CDDIS Services to the ILRS

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Abstract:

The Crustal Dynamics Data Information System (CDDIS) is one of twelve NASA Earth Observing System Data and Information System (EOSDIS) Distributed Active Archive Centers (DAAC) and supports the space geodesy and geodynamics community through the International Association of Geodesy (IAG) services, which includes the International Laser Ranging Service (ILRS). As an EOSDIS DAAC, the CDDIS is required to meet best archival practices including the Findability, Accessibility, Interoperability, and Reuse (FAIR) Guiding Principles for scientific data management and stewardship which ultimately serves data and product providers and users. These best practices and artifacts built to support them are not always visible to users although utilizing them ultimately benefits the community, for example with citing with Digital Object Identifiers (DOIs) to ensure traceability and that proper credit is given to the data and product creators. To address this gap, this poster steps through the CDDIS's ingest, quality control, and archive systems that ensure data is searchable, citable, and credit is given to providers. The CDDIS will then review ESDIS tools for exploration of the CDDIS archive. Beginning next year, the CDDIS will start migrating to the cloud to support open science.

Findable – DOIs, Landing Pages

- Provides consistency and enables formal citations of data, products, and other digital objects to ensure proper credit to data and derived product providers, archive/data centers and analysis centers, and beyond
- CDDIS has published 120 DOIs representing the four techniques it supports
- DOIs and their Landing Pages are created for new data/products and updated when there are changes, including to format or documentation for a data/product

Accessible – HTTPs

- Https allows for human and machine accessibility
- Free and open
- Requires login to inform users about changes to data and/or services

Interoperable – GCMD, UMM

- Controlled keyword vocabulary using the Global Change Master Directory (GCMD)
- Structured metadata in the Unified Metadata Model (UMM)

Reusable – DOI, Landing Pages (see Findable)

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Ingest – Provider to Archive

Provider

User

CDDIS Ingest Processing
- Quality Check
- Metadata Extraction

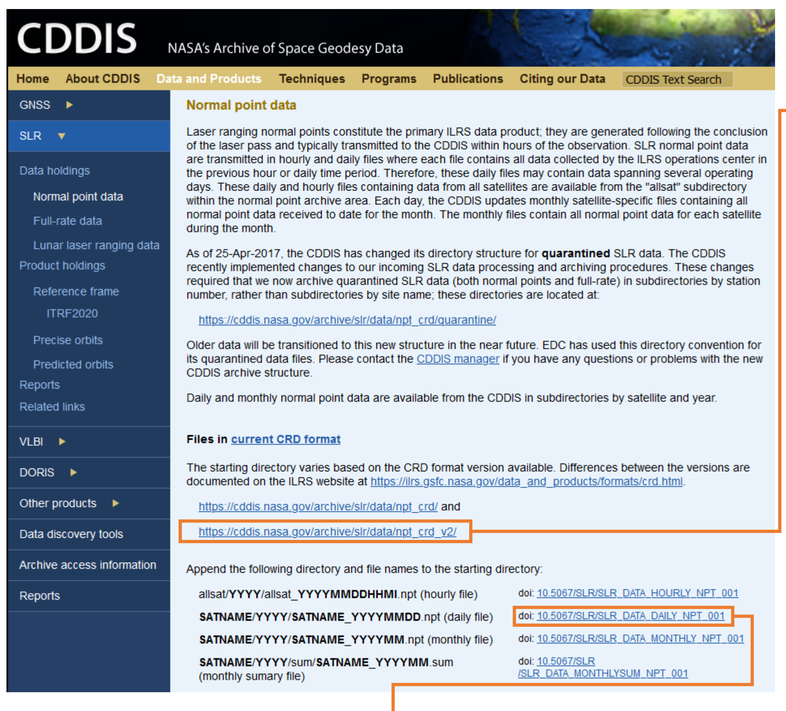
CDDIS Database and Outputs
- DB
- Reports and Files Created Internally

Common Metadata Repository
- Granule
- Collection

Access – Archive to User

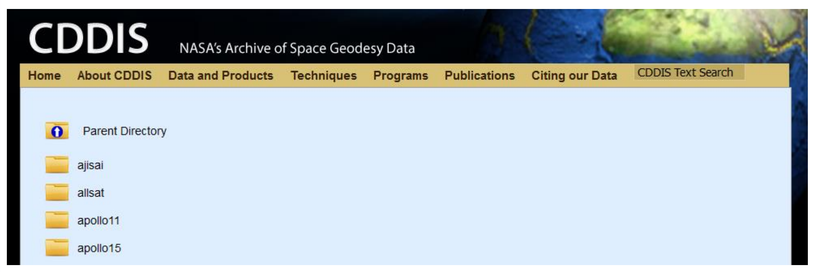
CDDIS Website

https://cddis.nasa.gov/Data_and_Derived_Products/SLR/Normal_point_data.html



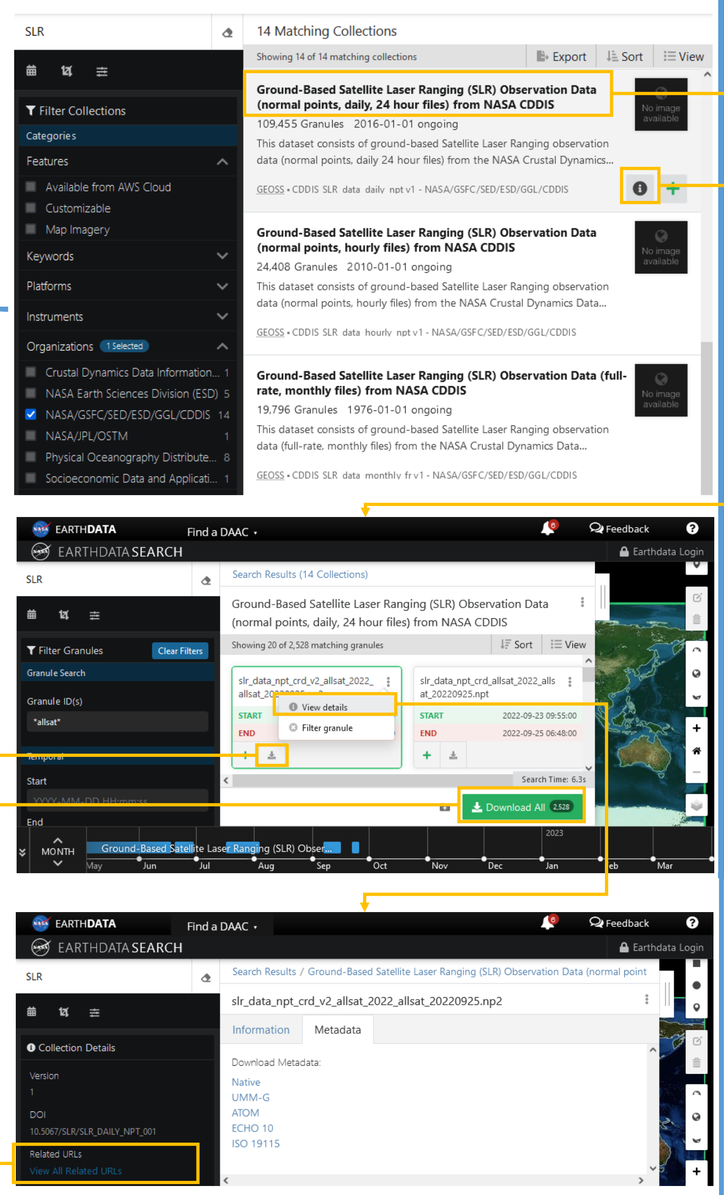
CDDIS Archive

https://cddis.nasa.gov/archive/slr/data/npt_crd_v2/

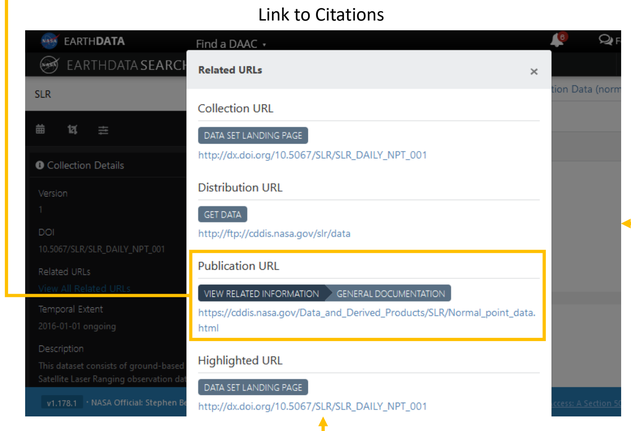


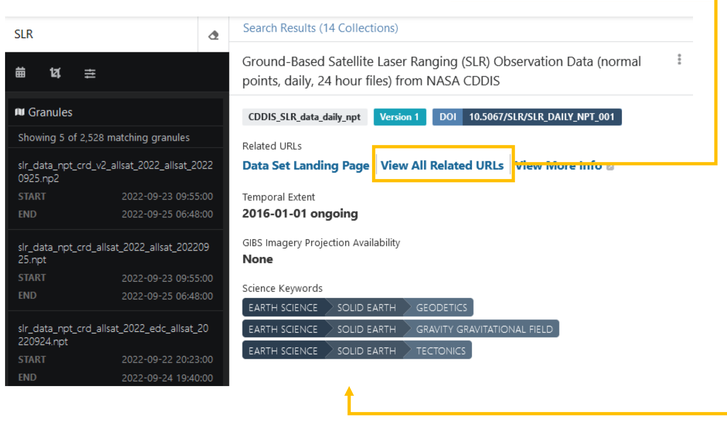
Earthdata Search

https://search.earthdata.nasa.gov/

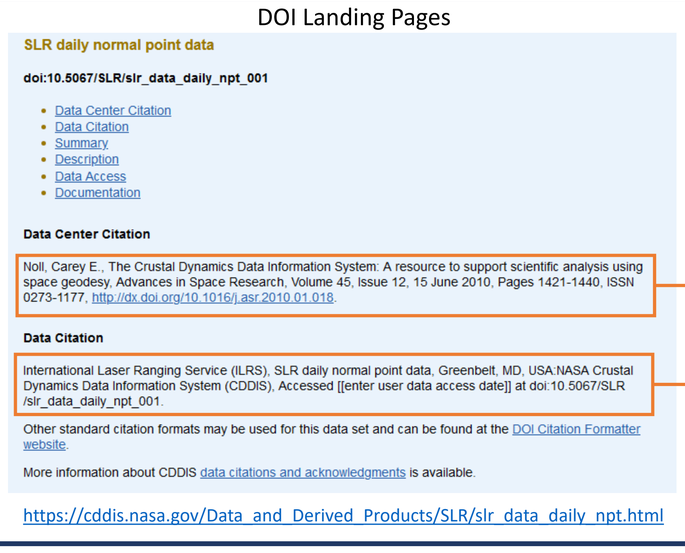


Link to Citations





DOI Landing Pages



https://cddis.nasa.gov/Data_and_Derived_Products/SLR/slr_data_daily_npt.html

Papers/Publications

Citation – User Publications

Data and Product Ingest and Archive

User Access to Archive/Data Discovery

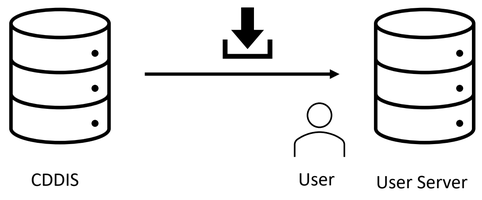
Access to Data and DOI via CDDIS Website

Data Discovery via Earthdata Search (which leads to the CDDIS Website

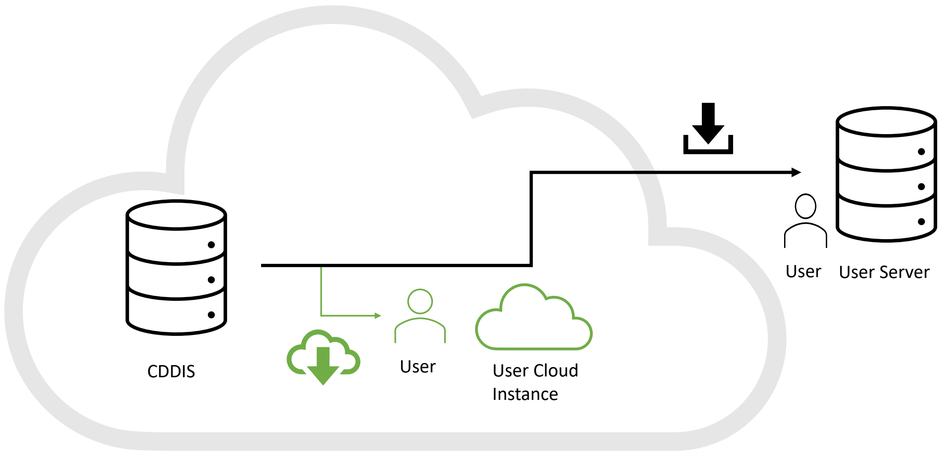
Future Work - Transition to the Cloud

As an EOSDIS DAAC, the CDDIS will begin transitioning from a NASA on-site archive to a cloud-based system. Currently, users need to download data from the CDDIS onto their computers or servers which requires, at times, substantial resources and support from additional infrastructure needs.

Current Interaction



Future Options



With the migration to the cloud, users will still have the option to download data to their servers but will also be able to create instances in the cloud (similar to having a virtual machine) to download and perform their work without needing additional hardware on-site.

Changes that my impact users include:

- HTTPs and API access to data will be available but FTP will not
- Ability to have a subscription download which downloads files based on when a collection was last updated
- More through and new QC implementations for files to fit format specifications to ensure usability for new users

References

Ramapriyan, H. and Behnke, J., "NASA's Earth Observing System Data and Information System (EOSDIS) and FAIR - A Self-Assessment", vol. 2020, 2020.

Blevins, S., Tyahla, L., Michael, B., and Noll, C., "DOIs for geodetic data and derived product collections at the NASA GSFC CDDIS", AGU 2020, Online, Dec. 7-11.