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.

Step 3: Perform a Spatiotemporal Search for Granules

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

[calendar icon] [crop icon] tools below the search bar in Earthdata Search.

The temporal filter ([calendar icon]) allows for user-provided start and end date/time and will return any available granules acquired between those dates.
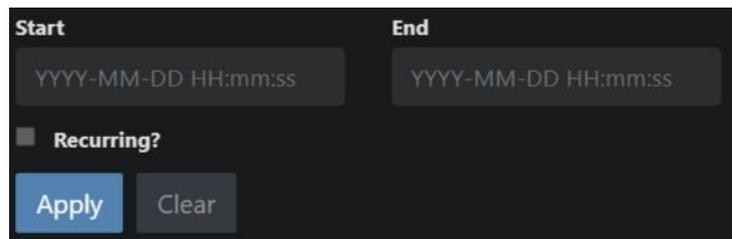
Start **End**

YYYY-MM-DD HH:mm:ss YYYY-MM-DD HH:mm:ss

☐ **Recurring?**

Apply Clear

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.
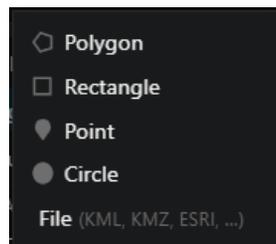
⬡ Polygon
☐ Rectangle
📍 Point
● Circle
File (KML, KMZ, ESRI, ...)

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.
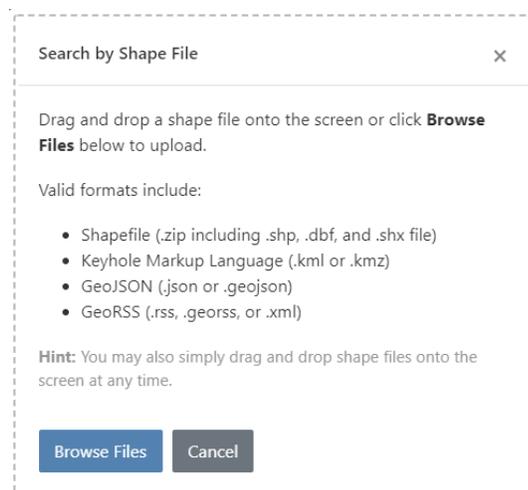
Search by Shape File ✕

Drag and drop a shape file onto the screen or click **Browse Files** below to upload.

Valid formats include:

- Shapefile (.zip including .shp, .dbf, and .shx file)
- Keyhole Markup Language (.kml or .kmz)
- GeoJSON (.json or .geojson)
- GeoRSS (.rss, .georss, or .xml)

Hint: You may also simply drag and drop shape files onto the screen at any time.

Browse Files Cancel

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.
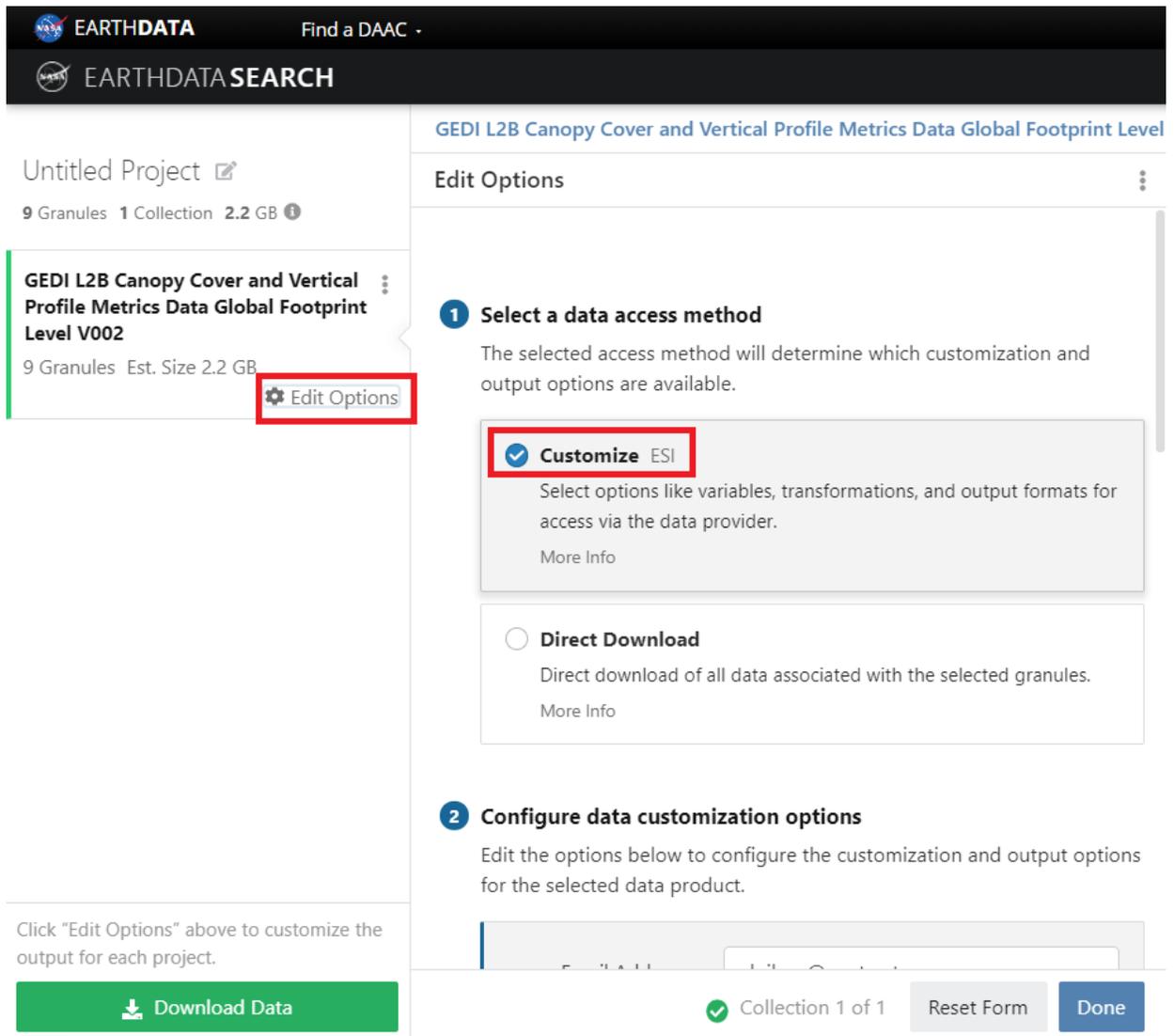

Clicking on the browse image of the granules provides a preview of each sub-orbit granule's data.
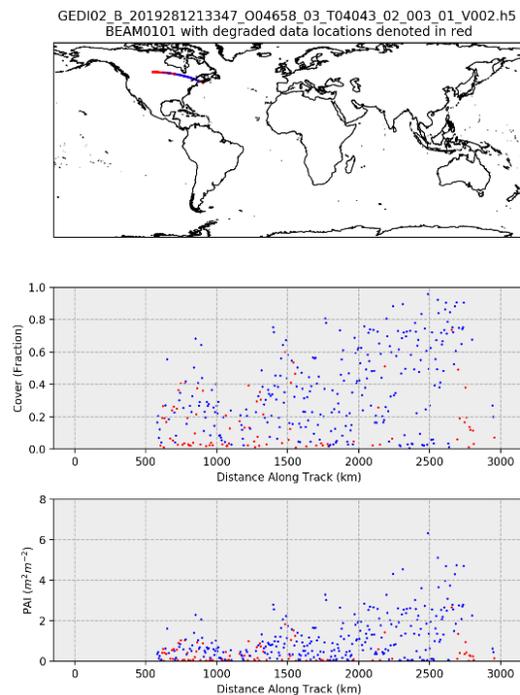
Download all granules associated with the selected collection using the button located in the bottom right-hand corner (![Download All 9 Granules]), select specific granules to add to an order using the ![+] button, or directly download the full granule using the ![download] icon.

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.

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.

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

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.
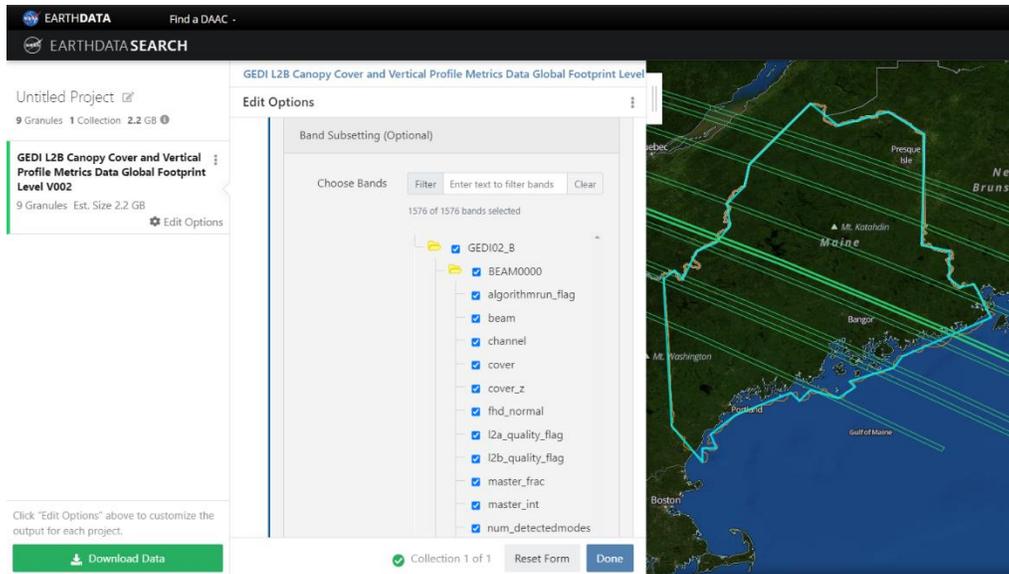
Step 6: Place Order

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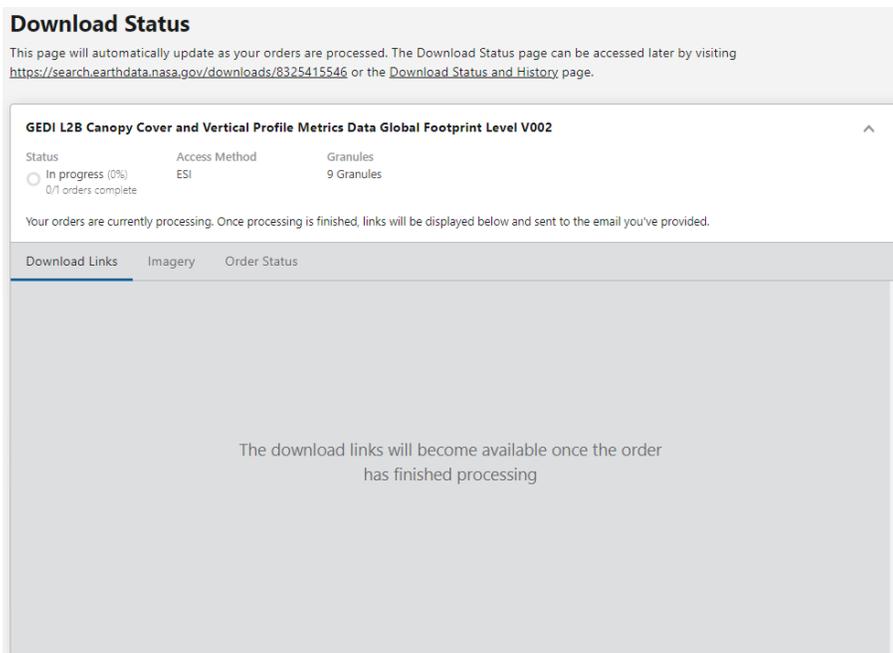
An order confirmation email is also sent to the email address associated with the Earthdata login credentials or specified in the custom order form. Check the status of the order in the [Download Status and History](#) page.

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 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.