NSIDC DAAC
ICESat-2 Data Products, Tools and Services

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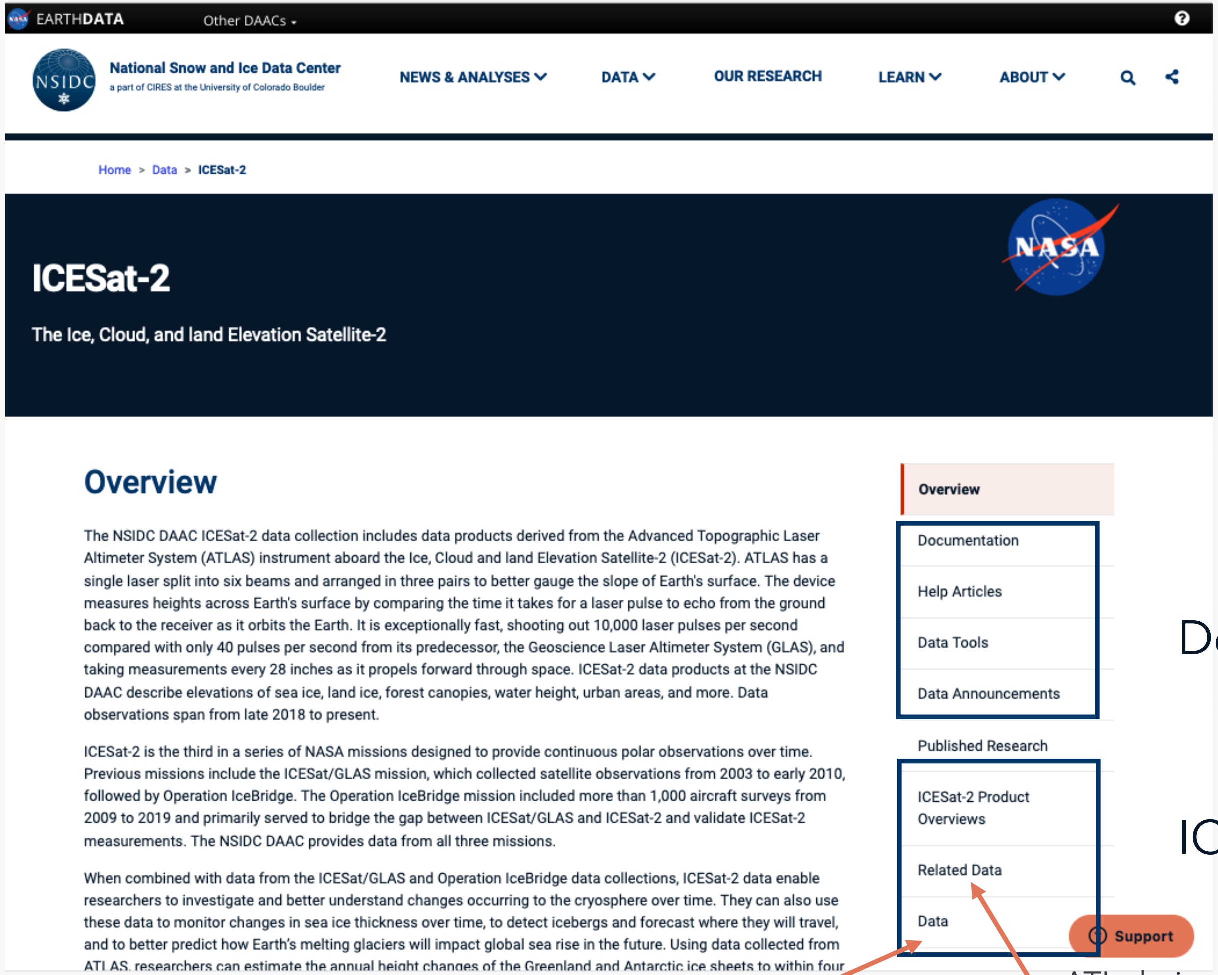
03 June 2024 – ICESat-2 Applications Workshop

NSIDC DAAC ICESat-2 DATA COLLECTION WEBSITE



ⓘ https://nsidc.org/data/icesat-2

Documents, tools and services

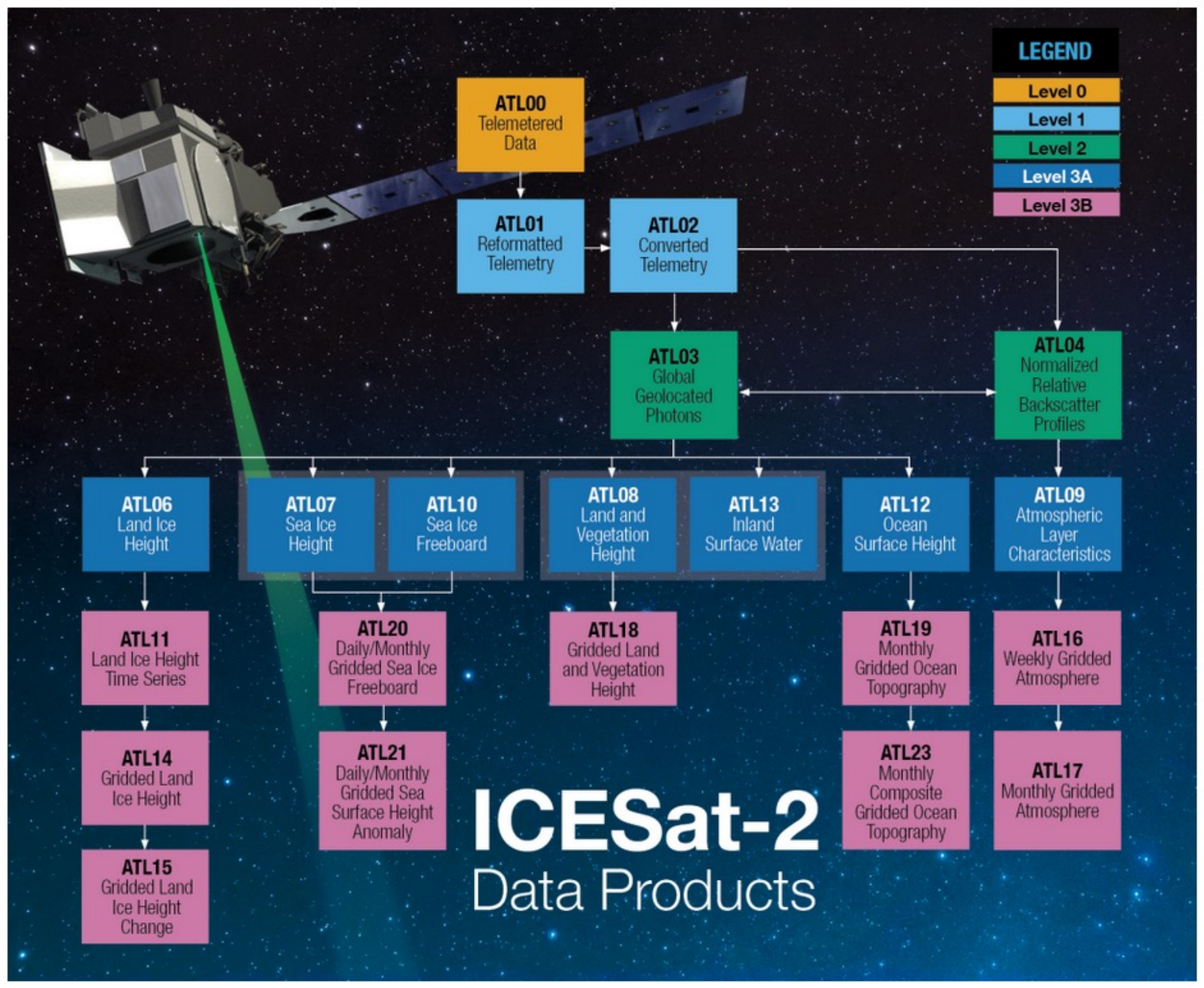
ICESat-2 data

ICESat-2 ATLAS mission funded data sets

ATL derived data sets
Calibration/Validation
ROSES-19/-20 funded

ICESat-2 Standard Data Sets

ⓘ https://nsidc.org/data/icesat-2/products



- Mission data sets (ATL02-ATL23)
  - Also available in the cloud
  - ~45 day latency
- Quick look data sets:
  - ATL07QL, ATL08QL, ATL09QL, ATL10QL, ATL13QL
  - ~3 day latency
- Future data sets:
  - ATL24 – bathymetry
  - ATL25 – lake ice
- Future quick look data sets:
  - ATL03QL, ATL20QL, ATL25QL
- Release 7 expected in spring 2025 with cloud-optimized HDF5 files for ATL03, and potentially others

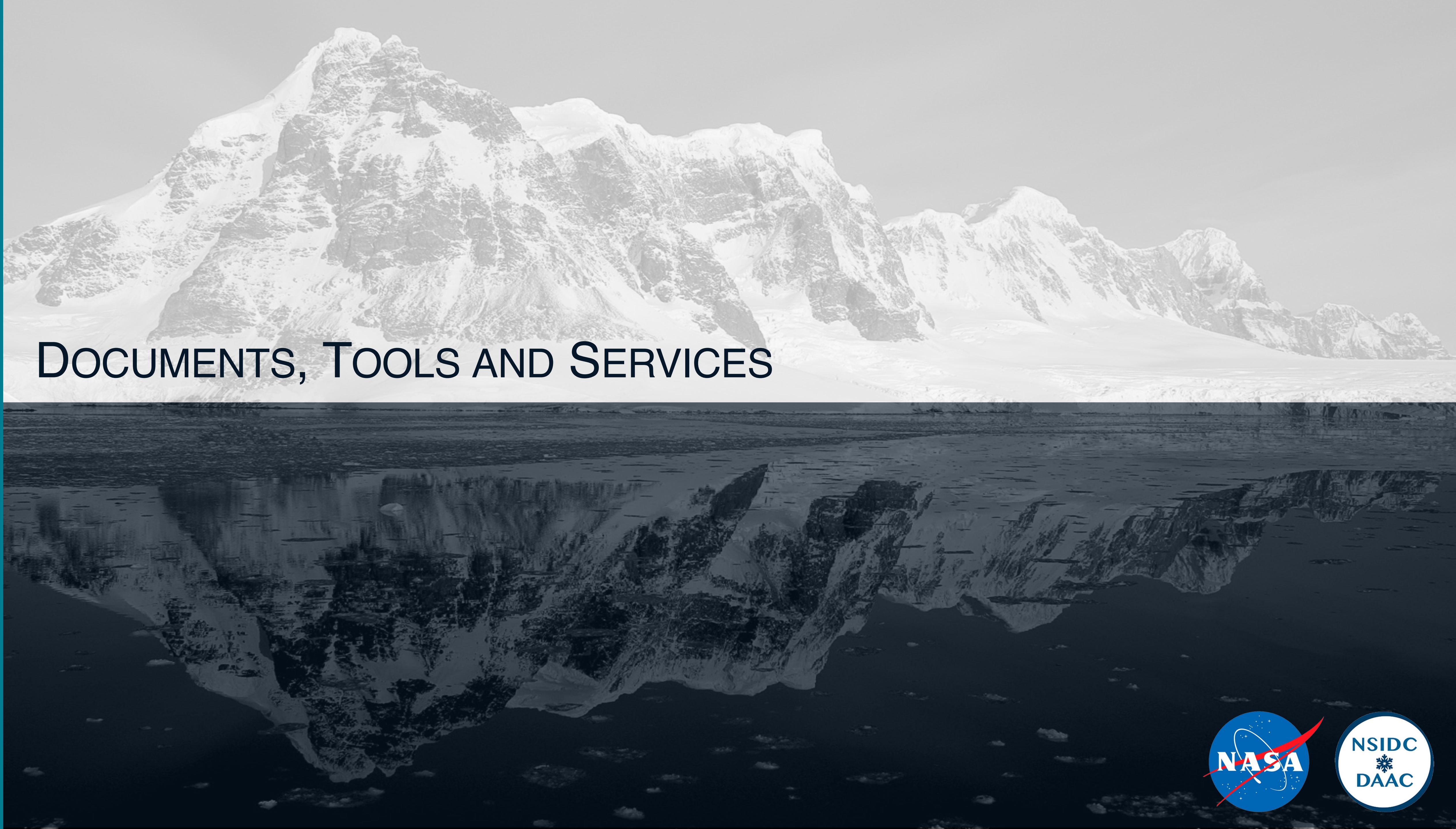
ICESat-2 Related Data Sets

ⓘ https://nsidc.org/data/icesat-2/related-data

- Overview
- Documentation
- Help Articles
- Data Tools
- Data Announcements
- Published Research
- ICESat-2 Product Overviews
- **Related Data**
- Data

- ICESat-2 Related Products derived from ATL products
  - Grounding Zone for Antarctic Ice Shelves
  - Along-Track Sea Ice Thickness
  - Gridded Sea Ice Thickness
  - 30 m Along-Track Boreal Aboveground Biomass Density
  - Sea Ice Melt Pond Characteristics from the Density-Dimension Algorithm
- Calibration/Validation data – GL2022 campaign
  - LVIS Georeferenced Imagery

Documents, Tools and Services



Documents, Tools, Services

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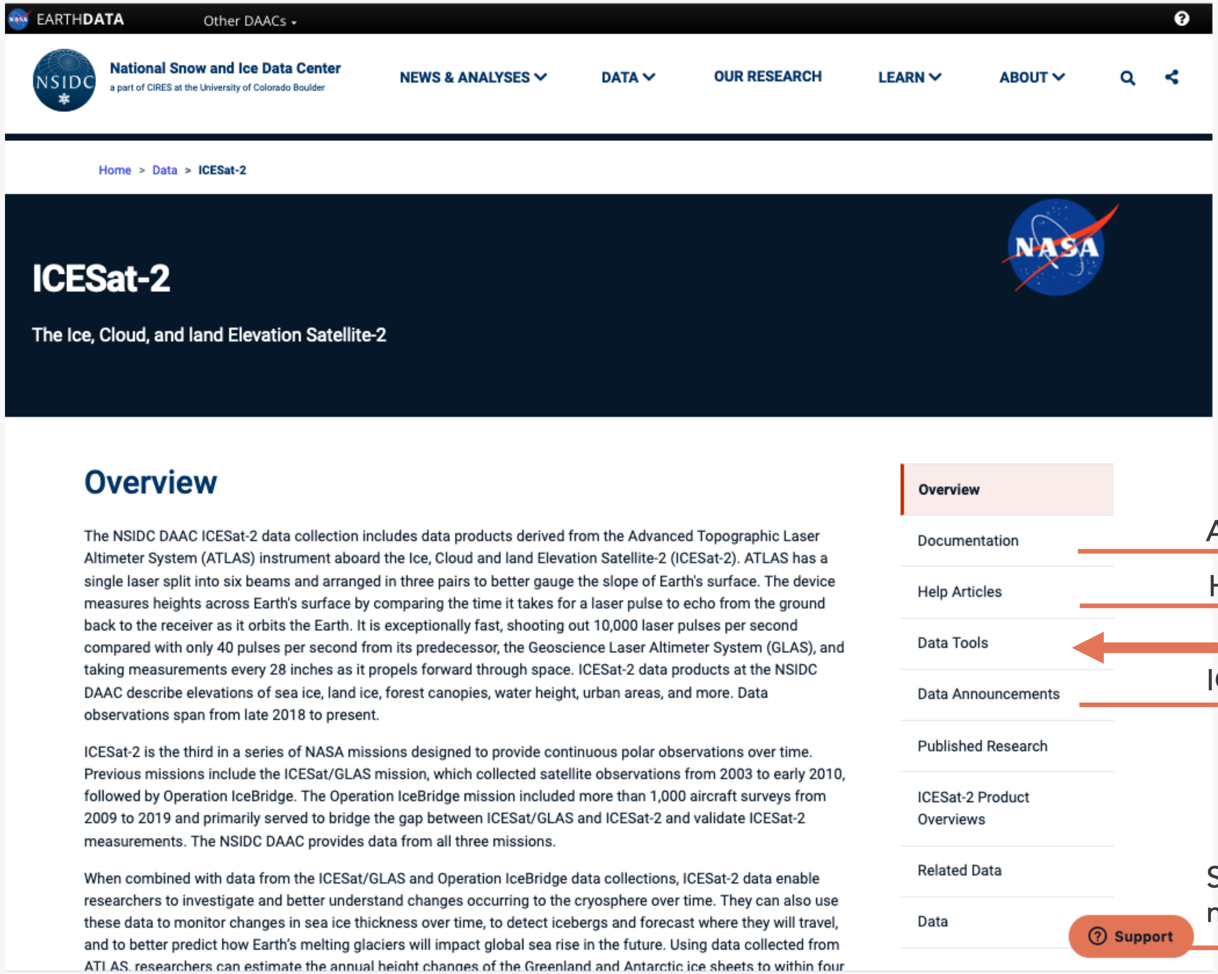


ATBDs and other data related documents

Help articles specific to ICESat-2

ICESat-2 related data announcements

Support from the User Support Team
nsidc@nsidc.org

Various data access tools and customization services support different users and workflows

- Overview
- Documentation
- Help Articles
- **Data Tools**
- Data Announcements
- Published Research
- ICESat-2 Product Overviews
- Related Data
- Data

ⓘ https://nsidc.org/data/icesat-2/tools

Graphic User Interface (GUI):

- NSIDC Data Access Tool
- Earthdata Search*
- OpenAltimetry (more later)

Programmatic:

- Earthaccess (python library)
- NSIDC Data Access Tool (python script)
- NSIDC API*

All provide search and access to data

** = Allow customization of the data*

Note: We also link to externally developed tools, e.g.:

- icepyx, OpenAltimetry, PhoREALI, PhotonLabeler

INSTRUCTIONAL GUIDES ARE AVAILABLE FOR ALL TOOLS AND SERVICES

ⓘ https://nsidc.org/data/icesat-2/tools

Link to tool/service

Tags to distinguish tool function

Link to instructional guide

Data Access Tool

Search & Discover | Get Data

Filter files before downloading based on date, spatial area, or file name. Choose from various download options, such as Python script. Export bounding boxes as a GeoJSON.

Filter and order from a data set web page

Type: Web Application **Last updated:** July 2020

NASA Earthdata Search

Visualize | Search & Discover | Get Data

Search and order data from all NASA DAACs using spatial and temporal filters in a map interface. Reformatting, reprojecting, and subsetting options are available for some data sets.

How to search, order, and customize data with NASA Earthdata Search

Type: Web Application

Customized Programmatic Data Access Service

Get Data | Customize

Programmatically request selected data products through our API. This tool is valuable for selecting just the parameters you need from big data sets. Apply spatial and temporal filters, subsetting, reformatting, and reprojection.

Programmatic Data Access Guide

Type: Service **Last updated:** February 2021

Expand for Details

NASA Earthdata Cloud (AWS S3)

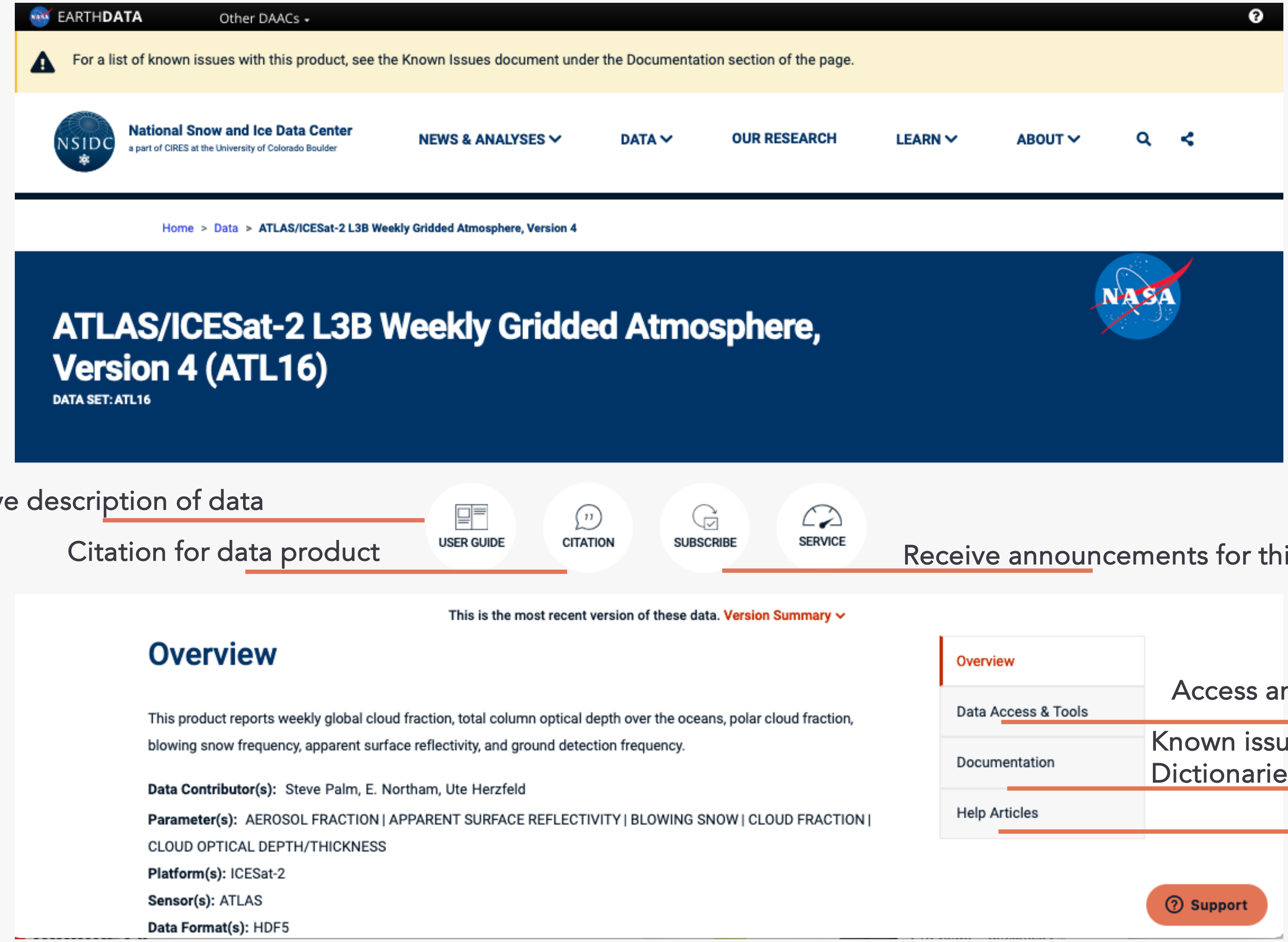
Get Data

Access data directly from the NASA Earthdata Cloud via Amazon Web Services Simple Storage Service (AWS S3). This access option is only available when working within the us-west-2 region and requires additional AWS S3 credentials.

NASA Earthdata Cloud Data Access Guide
AWS S3 Credentials

ICESat-2 data product specific landing pages
Documents, Tools, Services

ⓘ https://nsidc.org/data/ATL16



Comprehensive description of data

Citation for data product

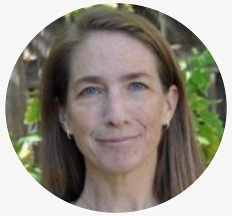
Receive announcements for this data product

Access and tools for the data product

Known issues, ATBDs, Data Dictionaries, User Guides

Help articles for the data product

User Services



- Diane Fritz– NSIDC DAAC end user support for ICESat-2 data
- Helpdesk at nsidc@nsidc.org – real people read and answer emails sent to this address!
- User Services representatives help people with data discovery, access, and use. We reach out to subject matter experts when necessary.
- Support for data accession and publication process – review new data products with the goal of making data as accessible to as many users as possible.

NSIDC Data Tutorials – GitHub repository

Notebooks to access and analyze ICESat-2 data

- https://github.com/NSIDC-Data-Tutorials
- ICESat-2_Cloud_Access
- ICESat-2_MODIS_Arctic_Sea_Ice

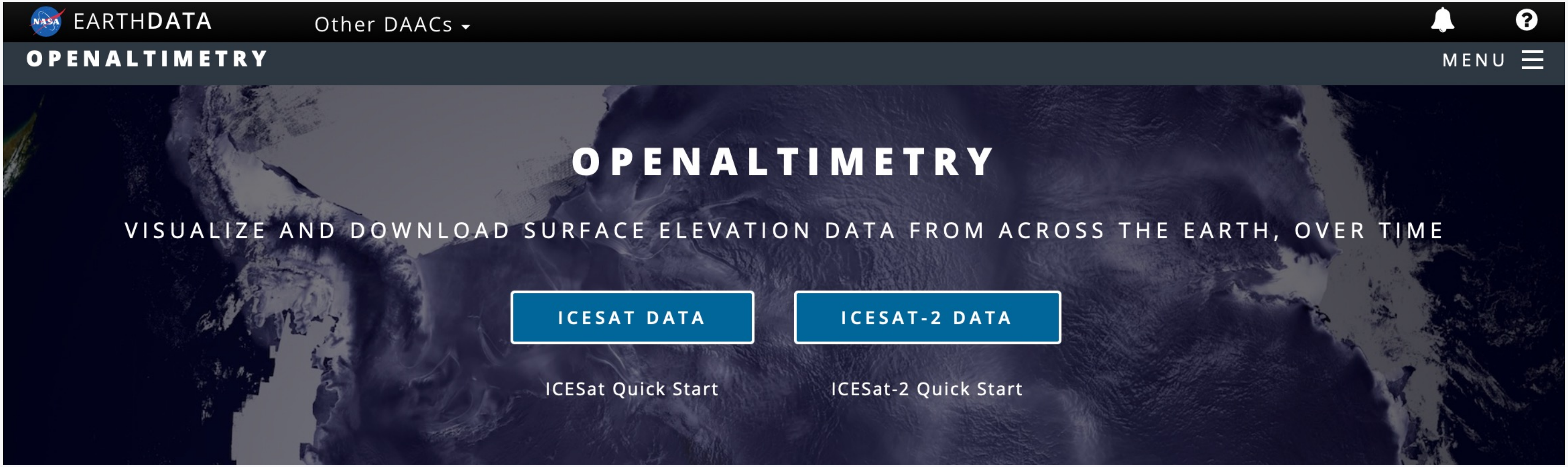
Access to NASA earth science data: *earthaccess*

- https://github.com/nsidc/earthaccess
- Python library for data discovery and access
- Discover and access on-prem and cloud-hosted data with ease – AWS authentication made simpler
- Discover and access data across NASA DAACs (not just NSIDC)

Coming Attraction!: OpenAltimetry

ⓘ https://openaltimetry.earthdatacloud.nasa.gov

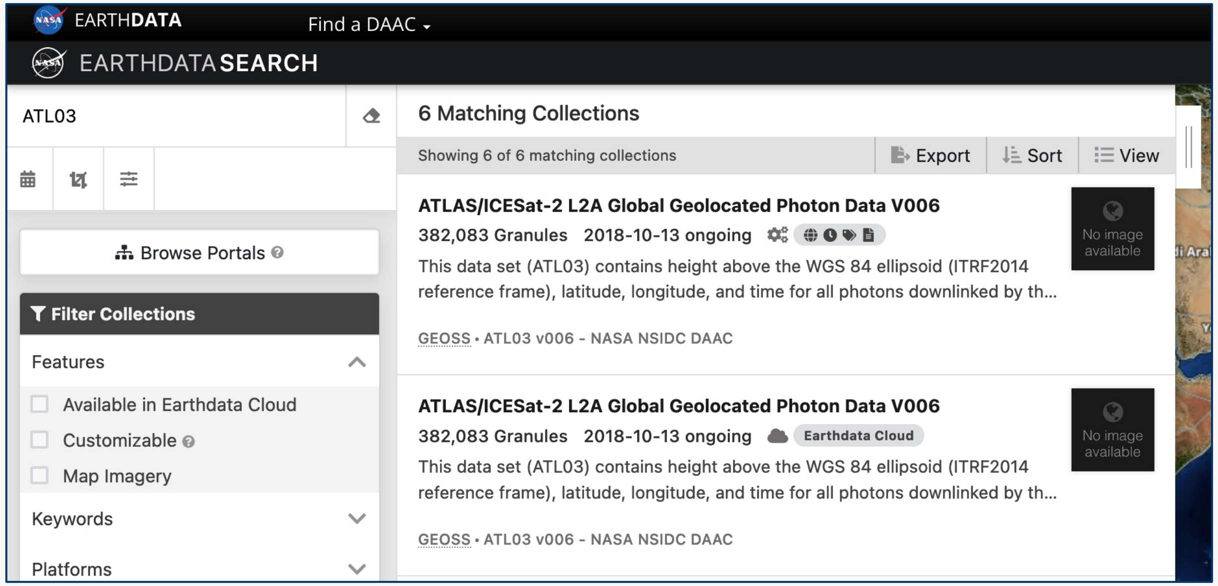
Mikala Beig will present a demo later this morning



TRANSITION OF DATA AND TOOLS TO EARTHDATA CLOUD AND CLOUD RESOURCES

Moving Data and Services to Earthdata Cloud

- All NSIDC DAAC data currently archived in our on-premise storage system be moved to Earthdata Cloud (AWS us-west-2 region) by 2026
- ICESat-2 ATL data products available in Earthdata Cloud since Fall 2022
- Currently two access options for ATL products
- Ongoing work to re-establish some services in cloud – prioritizing user needs
  - Determined by metrics assessment, UWG, user/science team input



NSIDC DAAC and ESDIS Hosted Webinars

- NASA Earthdata webinar: “Demystifying the Cloud”
  - August 2, 2023
  - Recording also available on YouTube
- NASA Earthdata webinar: “Community Developed Resources - Explore the Openscapes Earthdata Cloud Cookbook”
  - February 28, 2024
  - Featuring *earthaccess* – python library to search, download or stream NASA Earth science data with just a few lines of code

NASA Openscapes Champions Program

- Mentorship and professional development opportunity for research teams interested in open science and migrating their workflow to the cloud
- https://openscapes.org, https://nasa-openscapes.github.io

https://www.earthdata.nasa.gov/learn/webinars-and-tutorials/
https://www.youtube.com/watch?v=ILYLKxte44E

Educational Resources

- NSIDC DAAC general resources on finding data in the cloud, downloading cloud data, and working in the cloud:
  - NSIDC Earthdata Cloud Access Guide
    https://nsidc.org/data/user-resources/help-center/nasa-earthdata-cloud-data-access-guide
  - NSIDC GitHub tutorials: https://github.com/nsidc/NSIDC-Data-Tutorials/

- ICESat-2 specific resources:
  - CryoCloud Introduction to NASA Earthdata Cloud and ICESat-2
  - CryoCloud NASA Earthdata Cloud and data access using earthaccess and icepyx
    https://book.cryointhecloud.com/tutorials/NASA-Earthdata-Cloud-Access/

- NASA Openscapes
  - Earthdata Cloud Cookbook: https://nasa-openscapes.github.io/earthdata-cloud-cookbook/
  - Includes resources on learning how to work with data in the cloud, tutorials, workshops, etc.