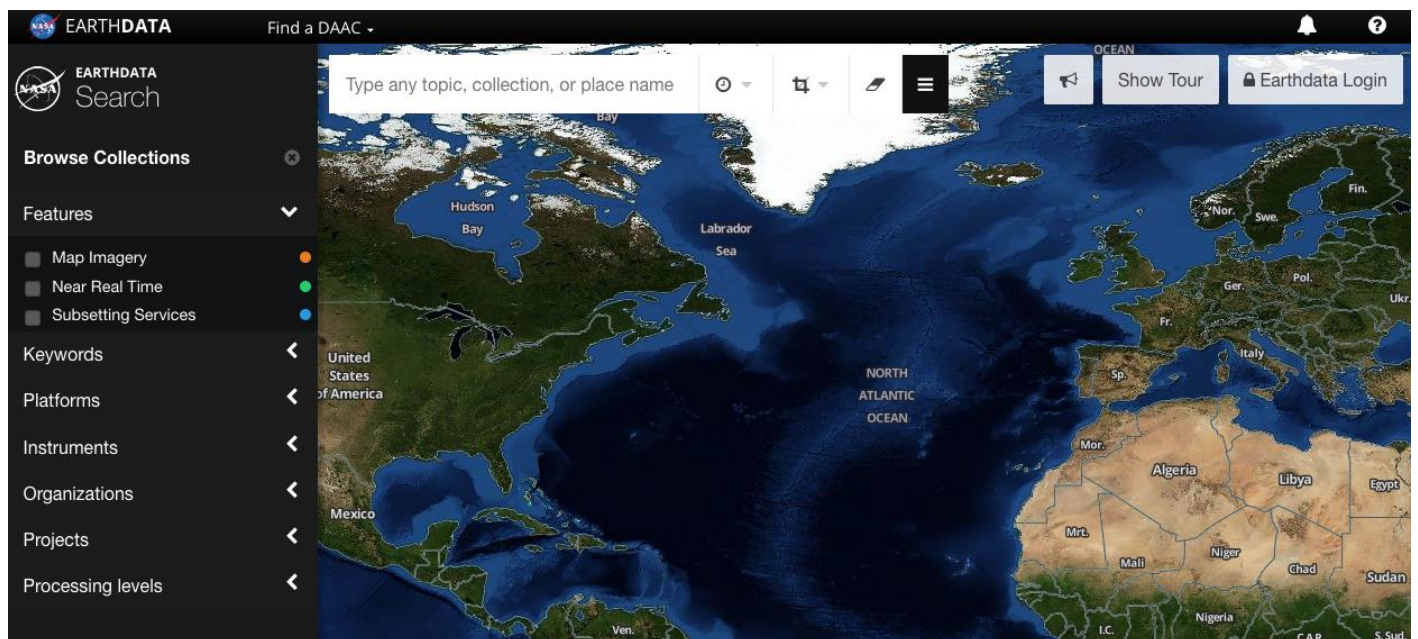


Search, Order and Customize NASA SMAP Data with NASA Earthdata Search

In this step-by-step tutorial, we will demonstrate how to search, order, and customize NASA Soil Moisture Active Passive, or SMAP data using the NASA Earthdata Search application. NASA Earthdata search provides an interactive map-based search environment where you can filter your results based on spatial and temporal constraints and perform numerous services on your data order, including re-formatting and spatial and parameter subsetting.

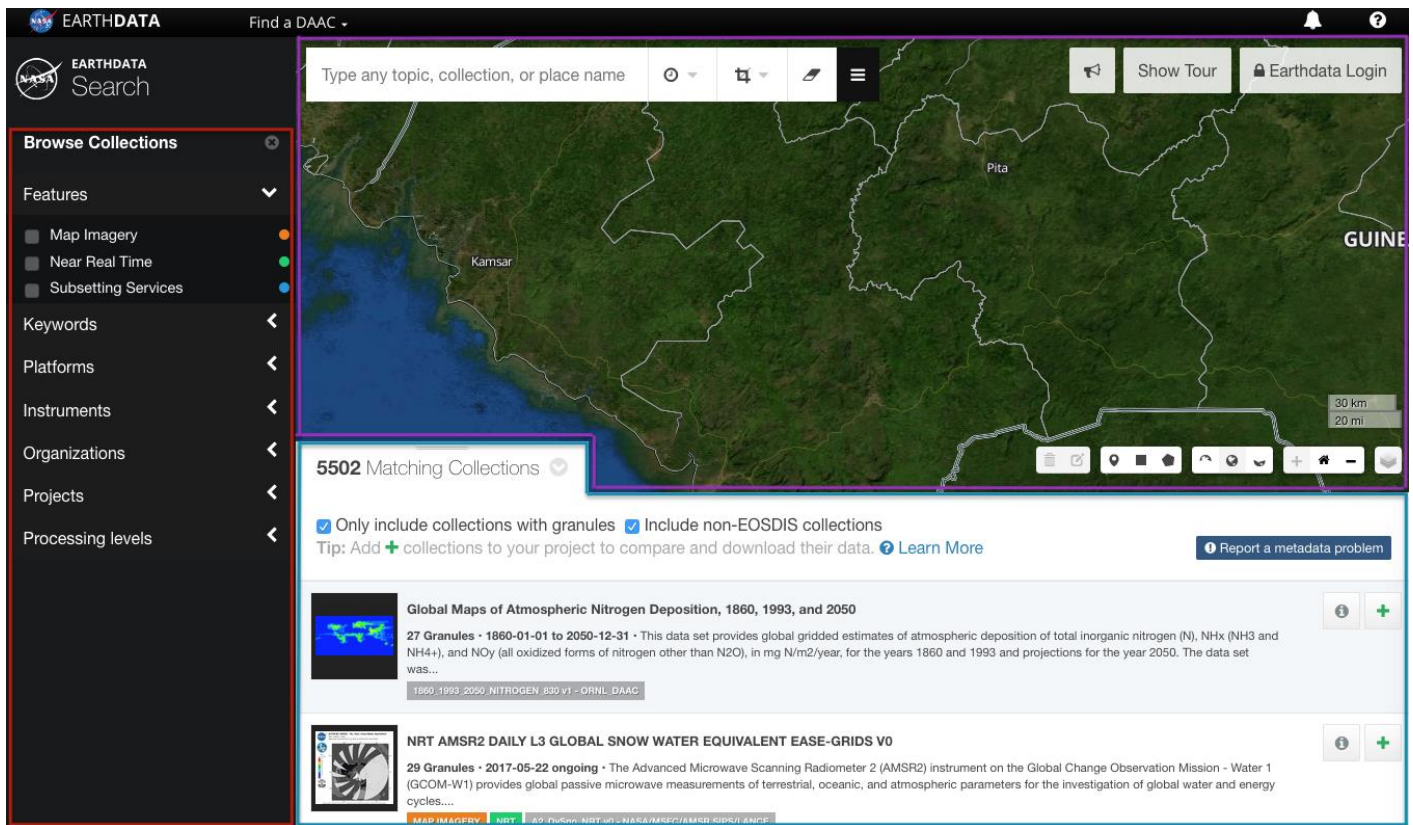
Step 1: First, go to the NASA Earthdata Search main page.

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



Note: For this demo we will leave the search box blank for now.

Step 2- Understanding Three Main Sections of Page.



Far Left - Faceted Search Options. (Section 1)

- Search by features of the data, including the ability to filter by sample map imagery, near real-time data, and subsetting services.
- Search based on science keywords, as well as instrument, organization associated with the data, etc.

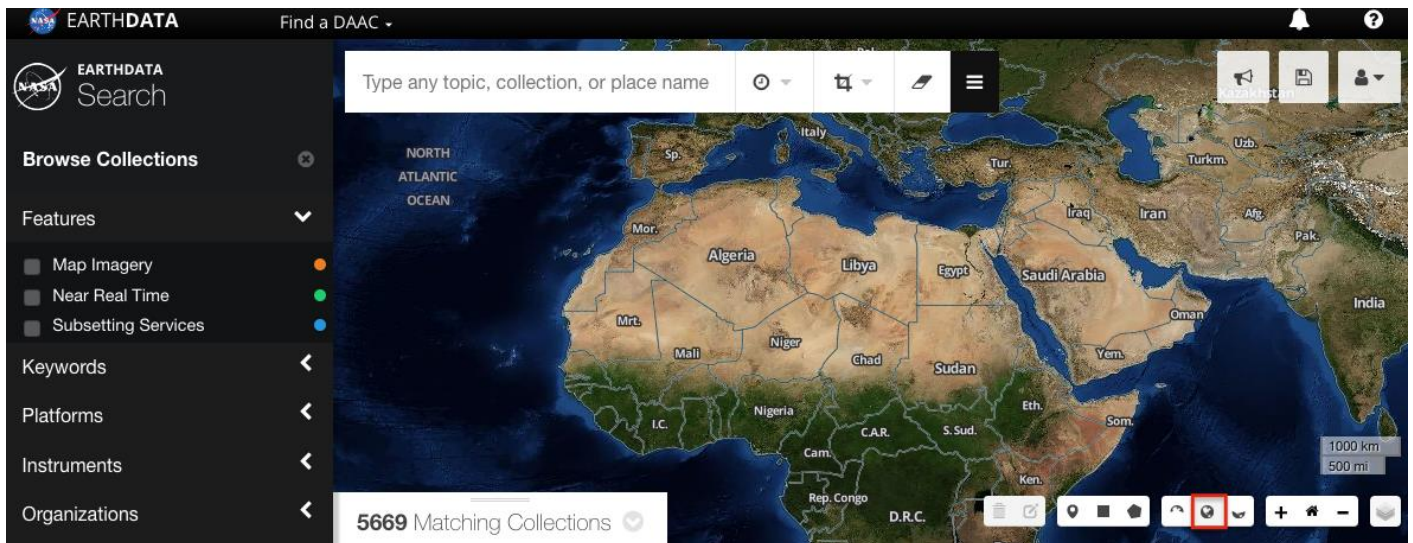
Bottom Panel - Lists the Collections that Match your Search Criteria (Section 2)

- This panel can be re-sized by clicking and dragging on the top of the 'Matching Collections' tab.

Main Panel - Global Map Displaying Search Results. (Section 3)

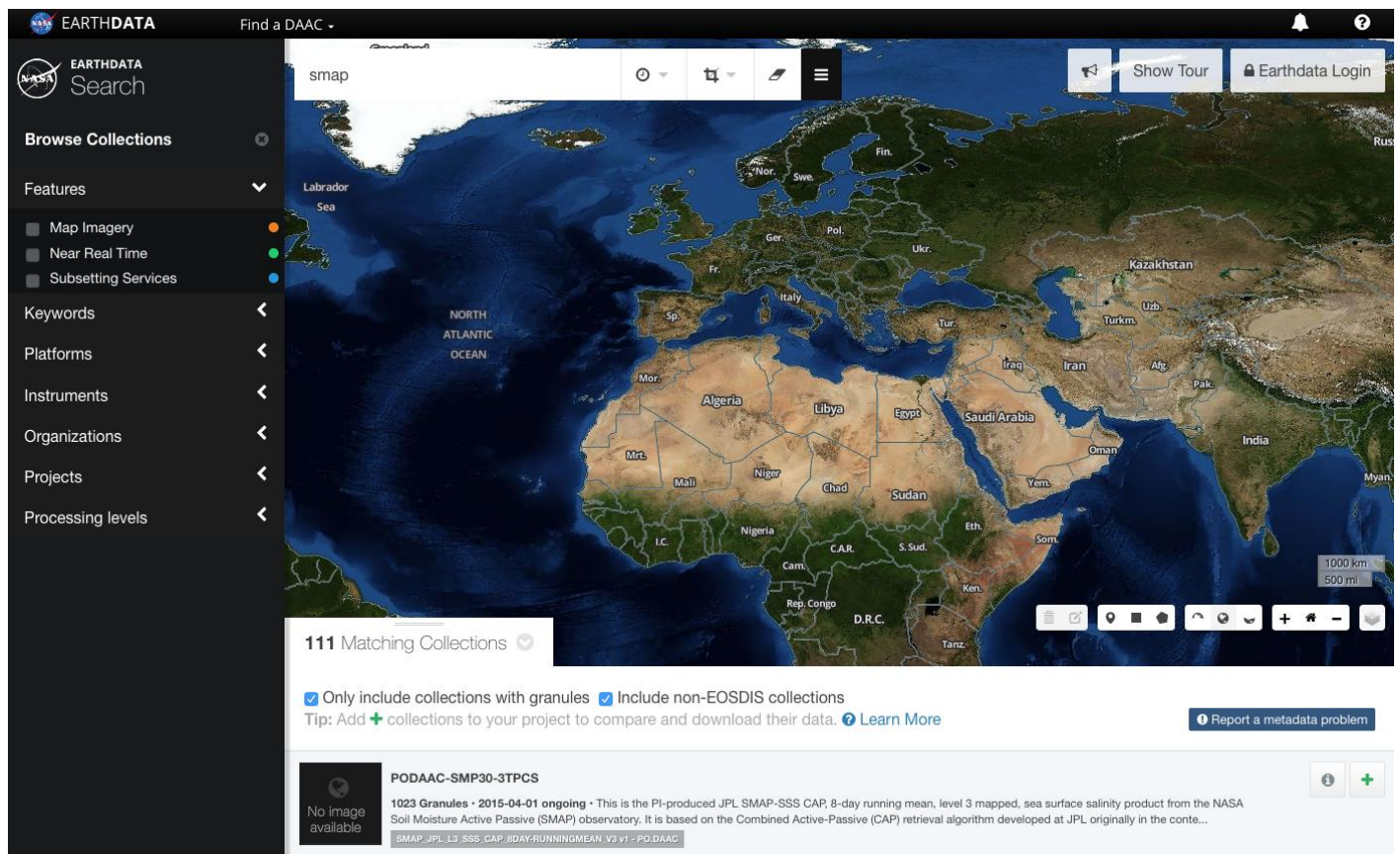
- Use your cursor to pan across the map.
- Zoom in and out using the plus (+) and minus (-) buttons on the far right.
- Choose your geographic projection, including North Polar Stereo View, South Polar Stereo View and Geographic.
- Apply spatial and temporal filters.
- Switch and add/remove baselayers.

Step 3: Click on the Geographic View (middle icon outlined below).

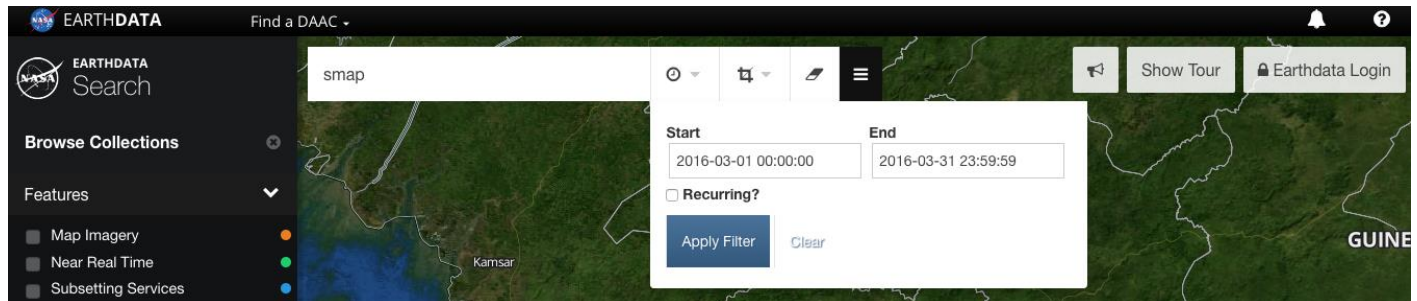


Step 4: Start your search by entering SMAP into the main search bar.

Tip: You will notice that the collection list has been automatically updated to show matching collections for SMAP.



Step 5: Refine your search by applying a temporal filter for March 2016.



Step 5a - Select 'Temporal' drop down.

Step 5b - Click on 'Start.'

Step 5c - Select March 1, 2016.

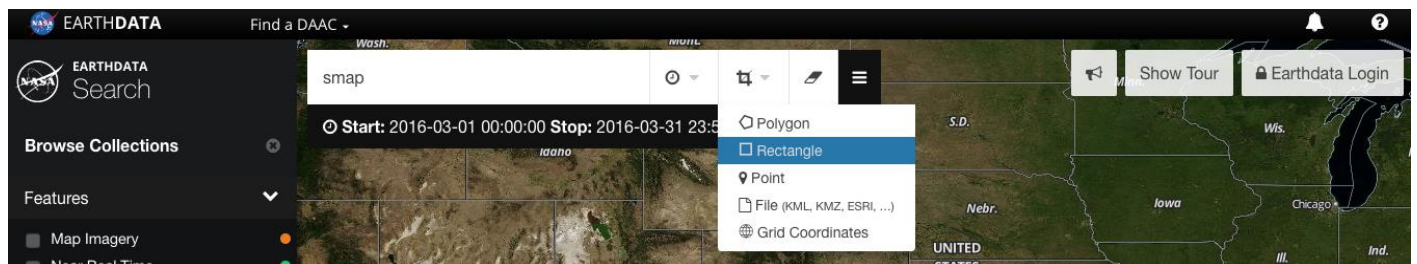
Step 5d - Select March 31, 2016 in the 'End' Box.

Step 5e - Click on 'Apply Filter.'

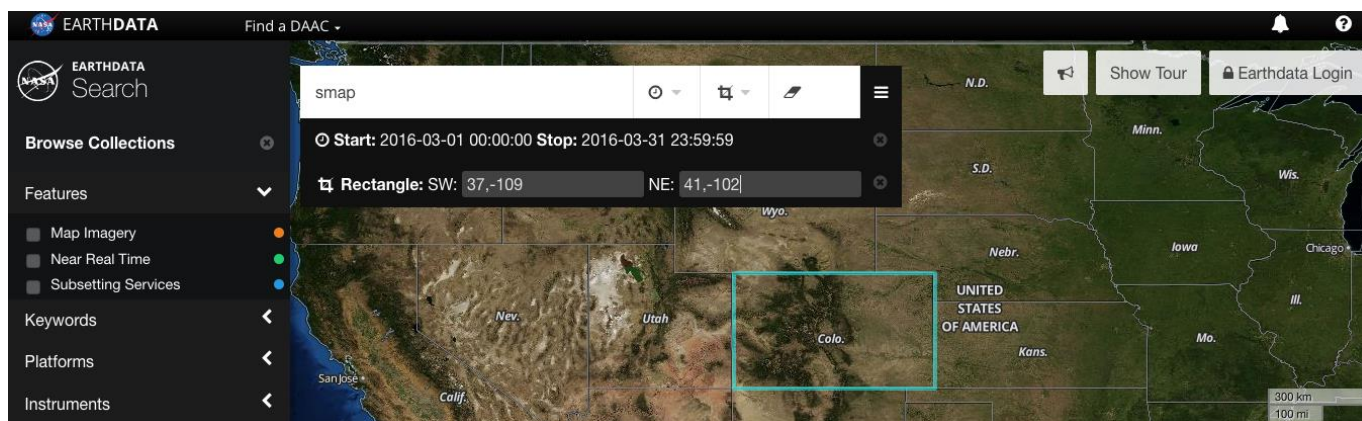
Tip: Notice that the collection list has changed yet again, and the filter is now displayed under the search bar.

Step 6 - Choose Spatial Filter.

Tips: There are several spatial filter options. Filter by drawing a polygon or rectangle over your geographic region of interest, select a point, or upload a polygon in KML or Shapefile format as your spatial constraint. You may also type the latitude/longitude coordinates for a point or polygon or grid coordinates for several different grids.



Step 6a - Select 'Rectangle' which results in a drawing tool to draw box on map.



Note: In this demo, we are interested in soil moisture over the state of Colorado.

Step 6b - Manually enter coordinate for the SW corner (37, -109) and NE corner (41, -102) into the rectangle bounding box.

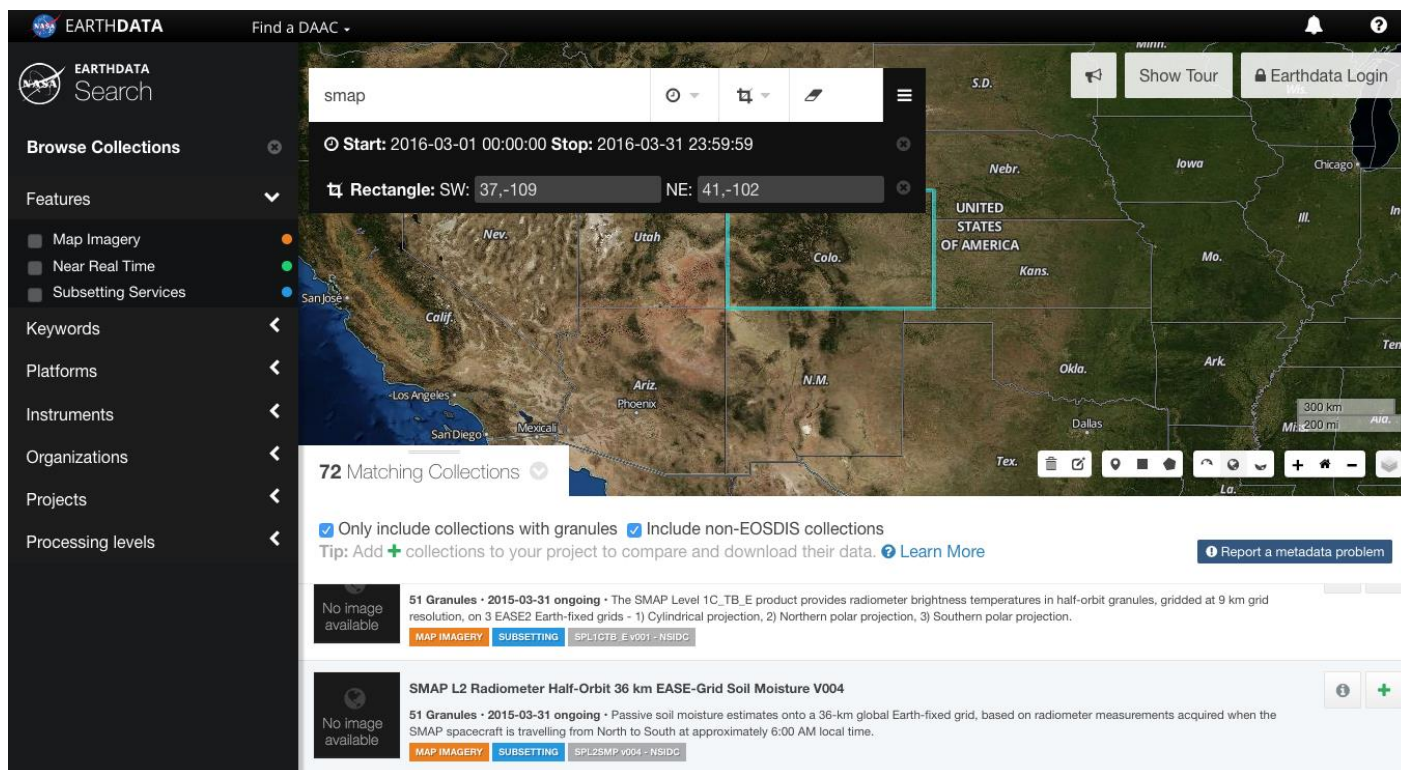
Step 6c – Click ‘Enter’ and note that the blue outline is now present over the selected bounding box, over Colorado.

Step 7- Select Data Product

Note: We are interested in the SMAP L2 Radiometer Half-Orbit 36km EASE-Grid Soil Moisture V004.

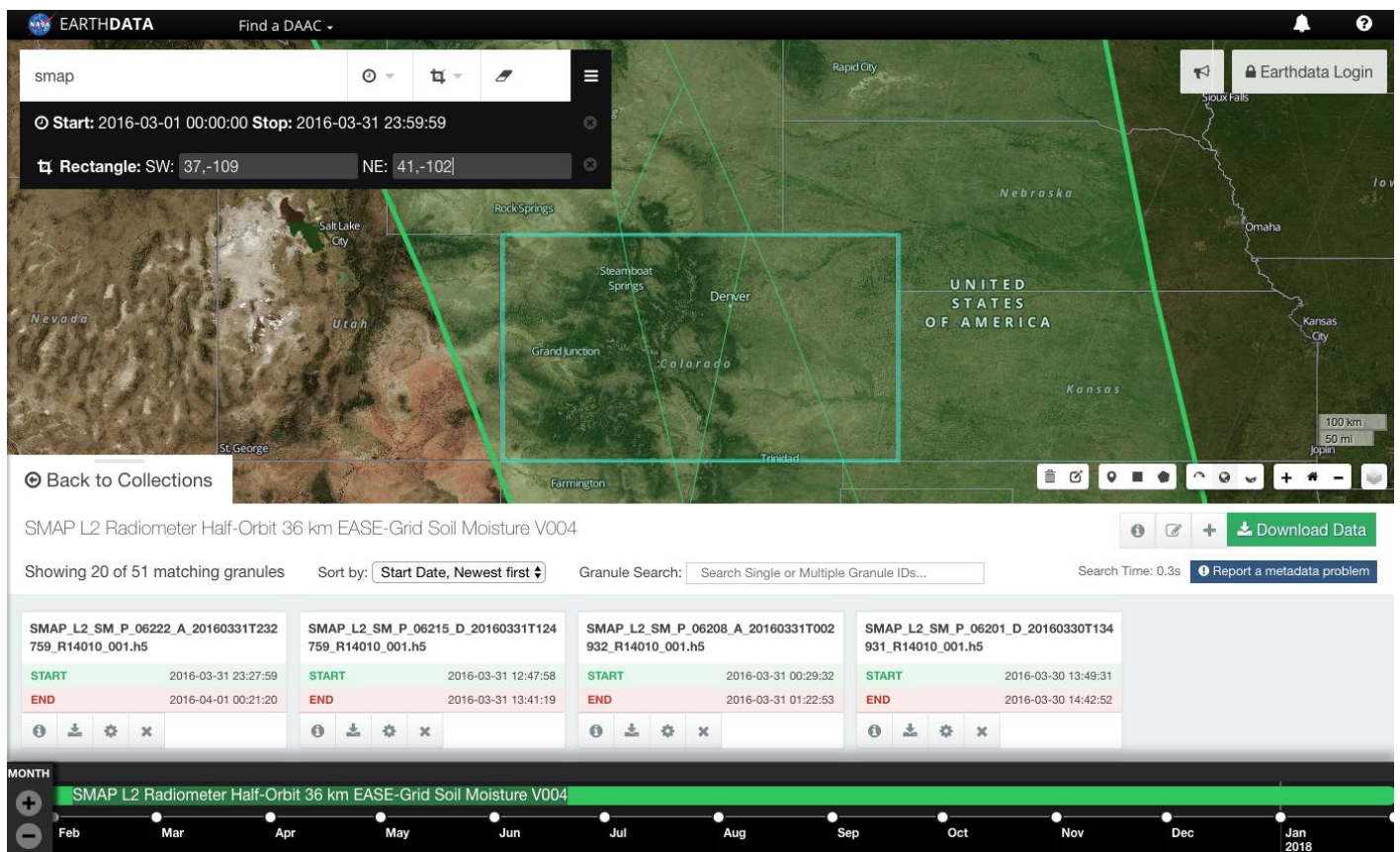
Step 7a: Scroll down the collection list to locate it.

Step 7b: Click on that collection. You are now taken to the next step in the search.



Data Selection Tips:

- You can see each of the granule outlines that correspond to the search criteria displayed on the map in green.
- Hover over granule footprints on the main screen to see those outlines or click on them.
- View the temporal coverage of these data with the time scale at the bottom.
- Sort filtered granules by date.
- Immediately download a granule to your computer by selecting the download button.
- Remove the granule from the list by clicking on the 'x'.



Step 8 – Order Data.

Step 8a - Click on the green 'Download Data' button on the right.

Step 8b - Authenticate Earthdata login information.

The screenshot shows the 'Data Access' page for 'SMAP L2 Radiometer Half-Orbit 36 km EASE-Grid Soil Moisture V004'. A green box with the number '1' is in the top left corner. The page has a dark header with the title 'Data Access' and a subtitle 'Review and select service options for your data prior to download'. Below the header, there's a section titled 'Review & Select Service Options'. Under 'Review', it shows '51 Granules'. There's a button 'Expand List'. Below that, 'Select Data Access Method' has three options: 'Direct Download' (selected), 'Stage for Delivery', and 'Customize Product'. Each option has a brief description.

Data Access
Review and select service options for your data prior to download

1 **SMAP L2 Radiometer Half-Orbit 36 km EASE-Grid Soil Moisture V004**

Review & Select Service Options

Review

51 Granules

Granule List

Expand List

Select Data Access Method

☒ **Direct Download**
Download data as-is now from your browser or access script.

☐ **Stage for Delivery**
Submit a request for data to be staged for delivery. You will get an email when they are ready.

☐ **Customize Product**
Select custom service options to be performed. (e.g. subsetting, etc.)

Note: You must register for an Earthdata login account before retrieving data through this system.

Data Ordering Tips:

- Once registered, users can view previous orders, save projects that you have built and compare data from multiple collections.
- From this Data Access page, review the list of granules by clicking 'Expand List'.
- By selecting the 'Direct Download' option, you will be provided with a list of download links, as well as a download access shell script, which is helpful for large data requests.
- Choose 'Stage for Delivery' for HTTPS pull ordering. QA is also available in this option.

Note: For this demo, we will focus on the last data access method, the ESI service.

Step 9- Customize each SMAP Granule.

Customization Tips:

- Several options to customize each SMAP granule.
- Reformatting from original HDF5 available is available.

Step 9a - Reformat the data from the original HDF5 format.

Step 9b - Click on GeoTIFF in the 'Reformat Output(Optional)' box.

Select Data Access Method

☐ **Direct Download**

Download data **as-is** now from your browser or access script.

☐ **Stage for Delivery**

Submit a request for data to be staged for delivery. You will get an email when they are ready.

☒ **Customize Product**

Select custom service options to be performed. (e.g. subsetting, etc.)

Email Address

paul.moth@nsidc.org

Reformat Output (Optional)

Output File Format

GeoTIFF

Step 9c – Spatially subset granules so that only data within the Colorado bounding box are received by checking the 'Enter bounding box' option. Spatial filter previously entered will apply directly to this form.

Spatial Subsetting (Optional)

☒ Enter bounding box

North

41

West

-109

East

-102

South

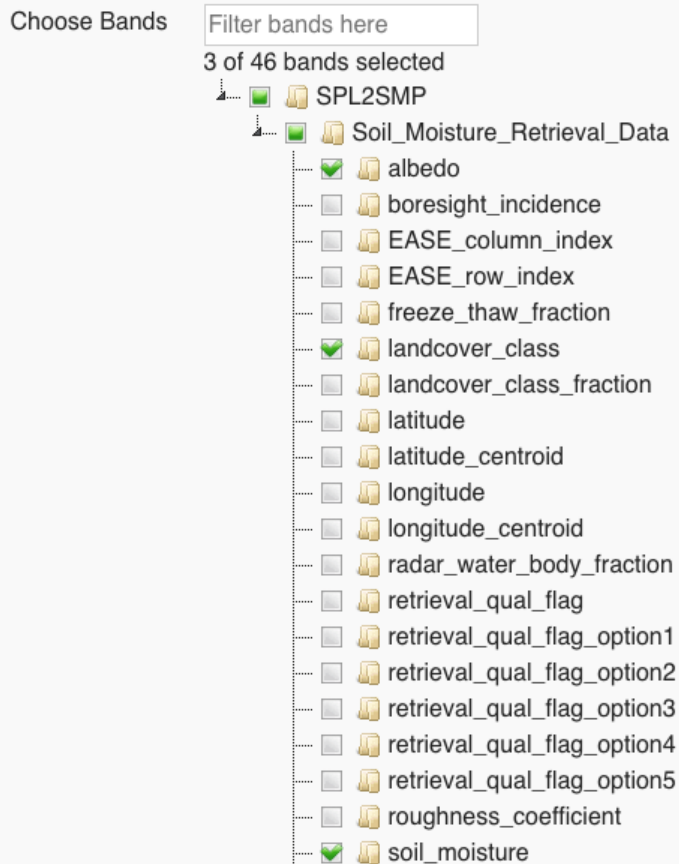
37



Step 9d - Subset the bands or parameters of interest.

Step 9f - Deselect all of the parameters and add the three of interest (albedo, soil moisture and landcover class).

Band Subsetting (Optional)




Step 10- Submit Order



Step 10a - Enter email address.



Step 10b - Click 'Continue' at the bottom.

Step 10c - Click on 'Submit'.

 EARTHDATA

Find a DAAC ▾





⌕ Back to Data Access Options

The following collections are being processed

When the data becomes available, an email containing download links will be sent to the address you provided.

- **SMAP L2 Radiometer Half-Orbit 36 km EASE-Grid Soil Moisture V004** Complete

Your request is complete and can be downloaded using the following urls:

<https://n5eill01u.ecs.nsidc.org/esir/5000000051261.html>
<https://n5eill01u.ecs.nsidc.org/esir/5000000051261.zip>

Next Steps

- [Back to Earthdata Search Results](#)
- [Start a New Earthdata Search Session](#)
- [View Your Download Status & History](#)

Tips for Retrieving your Order:

- Watch the progress of your order on the final page.
- When processing is complete, two URLs are presented to you.
- Click on the top URL and you can see all of your output granules displayed. You can download individual granules with this link.
- Click on the bottom URL to download the whole order as one single zip file.

Need Help or Have Questions?

- If you have any questions on Earthdata Search or any feedback, you can always click on this 'Feedback' button on the top right of the page.
- If you're interested in learning more about Earthdata Search, you can go back to the home and you can start an introductory tour.
- Finally, if you have any questions about ordering SMAP data or performing services on SMAP data, you can email the National Snow and Ice Data Center User Services office at nsidc@nsidc.org.