



## NASA Earthdata Search

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Presented by Paul Moth



National Snow and Ice Data Center  
*Advancing Knowledge of Earth's frozen regions*



University of Colorado **Boulder**

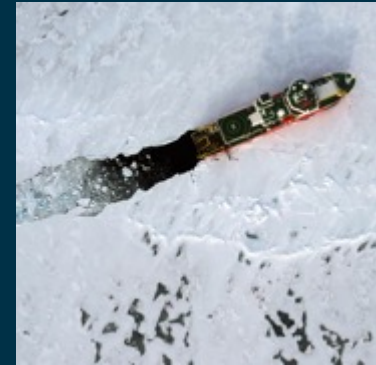
# National Snow and Ice Data Center



manages and distributes  
scientific data



researches the cryosphere and  
data science



supports data users



supports local and Traditional  
Knowledge



provides tools for data users



informs the public about the  
cryosphere

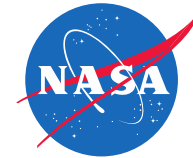
# Affiliations



Cooperative Institute for Research in Environmental Science



# Sponsors



# NASA Earthdata Search - Overview

- <https://search.earthdata.nasa.gov/>
- Earthdata login required to order data
  - <https://urs.earthdata.nasa.gov/>
- This demo does not require a personal Earthdata login, but hopefully I'll convince you to get one

# NASA Earthdata Search – Overview

- Search for data sets by keyword and spatial and temporal filters
- Visualize data sets
- Order data
- Customize data, including re-formatting, re-projection, & subsetting (parameter & spatial)

# Earthdata Search – Overview

The screenshot displays the Earthdata Search web application. On the left, a sidebar contains navigation links: 'EARTHDATA Search UAT', 'Browse Collections', 'Features' (with sub-options: Map Imagery, Near Real Time, Customizable), 'Keywords', 'Platforms', 'Instruments', 'Organizations', 'Projects', and 'Processing levels'. The main area features a map of the North Atlantic Ocean and surrounding landmasses. Above the map is a search bar with the placeholder text 'Type any topic, collection, or place name'. Below the map, a section titled '5,153 Matching Collections' shows search results. The first result is 'Global Maps of Atmospheric Nitrogen Deposition, 1860, 1993, and 2050', which includes a thumbnail image and a description of the data set. The second result is 'Test ESDT with 24 character ShortName V001', which includes a thumbnail image and a description of the data set. The interface also includes a 'Find a DAAC' dropdown menu at the top left and a 'Sort by: Relevance' dropdown menu below the map.

**Left:** Search options including features, keywords, platforms, instruments, organizations, projects, and processing levels

**Main:** Search for data. Set spatial and temporal filters. Change projections. Add basic overlays for visualization.

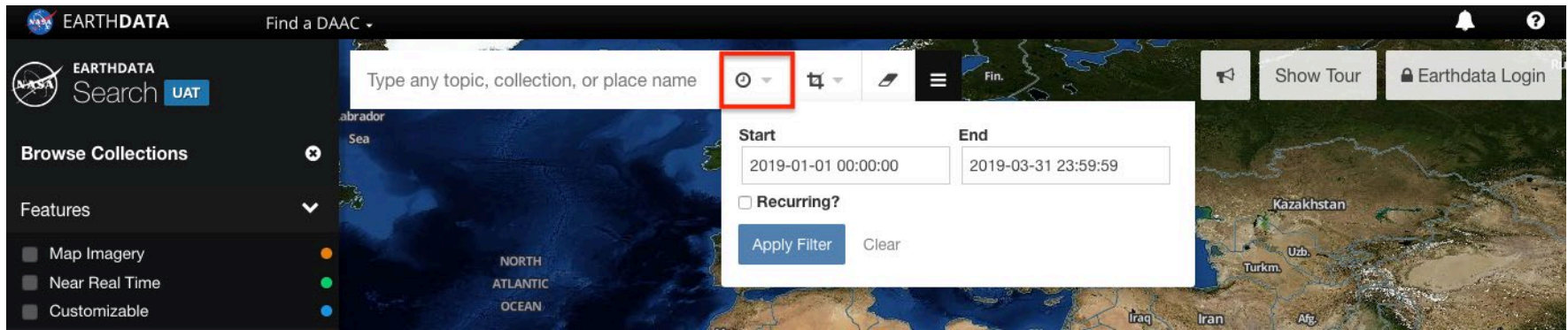
**Bottom:** Search results with summary information and relevant badges (customizable, map imagery, NRT). Re-size panel. Add collections to your project.



# NASA Earthdata Search – Available data sets of interest

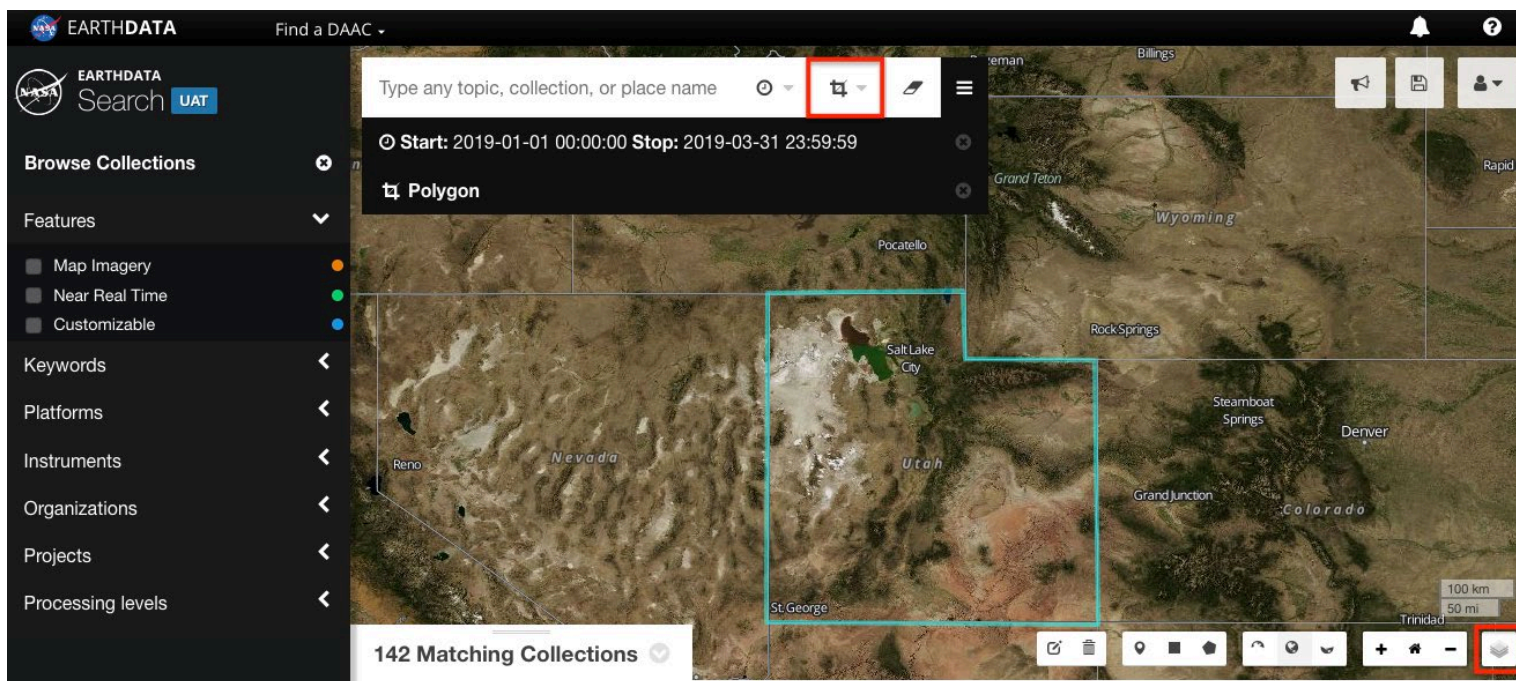
- All SMAP data sets
- AMSR-E/2 soil moisture, SWE, & brightness temperature
- MODIS snow cover, NDVI, & evapotranspiration
- VIIRS snow cover, albedo, & NDVI,
- ICESat-2...eventually
- Many, many more

# NASA Earthdata Search – Apply temporal filter



- Let's look for data!
- Choose 2019-01-01 in the Start date
- Choose 2019-03-31 in the End date
- Check the Recurring box to receive these same dates over different, continuous years
- Click Apply Filter

# NASA Earthdata Search – Apply spatial filter



- Let's get filter out more data!
- Zoom in to area of interest
- Click the 'Borders and Roads' layer
- Draw a polygon around the state of Utah
- Other spatial filter options include uploading a .shp or .kmz, entering grid coordinates (UTM, MODIS grids), and points

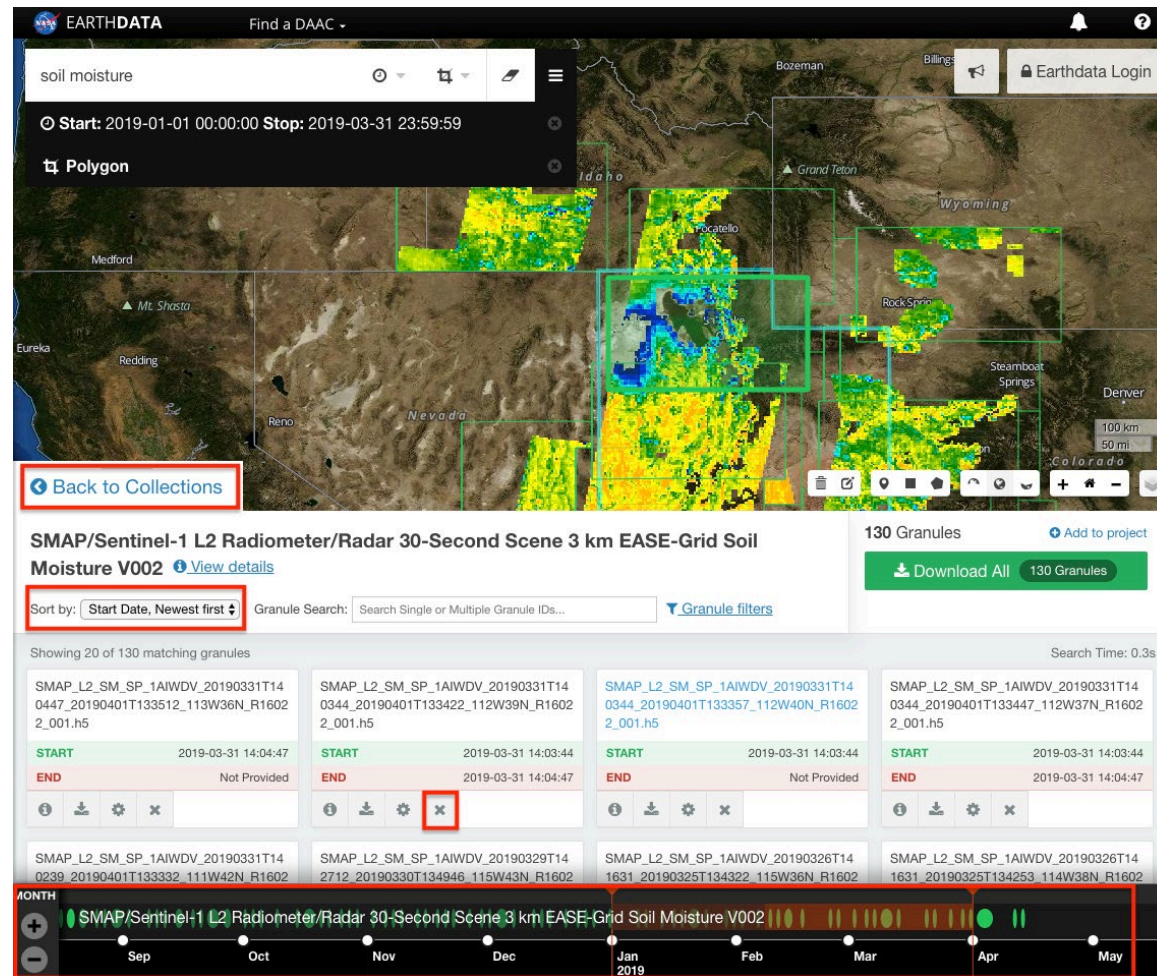
# NASA Earthdata Search - Discover data

The screenshot displays the NASA Earthdata Search web application. The search bar at the top contains the text "soil moisture". Below the search bar, the date range is set to "Start: 2019-01-01 00:00:00 Stop: 2019-03-31 23:59:59" and the polygon tool is selected. The left sidebar shows the "Features" section with "Map Imagery" and "Customizable" checked. The main map area shows a satellite image of the western United States with a red polygon highlighting a region in Utah. Below the map, it indicates "23 Matching Collections". The first collection, "SMAP/Sentinel-1 L2 Radiometer/Radar 30-Second Scene 3 km EASE-Grid Soil Moisture V002", is highlighted with a red box. It shows 130 granules, is ongoing, and includes a "MAP IMAGERY" button. The second collection, "SMAP L2 Radiometer Half-Orbit 36 km EASE-Grid Soil Moisture V005", is also visible below it.

- Search by science theme and enter "soil moisture" in the search box
- Choose Map Imagery and Customization
- Click on SMAP/Sentinel-1 L2 Radiometer/Radar 30-Second Scene 3 km EASE-Grid Soil Moisture V002 to view granules



# NASA Earthdata Search - Discover data



- Remove individual granules by clicking the x
- Sort by date
- View data with map imagery
- View temporal coverage of granules on the adjustable time scale
- Click on 'Back to Collections' to add more data

# NASA Earthdata Search - Add data to project

The screenshot shows the NASA Earthdata Search interface. On the left is a sidebar with navigation options: Browse Collections, Features (Map Imagery, Near Real Time, Customizable), Keywords, Platforms, Instruments, Organizations, Projects, and Processing levels. The main area displays a search for 'soil moisture' with filters for Start (2019-01-01 00:00:00) and Stop (2019-03-31 23:59:59), and a Polygon selection tool. A map of the Western United States shows a red polygon highlighting a region in Utah. Below the map, it says '23 Matching Collections'. The top right corner has a 'My Project' button highlighted with a red box. The bottom right corner of the collection list has a red box around a minus sign icon.

Find a DAAC

soil moisture

Start: 2019-01-01 00:00:00 Stop: 2019-03-31 23:59:59

Polygon

My Project

Show Tour

Earthdata Login

23 Matching Collections


Sort by: Relevance Only include collections with granules Include non-EOSDIS collections

You have 1 collection in your current Project


SMAP/Sentinel-1 L2 Radiometer/Radar 30-Second Scene 3 km EASE-Grid Soil Moisture V002

130 Granules • 2015-03-31 ongoing • This Level-2 (L2) soil moisture product provides estimates of land surface conditions retrieved by both the Soil Moisture Active Passive (SMAP) radiometer during 6:00 a.m. descending and 6:00 p.m. ascending half-orbit passes and the Sentinel-1A and -1B radar. SMAP L-band brightne...

MAP IMAGERY CUSTOMIZABLE SPL2SMAP\_5 v002 - NASA NSIDC DAAC

- We want all the SMAP/Sentinel data that meets our filter, let's add it to a project by clicking 
- Add any other data of interest to your project
- Once finished adding data, click on My Project

# NASA Earthdata Search – Login

 **EARTHDATA LOGIN**

**Username** ⓘ


**Password**

☒ **Stay signed in (this is a private workstation)**

ⓘ I don't remember my username

ⓘ I don't remember my password

ⓘ Help



**Why must I register?**

The Earthdata Login provides a single mechanism for user registration and profile management for all EOSDIS system components (DAACs, Tools, Services). Your Earthdata login also helps the EOSDIS program better understand the usage of EOSDIS services to improve user experience through customization of tools and improvement of services. EOSDIS data are openly available to all and free of charge except where governed by international agreements.

- Username: usfs\_2019
- Password: UsFs\_2019
- Earthdata login required to order data
- <https://urs.earthdata.nasa.gov/>

# NASA Earthdata Search – Customize and order data

The screenshot shows the NASA Earthdata Search interface. On the left, a sidebar displays a project named 'Untitled Project' containing 125 granules and 1 collection, totaling 636.0 MB. Below this, the specific data collection is listed: 'SMAP/Sentinel-1 L2 Radiometer/Radar 30-Second Scene 3 km EASE-Grid Soil Moisture V002', also with 125 granules and an estimated size of 636.0 MB. An 'Edit Options' gear icon is visible next to the collection name. The main panel on the right is the 'Edit Options' dialog for this collection. It features a 'Select Data Access Method' section with three radio buttons: 'Direct Download', 'Stage for Delivery', and 'Customize' (which is selected). Below this is an 'Email Address' input field and a checkbox for 'Include Metadata and Processing History'. A 'Reformat Output (Optional)' section contains an 'Output File Format' dropdown menu currently set to 'GeoTIFF'. At the bottom of the dialog, there is a green 'DOWNLOAD DATA' button and a status bar indicating 'Collection 1 of 1' with a 'Done' button.

- Choose Edit Options and Customize for each data set in your project
- Choose preferred format, projection and band/parameter subsets
- Choose Bounding Box to get data clipped to pre-defined coordinates
- Other delivery options include Direct Download (native data) and Stage for Delivery (HTTPS)
- Choose Done then Download Data

# NASA Earthdata Search – Order status

## Order Status

This page will automatically update as your orders are processed. The Order Status page can be accessed later by visiting <https://search.earthdata.nasa.gov/data/retrieve/8305455616> or the [Download Status and History](#) page.

## Customize Product

When the data for the following orders become available, links will be displayed below and sent to the email address you've provided.

### SMAP/Sentinel-1 L2 Radiometer/Radar 30-Second Scene 3 km EASE-Grid Soil Moisture V002

Complete

Your orders are done processing and are available for download.

1/1 orders complete (100.00%)

More Details ▼

Download Links ▲

Order 1/1 - Order ID: 5000000151125

<https://n5eil02u.ecs.nsidc.org/esir/5000000151125.html>

<https://n5eil02u.ecs.nsidc.org/esir/5000000151125.zip>

## Additional Resources and Documents

- **SMAP/Sentinel-1 L2 Radiometer/Radar 30-Second Scene 3 km EASE-Grid Soil Moisture V002**

<https://doi.org/10.5067/KE1CSVXMI95Y>



# NASA Earthdata Search – Order status email

## Status update for ECS data processing request 5000000151125

Your request is currently complete . Your request has completed processing. You may retrieve the results from the download URLs until 2019-05-02 08:49:28.818

Note from Client: To view the status of your request, please see:

<http://search.earthdata.nasa.gov/data/retrieve/8305455616>

The output of this request can be downloaded from the following URLs:

- <https://n5eil02u.ecs.nsidc.org/esir/5000000151125.html> (Listing of individual files)
- <https://n5eil02u.ecs.nsidc.org/esir/5000000151125.zip> (ZIP file containing all output files)

Please contact NSIDC User Services at [nsidc@nsidc.org](mailto:nsidc@nsidc.org) with any questions about this request. Be sure to reference the request ID 5000000151125 in any correspondence.



# NASA Earthdata Search – Programmatic access

- Programmatically access services with an API
  - <https://nsidc.org/support/how/how-do-i-programmatically-request-data-services>
- Programmatically access data without services but with filters
  - <https://nsidc.org/support/how/how-do-i-programmatically-access-data-spatial-temporal>

# Questions?

- Earthdata related questions: [https://search.earthdata.nasa.gov/contact\\_info](https://search.earthdata.nasa.gov/contact_info)
- NSIDC data related questions: [nsidc@nsidc.org](mailto:nsidc@nsidc.org)

