

Planet Quick Start

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https://libguides.brown.edu/gis_data_tutorials/raster

Introduction

The Brown University Library has a subscription to Planet Lab's database of daily satellite imagery. This tutorial demonstrates how to use the *Basemaps Viewer* and *Planet Explorer* web applications to access images. For more information about our subscription, visit <https://libguides.brown.edu/planet/>.

Tiles from BaseMaps Viewer: Processed mosaics of imagery that have been stitched together to provide clear and cohesive coverage for the earth in monthly and quarterly increments.

Scenes from Planet Explorer: Individual, specific, daily captures of locations from two satellites: PlanetScope (3 meter resolution, 4 and 8 band, 2014-present) and RapidEye (4 band, 2009 to 2020).

PLEASE NOTE: Our shared campus license limits us to 30 million sq km of scene downloads and 150 million sq km of basemap tile downloads per year. For perspective, the surface area of the Earth is 510 million sq km. **Under no circumstances should any user download quantities of data that would significantly deplete or exceed our allocation.**

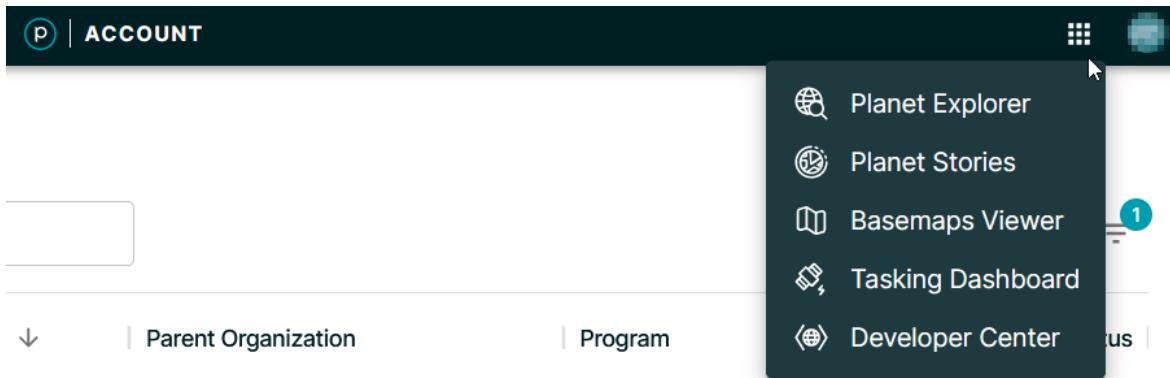
You can also access Planet imagery and basemaps via plugins for QGIS and ArcGIS, and through scripting languages using an API (not covered in this tutorial). The default format for tiles and scenes is GeoTIFF, in the UTM coordinate reference system zone that's appropriate for the coverage area.

1 Basemaps Viewer for Tiles

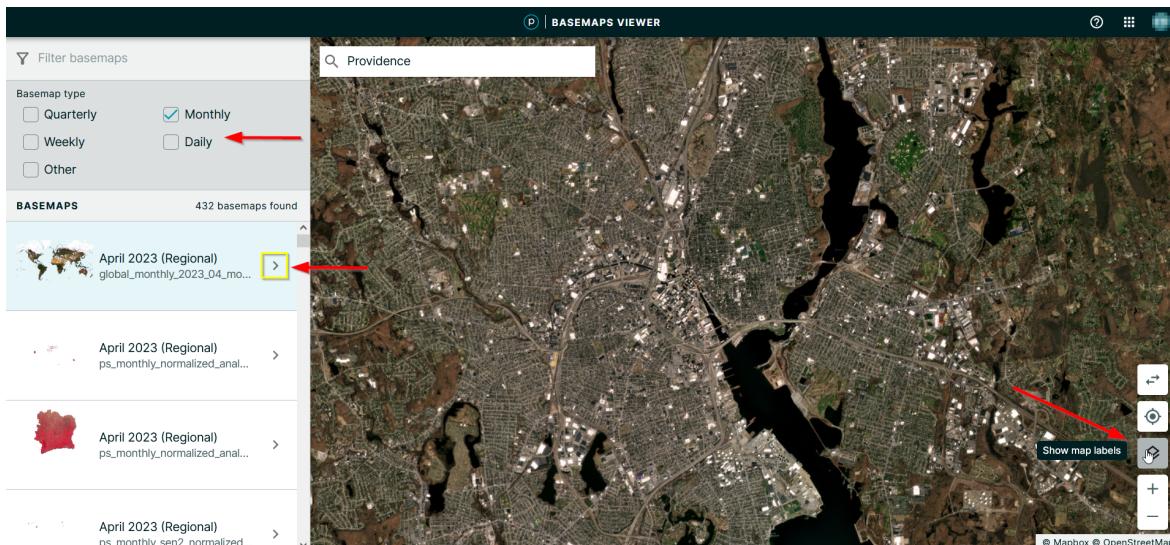
These are processed mosaics of imagery that have been corrected to remove atmospheric disturbances, and stitched together to provide clear and cohesive coverage for the earth in monthly and quarterly increments. This resource is not appropriate for downloading basemaps of the entire planet; use NASA's Worldview tool to obtain lower resolution global basemaps: <https://www.earthdata.nasa.gov/worldview>. If you want daily, detailed imagery, use the *Planet Explorer*, described in Section 2.

1. **Log in to your account:** <https://account.planet.com/>.

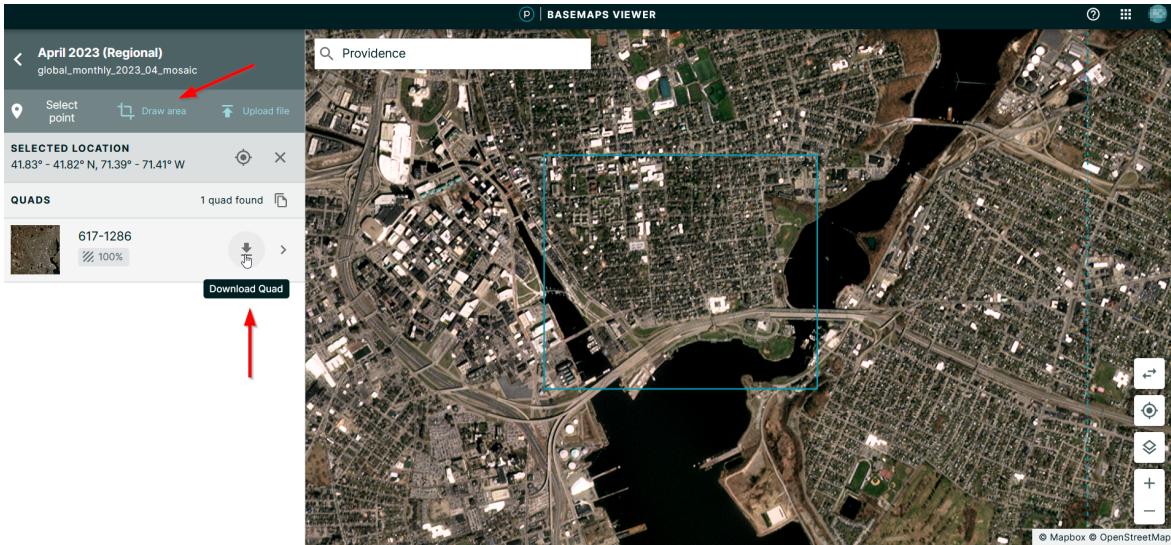
- 2. Launch Basemaps Viewer:** Click on the *Applications Menu* in the upper right-hand corner of the screen and choose *Basemaps Viewer*.



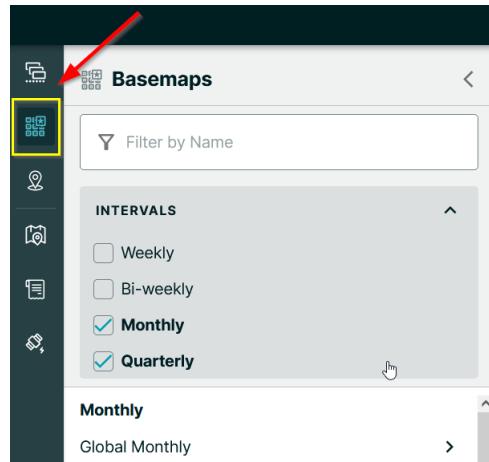
- 3. Search for a location:** Use the map to zoom to an area of interest, or type a location in the search bar.
- 4. Choose a time interval and map:** On the left side of the screen, check the time interval that you want, and then select a basemap in the menu below to view it. If the map labels obscure the basemap too much, turn them off by clicking the *Show map labels* button in the lower right-hand corner, above the zoom tools.



- 5. Download basemap tile:** To download a portion of the basemap, zoom into an area, and in the *Basemaps* menu on the left click the side arrow for a specific map to *View Quads and Scenes*. Then drop a point on the map or draw an area to see the number of tiles that cover that area. Click the download button to download a quad. You will immediately get a georeferenced Tiff for that tile.



6. **Compare basemap tiles:** To do a quick comparison between two different basemaps, you will need to use the *Planet Explorer* application and not the *Basemaps Viewer*. Access *Planet Explorer* from the applications window (upper right-hand corner), then select the *Access your basemaps* button (on the left, second button from top), filter by time period, and select your map. Follow steps 8 and 9 in the following section to make a comparison. You cannot download basemap tiles in *Planet Explorer*; in this application, the download option will give you the underlying, unprocessed scenes that were used to create the basemap.

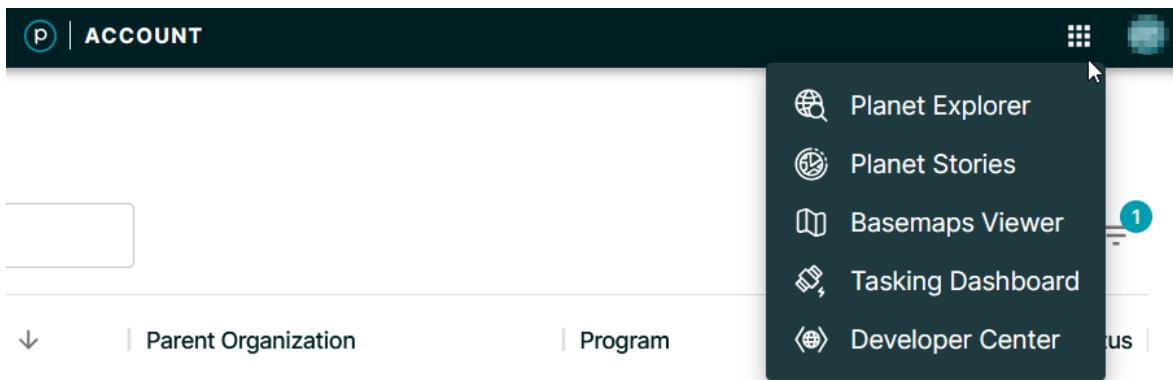


2 Planet Explorer for Scenes

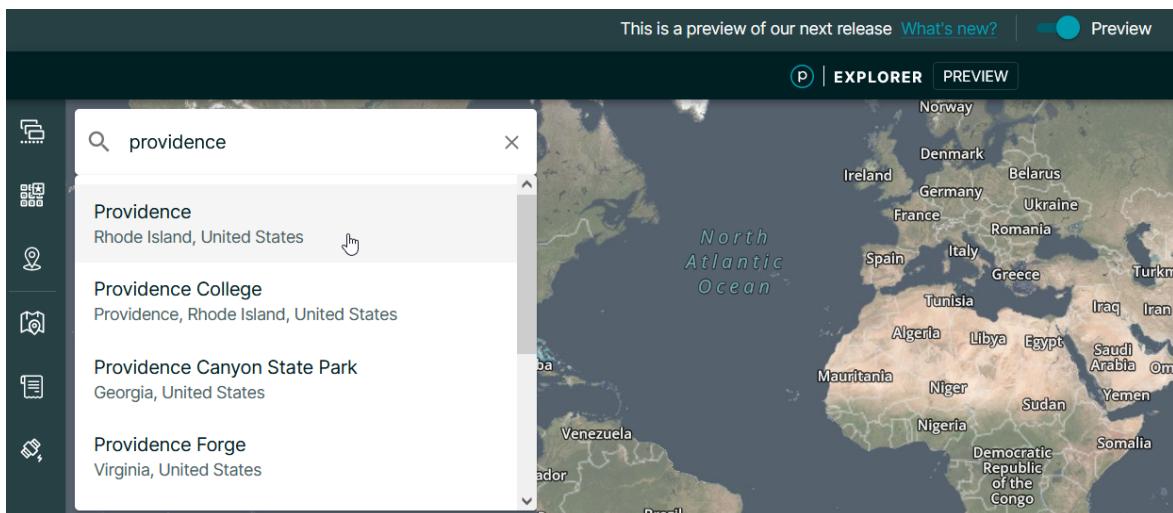
These are individual, specific, daily captures of locations from two satellites: PlanetScope (3 meter resolution, 4 and 8 band, 2014-present) and RapidEye (4 band, 2009 to 2020). If you just want basic images over a generalized period (monthly / quarterly) in a quick download, use the Basemaps Viewer instead (covered in previous section).

1. **Log in to your account:** <https://account.planet.com/>.

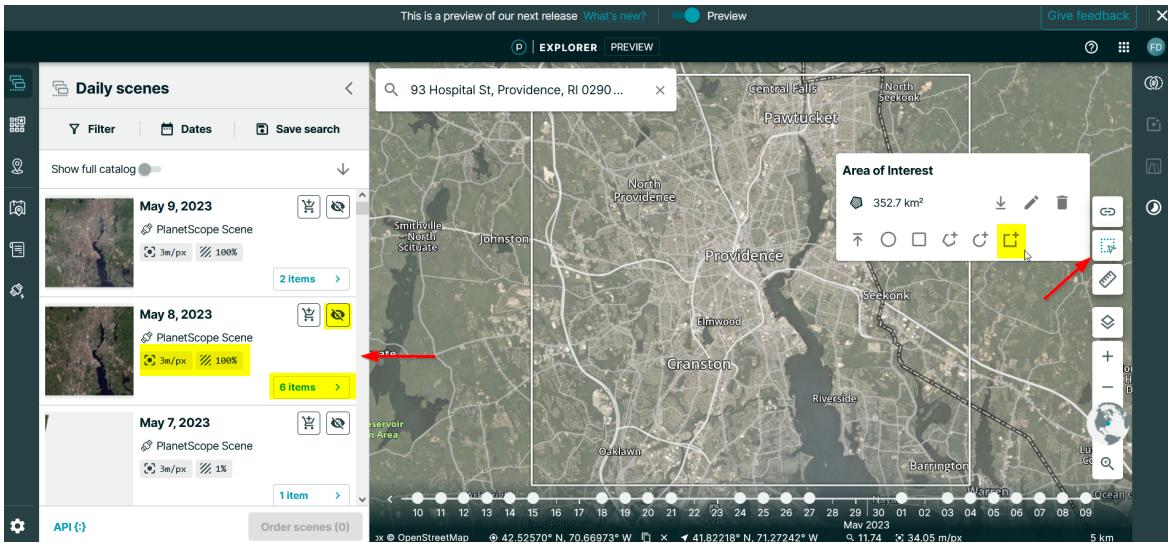
2. **Launch Planet Explorer:** Click on the *Applications Menu* in the upper right-hand corner of the screen and choose *Planet Explorer*.



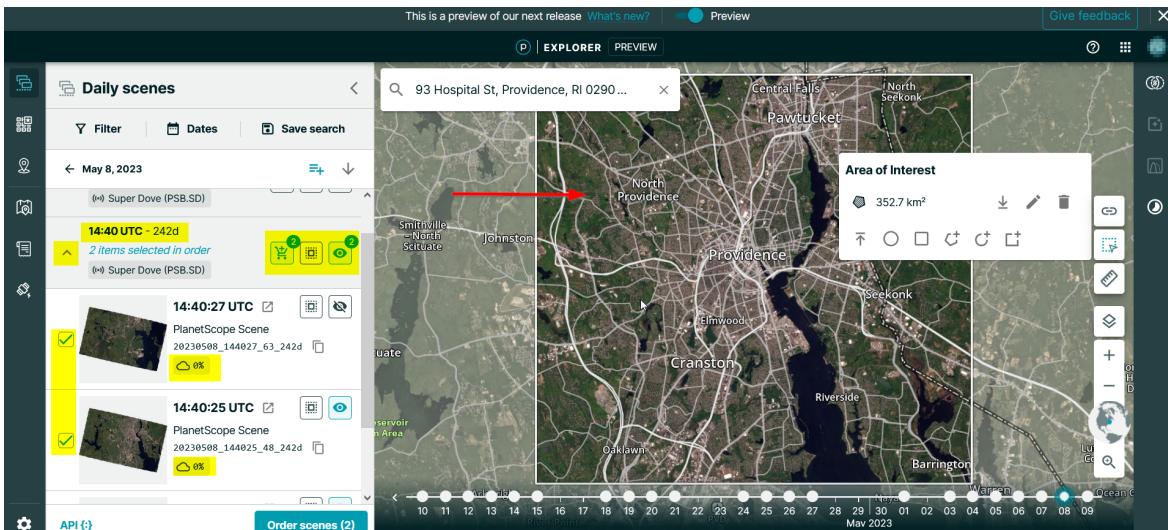
3. **Search for a location:** Use the map to zoom to an area of interest, or type a location in the search bar. If you search for a place, a white box will be drawn around the area that generally covers that location.



4. **Draw an area of interest:** To narrow down the area even further to minimize download time and the impact on our quota, click the *Draw an area of interest* button on the right-hand side of the map, and select the *Draw a rectangular area of interest* button. Click on the map and draw a box around your area that captures it more specifically.



5. **Browse scenes by date:** You can browse through dates by using the date slider below the map, or the list of *Daily Scenes* on the left. For each scene, you can see the pixel resolution, amount of imagery that falls within your area of interest, and number of items / scenes. Click the *View* button (eyeball) to see the extent to which imagery falls within your area. You will want to choose a day where coverage for your area is complete.
6. **Inspect scene items:** Click the *Items* button (that indicates N Items) to view individual scenes for a particular day. You will see a list of scenes by time stamp. Click the down button to view scenes for a particular time. Click the *View* button (eyeball) to see the coverage in your area, and note the cloud cover percentage. Select some scenes (check box to the left of each scene) so that your area is completely covered, and avoid scenes that have heavy cloud cover. You may have to choose a different date if coverage is poor or cloud cover is high.



7. **Order scenes:** Click the *Order scenes* button at the bottom of the screen. Then:

- (a) **Delivery options:** Choose *Direct download*.

- (b) **Name order:** Give your order a relevant name based on the location and date.
- (c) **Select assets:** The default is *Surface Reflectance 4 band*. This option is best if you plan to analyze land use and land cover, and includes an infrared band. Alternatively, if you want a basic image that captures just the visual light spectrum, choose *Visual* (RGB only). Other options include additional bands for more specialized analyses.

The screenshot shows the 'Order Imagery' interface. At the top, there are four steps: 1 Delivery options, 2 Name order, 3 Select assets (which is highlighted in blue), and 4 Tools & review. Below this, a 'PlanetScope Scene' is listed with a thumbnail and a '2 items' indicator. Two red arrows point down to the 'RECTIFIED ASSETS' section. This section contains two boxes: one for 'Visual' (optimized for visual analysis - RGB only) and one for 'Surface reflectance - 4 band' (corrected for surface reflectance: recommended for most analytic applications - includes RGB NIR). The 'Surface reflectance' box has a yellow background and is selected. Both boxes have radio button options for 'GeoTIFF' (selected for Visual) or 'NITF'. To the right, an 'Order Summary' panel shows the order name 'providence_may082023' and details about the selected asset.

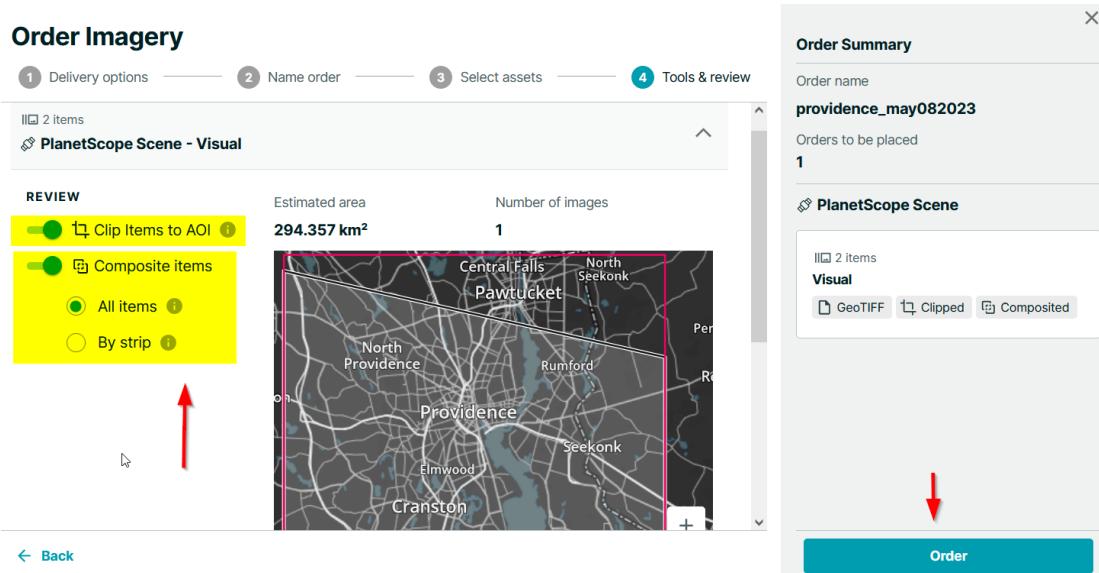


Visual RGB

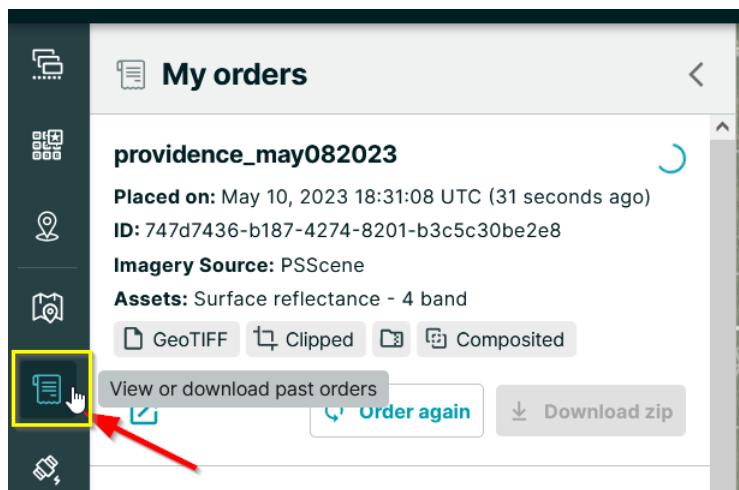
Surface reflectance 4-band

Comparison of Asset Types

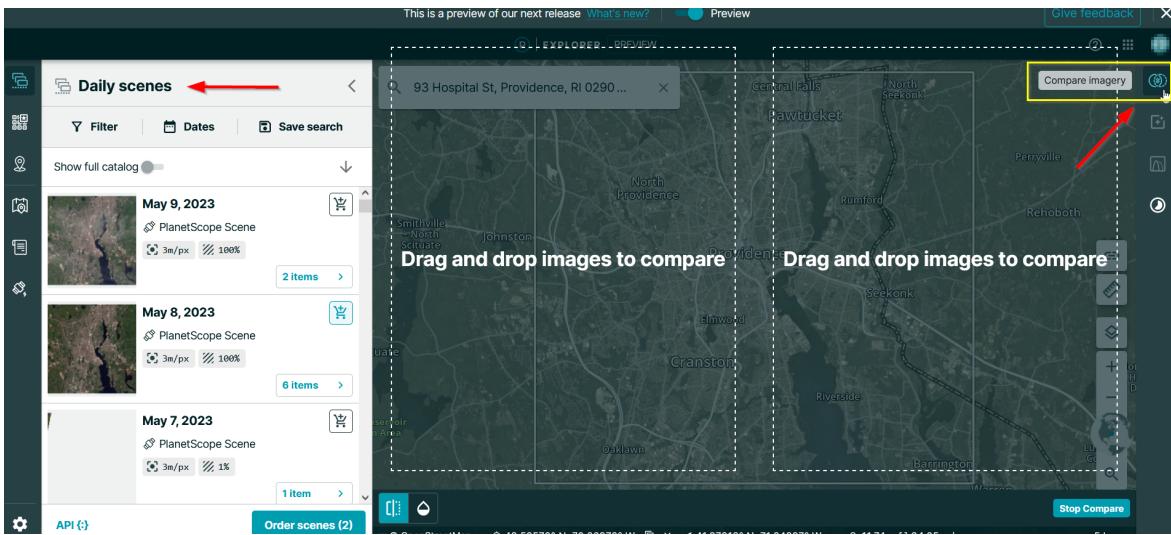
- (d) **Tools and review:** To minimize downloads, make sure the *Clip items to AOI* box is checked, to clip scenes to your area of interest. If you would like to combine individual images into one seamless image, check *Composite items*, and stitch *All items* together, or only stitch items that were taken within the same pass of the satellite (*By strip*).



- (e) **Order items:** Click the *Order* button. When your images are ready, you will receive an email that you can download them. You can always view and access your orders within *Planet Explorer* by selecting the *View or download past orders* button on the left side of the screen. When it's ready, you can download the ZIP file. Unzip the file, and you will have a georeferenced TIF that you can add as a raster to any GIS software, or you can simply view it as picture in an image viewer (if the image is not too large) or graphic design package.



8. **Compare two images:** Return to the initial search screen (*Search and browse* button to the left of the map at the top, and back arrows to return to scene views). Click the *Compare imagery* button to the right of the map at the top. Search for a scene from six months ago and drag it into the left panel. Then search for a scene from a few days ago and drag it into the right panel.



9. **View comparison:** Zoom into an area and drag the slider back and forth to see differences. If the street overlay obscures your view, click on the *Toggle map overlays* button above the zoom tools in the lower right-hand corner to turn *Street labels* off. Hit *Stop compare* when finished. Note that you can create a time-lapse image by hitting the *Create time-lapse in Planet Stories* button, last button on the right hand side of the map.

