

# GEDI Version 2 Spatial Querying and Subsetting Quick Guide

The Global Ecosystem Dynamics Investigation (GEDI) instrument aboard the International Space Station (ISS) collects light detection and ranging (lidar) full waveform observations. The Level 1B Geolocated Waveform Data ([GEDI01\\_B](#)), Level 2A Elevation and Height Metrics Data ([GEDI02\\_A](#)), and Level 2B Canopy Cover and Vertical Profile Metrics Data ([GEDI02\\_B](#)) granules are available through [NASA's Earthdata Search](#). This quick guide demonstrates how to find and subset GEDI Version 2 granules using Earthdata Search. GEDI Version 2 data are split into sub-orbit granules and contain the spatial metadata necessary to perform spatial queries in Earthdata Search.

Instructions on how to find granules that contain data for a region of interest (ROI) and how to perform spatial and/or layer subsetting of GEDI sub-orbit granules accessed from NASA's Earthdata Search are provided below. [Earthdata Login credentials](#) are required to download GEDI data products.

## NASA's Earthdata Search

### Step 1: Access Earthdata Search

Open [NASA Earthdata Search](#). Sign in with Earthdata Login credentials ( Earthdata Login) or [register](#) for a new account.

### Step 2: Search for GEDI Version 2

Search for a GEDI Version 2 collection by entering “GEDI v002” or the dataset short name (e.g., GEDI01\_B v002) into the search box in the upper left-hand corner of the page, then select the desired product from the list of matching collections. All available granules for the product will be included in the list of matching granules.

The screenshot shows the NASA Earthdata Search interface. In the top search bar, the query "GEDI v002" is entered. The search results are displayed under the heading "Matching Collections". There are four matching collections listed:

- GEDI L2A Elevation and Height Metrics Data Global Footprint Level V002**  
7,250 Granules • 2019-03-25 ongoing • The Global Ecosystem Dynamics Investigation (GEDI) mission aims to characterize ecosystem structure and dynamics to enable radically improved quantification and understanding of the Earth's carbon cycle and biodiversity...  
CUSTOMIZABLE GEDI02\_A v002 - LP DAAC
- GEDI L2B Canopy Cover and Vertical Profile Metrics Data Global Footprint Level V002**  
2,456 Granules • 2019-03-25 ongoing • The Global Ecosystem Dynamics Investigation (GEDI) mission aims to characterize ecosystem structure and dynamics to enable radically improved quantification and understanding of the Earth's carbon cycle and biodiversity...  
CUSTOMIZABLE GEDI02\_B v002 - LP DAAC
- GEDI L1B Geolocated Waveform Data Global Footprint Level V002**  
3,509 Granules • 2019-03-25 ongoing • The Global Ecosystem Dynamics Investigation (GEDI) mission aims to characterize ecosystem structure and dynamics to enable radically improved quantification and understanding of the Earth's carbon cycle and biodiversity...  
CUSTOMIZABLE GEDI01\_B v002 - LP DAAC

### Step 3: Perform a Spatiotemporal Search for Granules

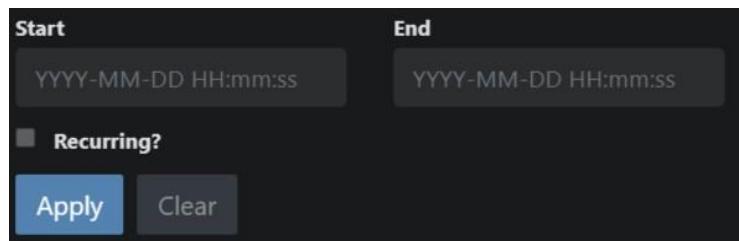
GEDI Version 2 products can be queried by temporal and/or spatial boundaries using the



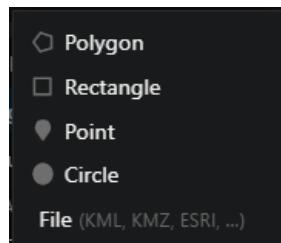
tools below the search bar in Earthdata Search.



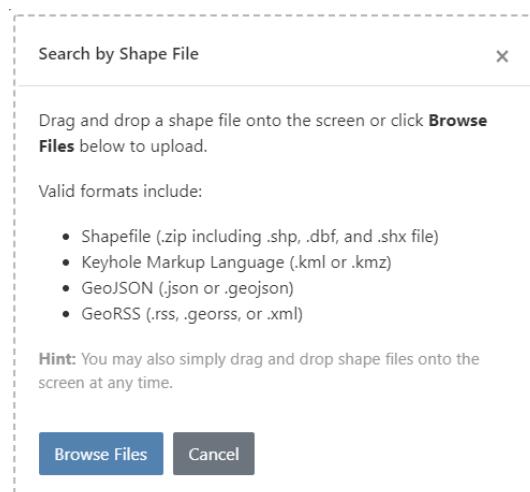
The temporal filter ( ) allows for user-provided start and end date/time and will return any available granules acquired between those dates.



The spatial filter allows you to draw a polygon, circle, or rectangle region of interest to filter granules by location. Other spatial options include submitting a lat/lon point location, or uploading a KML, shapefile, GeoJSON, or GeoRSS.



To upload a shapefile, select File from the spatial filter. In the following window either drag and drop the desired shapefile or select Browse Files to locate the shapefile, KML, GeoJSON, or GeoRSS on your computer.



## Step 4: Selecting Granules for Download

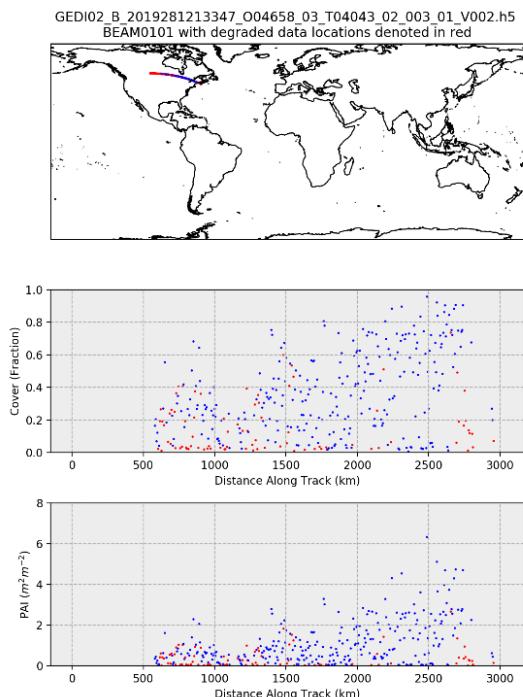
Now that the results have been filtered to the desired temporal and spatial extent, you can see the footprints of the GEDI Version 2 sub-orbit granules intersecting your spatiotemporal query.

The screenshot shows the EARTHDATA SEARCH interface with the following details:

- Spatial Filter:** main.bndry.geojson (19.2 KB)
- Temporal Filter:** Start: 2019-10-04 23:10:58, End: 2019-10-05 00:43:48
- Data Access:** Find only granules that have browse images
- Search Results:** 60 Granules
- Download All:** 60 Granules

The map on the right shows the geographic area of the granules, primarily covering Maine and parts of New Brunswick and Quebec. A green line indicates the trajectory of the satellite over the region.

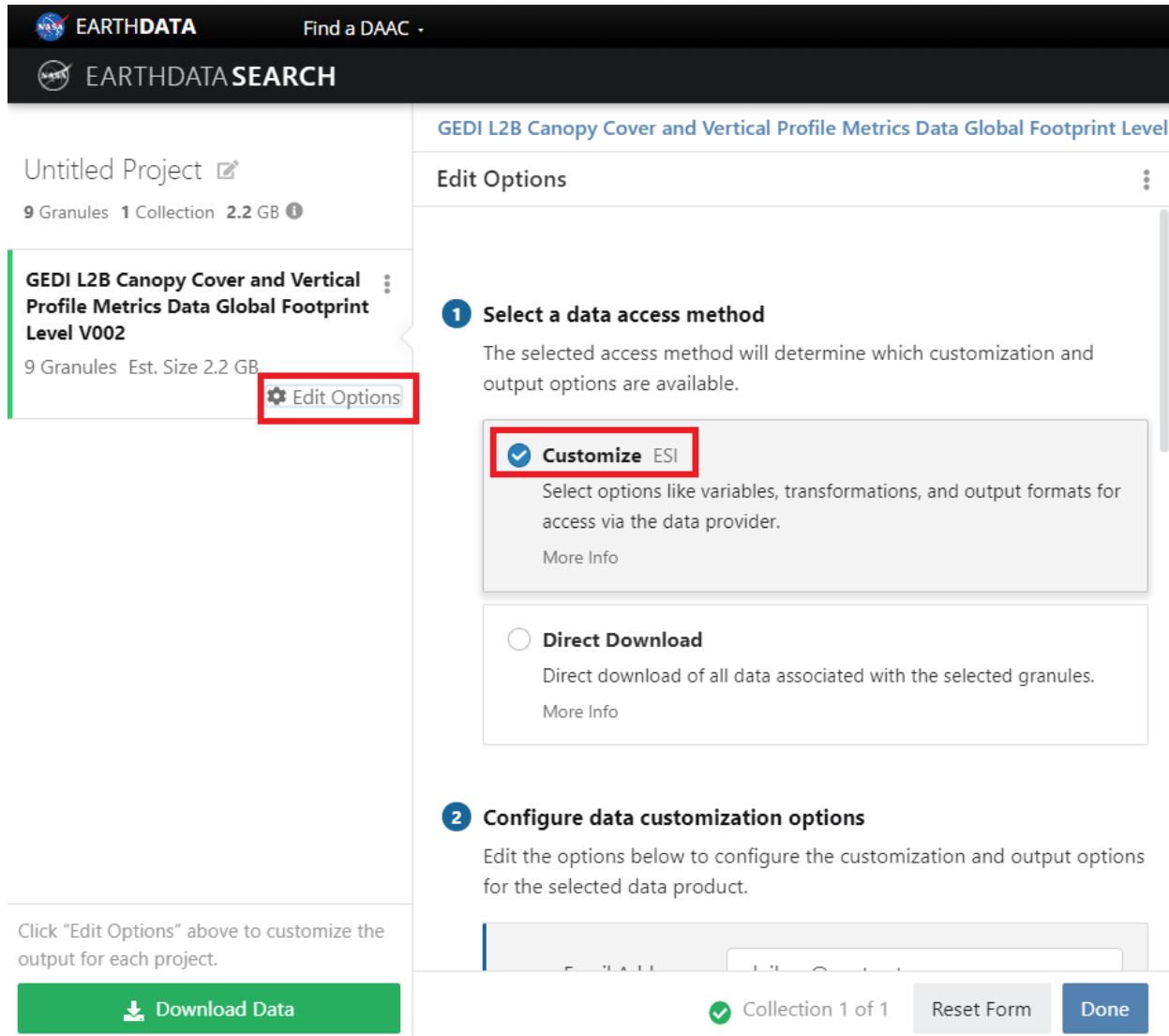
Clicking on the browse image of the granules provides a preview of each sub-orbit granule's data.



Download all granules associated with the selected collection using the button located in the bottom right-hand corner (), select specific granules to add to an order using the  button, or directly download the full granule using the  icon.

### Step 5: Select Spatial and/or Layer Parameters for GEDI Granules (Spatial and Band/Layer Subsetting)

Click the green Download All button to open the download and order menu. Under the Project list on the left-hand side of the screen, click Edit Options, which will open the Edit Options tab. Under “Select a data access method,” select Customize.



The screenshot shows the EARTHDATA SEARCH interface. At the top, there are navigation links for EARTHDATA and EARTHDATA SEARCH. On the left, a sidebar displays an Untitled Project with 9 Granules, 1 Collection, and an estimated size of 2.2 GB. Below this, a project titled "GEDI L2B Canopy Cover and Vertical Profile Metrics Data Global Footprint Level V002" is shown, also with 9 Granules and an estimated size of 2.2 GB. A red box highlights the "Edit Options" button next to this project. The main content area is titled "Edit Options" and contains two sections:

- 1 Select a data access method**: This section is currently set to "Customize ESI" (indicated by a checked checkbox). It includes a description: "Select options like variables, transformations, and output formats for access via the data provider." and a "More Info" link.
- 2 Configure data customization options**: This section is partially visible, with a note: "Edit the options below to configure the customization and output options for the selected data product." Below this are several configuration fields, and at the bottom are buttons for "Collection 1 of 1", "Reset Form", and "Done".

At the very bottom of the sidebar, there is a note: "Click "Edit Options" above to customize the output for each project."

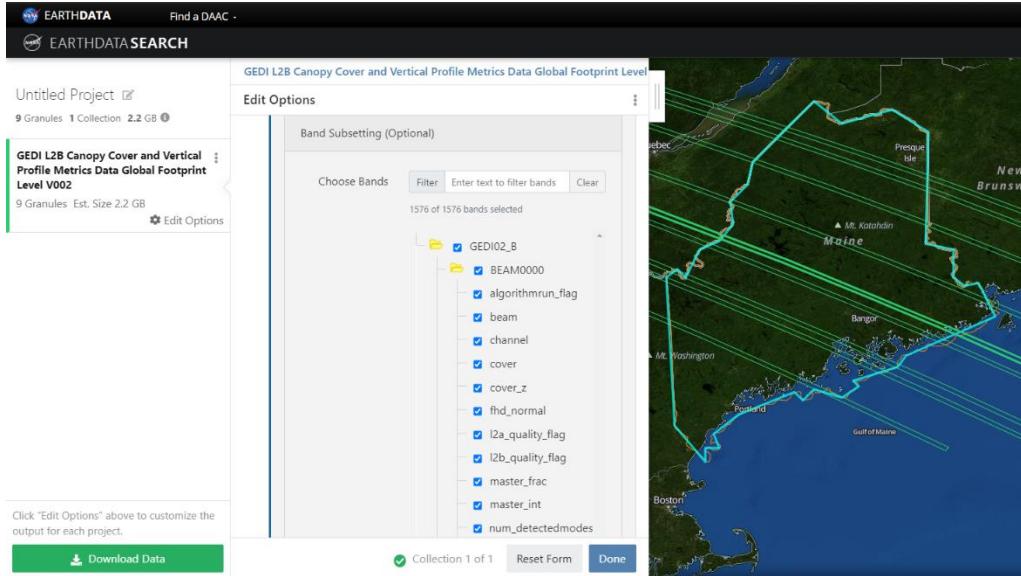
To set up the parameters for subsetting each granule to your region of interest, scroll down to the Spatial Subsetting section. Check the box next to “Click to enable” and it will populate the coordinates of the bounding box for the ROI.

The screenshot shows the EARTHDATA SEARCH interface. On the left, there's a sidebar with a project titled "Untitled Project" containing 9 Granules and 1 Collection, totaling 2.2 GB. Below this is another section for "GEDI L2B Canopy Cover and Vertical Profile Metrics Data Global Footprint Level V002" with similar details. On the right, under "Edit Options", the "Spatial Subsetting (Optional)" section is visible. It includes a checkbox labeled "Click to enable" which is checked, and another checkbox labeled "Use Shapefile from Search" which is unchecked. A note below states: "Complex shapefiles may take longer to process. You will receive an email when your files are finished processing." To the right of this note are four input fields for defining a bounding box: North (47.45215), West (-71.08593999999998), East (-66.90234), and South (42.93456999999998).

To clip the granules to the exact boundaries of a GeoJSON or shapefile, deselect “Click to enable” and select “Use Shapefile from Search.”

This screenshot is similar to the one above, but the "Use Shapefile from Search" checkbox is now checked instead of the "Click to enable" checkbox. The other elements, including the bounding box coordinates and the note about complex shapefiles, remain the same.

Select specific science dataset layers to extract by scrolling down to the Band Subsetting section. Expand the directories and select the desired GEDI beams and/or layers. Additional information for each of the data layers can be found on the [GEDI01\\_B](#), [GEDI02\\_A](#), or [GEDI02\\_B](#) Digital Object Identifier (DOI) product landing pages.



## Step 6: Place Order

After the desired parameters for spatial and/or layer subsetting have been selected, click Done to complete the custom order form then click Download Data to initiate the order. When the data request is submitted, a Download Status screen will monitor the progress of the order.

**Download Status**

This page will automatically update as your orders are processed. The Download Status page can be accessed later by visiting <https://search.earthdata.nasa.gov/downloads/8325415546> or the [Download Status and History](#) page.

**GEDI L2B Canopy Cover and Vertical Profile Metrics Data Global Footprint Level V002**

| Status                                  | Access Method | Granules   |
|---|---------------|------------|
| In progress (0%)<br>0/1 orders complete | ESI           | 9 Granules |

Your orders are currently processing. Once processing is finished, links will be displayed below and sent to the email you've provided.

Download Links    Imagery    Order Status

The download links will become available once the order has finished processing

An order confirmation email is also sent to the email address associated with the Earthdata login credentials or specified in the custom order form. Check the status of the order in the [Download Status and History](#) page.

| Download Status & History   |                |         |
|---|----------------|---------|
| Contents  | Created        | Actions |
| GEDI L2B Canopy Cover and Vertical Profile Metrics Data Global Footprint Level V002 | 20 minutes ago |         |

### Step 7: Retrieve Data

A status update email for the data processing request will be delivered when the order has completed. The order completion email contains URLs for accessing the data outputs. Note that the URLs have an expiration date and are only valid for one week.

Contact LP DAAC User Services at [lpdaac@usgs.gov](mailto:lpdaac@usgs.gov) with any questions about the request. Be sure to reference the request ID in any correspondence.

### Step 8: Download Data

Download the output files by clicking on the .zip link in the email and unzipping into a local directory. Or, click on the .html link, which goes to a page including options to download files one by one, or download a .txt file containing links to all of the output files. Automate downloading by saving the .txt file and using [DAAC2Disk](#) or [command line utilities wget and curl](#). Additionally, R or Python can be used to download data directly from the .csv file using the scripts provided in [How to Access the LP DAAC Data Pool with R](#) and [How to Access the LP DAAC Data Pool with Python](#).

### Step 9: Convert GEDI Data to GeoJSON

To convert the .h5 output files from Earthdata Search to GeoJSON, use the GEDI Spatial and Band/Layer Subsetting and Export to GeoJSON ([GEDI Subsetter](#)) script. The GEDI Subsetter is a command line executable Python script that allows users to export GEDI HDF5 files as a GeoJSON file that can easily be loaded into GIS and/or remote sensing software for further visualization and analysis.