level at which each service is provided. The LoS model enables NSIDC to appropriately tailor services based on the nature of the data set, the needs of the data producer and user communities, and the requirements and/or available resources of the funding agency.

The goals of the Levels of Service model are to:
- Describe requirements for data stewardship activities performed to publish, distribute and support data sets at various Levels of Service.
- Communicate the data stewardship and support expectations associated with a LoS to data producers and data users.

2. Levels of Service Categories

The NSIDC model defines five LoS categories. Table 1 describes the data management activities provided by NSIDC as well as the support and available resources that can be expected by data producers and data users.

Table 1: Levels of Service Data Management Activities

Data Verification	Documentation	Data Access	User Support
Basic			
• File sizes, checksums, and number of files have been verified. • File names are descriptive and consistent. • File format and structure are appropriate for expected data use.	• Data discovery and usage metadata are available. • Links are provided to supporting documentation describing data content and methodologies. • Data set landing page and data citation, including	• Data access through HTTPS.	• Assistance with data access. • Assistance with basic data usage questions and referral to external documentation or data producer for more complex questions.

• Key metadata— geospatial, temporal, and science variable information—are provided and well-defined. • Data can be accessed via all supported methods. • Data are backed up and versioned.	Digital Object Identifier (DOI), are available.		
Standard			
All *Basic* services plus: • Data usability has been verified in select data analysis tools.	**All *Basic* services plus:** • User guide is provided with the following content: detailed descriptions of science variables, geospatial and temporal information, and data quality.	**All *Basic* services plus:** • Advanced data access and customization services (subsetting, reformatting, and/or reprojection) may be available for select data.	**All *Basic* services plus:** • Assistance with data usage questions. • Guidance on use of data in select data analysis tools.
Comprehensive			
All *Standard* services plus: • Data usability has been verified in available customization services.	**All *Standard* services plus:** • Comprehensive user guide is provided with the following content: detailed descriptions of science variables, geospatial and temporal information, data quality, and data methodologies.	**All *Standard* services plus:** • Advanced data access and customization services are typically available.	**All *Standard* services plus:** • Assistance with complex data usage and methodologies questions. • Guidance on use of data customization services for select data.
No Documentation			
• File sizes, checksums, and number of files may be verified. • File names may be reviewed. • Data are backed up and versioned.	• Readme file or web content may be created.	• Data access through HTTPS which may be restricted to select users.	• Assistance with data access. • Referral to external documentation or data producer.
No Data Access			[*]Data sets archived by NSIDC
• File sizes, checksums, and number of files have been verified.[*] • File names have been reviewed.[*] • Data are backed up and versioned.[*]	• Collection-level metadata record is created or maintained. • User guide is preserved and accessible.[*]	• None.[*] • Web link to externally distributed data.	• Referral to NSIDC documentation, external documentation, or data producer.

Table 2 describes the rationale for determining which LoS category to apply to a data set as well as the benefits achieved by the category.

Table 2: Levels of Service Applicability and Benefits

Used For	Benefits
Basic	
• Data sets that will be used by a limited, expert user community. • Data sets that will have limited visibility and applicability to science research (e.g., raw instrument data).	• <u>Support and stewardship</u>: basic support and stewardship with a cost-controlled approach to staff knowledge and resources. • <u>Data usability</u>: basic user support, curated documentation for data use. • <u>Provenance and preservation</u>: stable data storage, verification of file integrity, availability of documentation, proper data citation and versioning practices.
Standard	
• Data sets that will be used by a targeted, fairly expert user community. • Data sets that will have moderate visibility and applicability to science research (e.g., regional airborne or ground-based data sets). • Data sets previously at *Comprehensive* that are no longer being processed and/or updated.	• <u>Support and stewardship</u>: relatively high level of support and stewardship with a moderate level of investment in staff knowledge and resources. • <u>Data usability</u>: high level of user support, high level of curated documentation, verification of data usability. • <u>Provenance and preservation</u>: stable data storage, verification of file integrity, availability of documentation, proper data citation and versioning practices.
Comprehensive	
• Data sets that will be used by a broad user community spanning experts to non-experts. • Data sets that will have high visibility and broad applicability to science research (e.g., global satellite data sets).	• <u>Support and stewardship</u>: highest level of support and stewardship resulting from a high level of investment in staff knowledge and resources. • <u>Data usability</u>: availability of data visualization and/or customization services, highest level of user support, collecting user feedback through proactive support approach, highest level of curated documentation, verification of data usability. • <u>Provenance and preservation</u>: stable data storage, verification of file integrity, availability of documentation, proper data citation and versioning practices.
No documentation	
• Preliminary data sets from a mission or project with restricted data access. • Data sets archived for provenance as part of a Long Term Archival package.	• <u>Support and stewardship</u>: data archive and access without data usage support • <u>Provenance and preservation</u>: stable data storage, verification of file integrity.
No data access	
• Data sets not archived at NSIDC but with relevance to NSIDC data (e.g., brokered data). • Previously distributed data sets (e.g., old versions, retired data).	• <u>Provenance and preservation</u>: stable data storage, verification of file integrity, availability of documentation, proper data citation and versioning practices.

2.1 Levels of Service Category States

An ***Early Release*** state is an optional, temporary state which enables NSIDC to publish a data set at a lower LoS category prior to achieving all of the requirements of the targeted LoS category. NSIDC utilizes *Early Release* when there is a requirement or rationale for publishing the data set

under an expedited timeline. Data sets can be *Early Released* at the *Basic* or *Standard* LoS categories.

3. Communicating Levels of Service

The NSIDC LoS model assists in establishing data stewardship and support expectations for data producers publishing data at NSIDC, as well as the data user community.

3.1 Data producer

During the assignment of a data set to NSIDC, whether through the NSIDC Data Accession Process or designation by a funding agency, NSIDC collaborates with the data producer and funding agency to identify the appropriate LoS. NSIDC works with the data producer to understand the characteristics of the data set as well as the intended research applications and user communities in order to inform the LoS. NSIDC also utilizes the LoS model to define expectations with the data producer regarding what services NSIDC will provide and what will be required from the data producer in order to achieve the targeted LoS.

3.2 Data user community

The primary means through which NSIDC communicates the designated LoS to the data user community is on data set landing pages. The landing pages display an icon indicating the LoS category for data sets that have a specific LoS designation. These icons link to supporting text that explains the data verification, documentation and user support the user can expect for that data set.

Figure 1: Example of a data set landing page displaying the LoS icon (green dial)
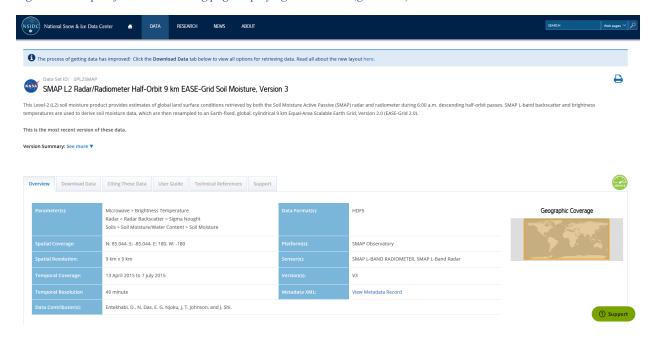

Figure 2: Supporting text accessed from the icon on the landing page (Figure 1), describing the three main LoS categories

BASIC SERVICE

Includes all **Basic** services:

DATA

- File sizes, checksums, and number of files have been verified.
- File names are descriptive and consistent.
- File format and structure are appropriate for expected data use.
- Key metadata—geospatial, temporal, and science variable information—are provided and well-defined.
- Data can be accessed via all supported methods.
- Data are backed up and versioned.

DOCUMENTATION

- Data discovery and usage metadata are available.
- Links are provided to supporting documentation describing data content and methodologies.
- Data set landing page and data citation, including Digital Object Identifier (DOI), are available.

USER SUPPORT

- Assistance with data access.
- Assistance with basic data usage questions and referral to external documentation or data provider for more complex questions.

STANDARD SERVICE

Includes all **Basic** services **plus**:

DATA

- Data usability has been verified in select data analysis tools.

DOCUMENTATION

- User guide is provided with the following content: detailed descriptions of science variables, geospatial and temporal information, and data quality.

USER SUPPORT

- Assistance with data usage questions.
- Guidance on use of data in select data analysis tools.

COMPREHENSIVE SERVICE

Includes all **Standard** services **plus**:

DATA

- Data customization services—subsetting, reformatting, and/or reprojection—are available for select data.

DOCUMENTATION

- Comprehensive user guide is provided with the following content: detailed descriptions of science variables, geospatial and temporal information, data quality, and data methodologies.

USER SUPPORT

- Assistance with complex data usage and methodologies questions.
- Guidance on use of data customization services for select data.

Appendix A: Related Documentation

NSIDC Data Policy Documents
NSIDC Data Solicitation and Acceptance
NSIDC DAAC Data Acceptance Plan