

Downloading and visualizing planet imagery using planet API

In this tutorial, we will learn how to download planet imagery and export high resolution training sites using their API the pythonic way. We will also learn how to import area of interest (shapefiles, kml, geojson) to look for scenes containing our AOI.

Setting up Planet account and installing libraries

1. Sign up for a planet account

<https://www.planet.com/>

2. Planet API Key

Access your planet API key using the below link - might be needed in some cases

<https://www.planet.com/account/#/>

3. Install Planet, initialize and install other relevant libraries

- If Windows OS, use anaconda command prompt. If mac, use mac terminal.
Run the below command

pip install planet

- Run the below command to initialize and login to planet account. This step is key to run all planet authentication requests.

planet init

This command will ask email and password of your planet account. Once you are logged in successfully, you should see a message saying "initialized".

- If you do not already have Rasterio library installed, install using the below command

conda install rasterio

- Install gdal using the below command. We will be using gdal to download training sites

conda install gdal

4. Create project in jupyter notebook

- Run the below command to open jupyter notebook

jupyter notebook

- Create a folder by clicking on New -> folder on the top right corner of the window

- Upload or drag and drop the two python notebooks into this folder.

“Download and visualize planet imagery.pynb” and
“Download training data from planet.pynb”

5. Creating a GeoJSON object of your Area of Interest (AOI)

- Use the below link to create a GeoJSON output of the area of your interest.

<http://geojson.io>

Only the geometry part of this output is needed - to be provided as an input to the geometry_filter for the planet API search. So, copy the coordinates of your AOI and paste it in the download script.

- Also draw a smaller polygon within your AOI (so we know that the scene covers this part) and this time - copy the entire code, paste it in a text editor and save as a “.geojson” file. Make sure to save it in the working directory. We will download just this area as a tif file. (training areas) Choose just one polygon per file, multiple polygons will not work.

Download and visualize imagery using Planet API

- Run ***“Download and visualize planet imagery.pynb”*** notebook till the point where you have a download link of your scene.
- Copy the downloaded image to your working folder (folder that contains the Planet script created using jupyter notebook) or navigate to the working folder in jupyter notebook and drag and drop the image.
- Once we have the download link of the scene, we will export training sites as image files.
- To visualize NDVI, we will use the subarea that we just downloaded and run the rest of the code. You can choose to visualize the entire scene as well, but this depends on the processing power of your computer. Symptom that it does not work for the entire scene is Python keeps crashing.

Export high resolution training sites using GeoJSON input

- Run the gdal.warp block of code once you have a download link for your area of interest (“#2 downloading subarea/training sites from planet” in the script)
- Alternatively, if you do not feel comfortable downloading something which you cannot see, go to planet website, search a scene of your choice and get the asset id as follows. Make sure, you have clicked on the scene you would like to use and click on the API{:} link as shown below.

Pakse

2018/09/09 - 2018/12/10
Save search

Browse
Compare
Stories

Daily Imagery

Cloud cover
0 - 100 %

Area coverage
0 - 100 %

Source
3 sources

All filters >

52 total >
Most recent >

Dec 9, 2018 09:23:46 UTC
RapidEye Ortho Tile (5 m)
100 % area coverage

2
images

Dec 9, 2018 09:09:08 UTC
4-band PlanetScope Scene (3 m)
52 % area coverage

1
image

Dec 7, 2018 09:15:43 UTC
4-band PlanetScope Scene (3 m)
100 % area coverage

4
images

Dec 5, 2018 09:09:11 UTC
4-band PlanetScope Scene (3 m)
100 % area coverage

1
image

API {}

Order items (2)

Click on selected IDs tab

API {}

Overview
cURL Request
Selected IDs

Copy IDs

REOrthoTile:20181209_092346_3343005_RapidEye-3,
REOrthoTile:20181209_092342_3343105_RapidEye-3

And copy the asset id of the scene you want to download.

Once you know the asset id of the item you want to download,

You can use this in **“Download and visualize planet imagery.pynb”** and get the download link. But make sure to change item_type accordingly and the variable id0 (name specific to this script) to the asset id you just copied.

Or

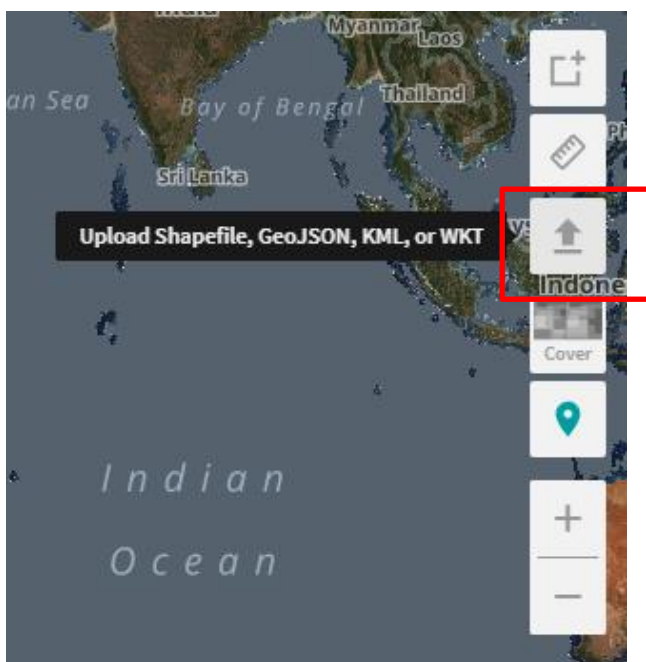
Run the below command in command prompt to activate the asset. The text marked in red needs to be changed.

```
planet --api-key yourapikey data download --item-type PSScene4Band --asset-type visual --string-in id 20180629_032537_1053
```

Come back to jupyter notebook and run the code in ***“Download training data from planet.pynb”*** notebook to download the training area. You can also use this method to download the entire scene.

Import training sites onto Planet using shape, kml or GeoJSON input formats.

- Login to planet.com
- Use the upload button to upload your AOI or training sites. This needs to be a shapefile, GeoJSON, KML or WKT file.



- You can choose to draw multiple polygons using <http://geojson.io> and save it as a single “.geojson” file to import multiple training areas at once.
- Inspect the imagery and choose the scenes which covers your AOI/s and download the scenes.
- To mosaic your scenes:
<https://developers.planet.com/planetschool/creating-a-mosaic-in-python/>

References:

https://samapriya.github.io/open-impact/satsummit2018/projects/search_and_download_quickstart/

<https://github.com/planetlabs/notebooks/tree/master/jupyter-notebooks/ndvi-from-sr>

<https://developers.planet.com/tutorials/>