Viewing Planet Images in ArcGIS Online (AGOL)

Mapping with high-resolution imagery

Background

Planet Basemaps is the monthly mosaic web service. This service allows staff to view the Planet Mosaic catalogue in AGOL as a Web Map Tile Service (WMTS). You can access all your planet imagery directly in AGOL.

Setup

There are two ways to use Planet imagery in AGOL:

1. Adding Planet Basemaps (WMTS)
2. Adding PlanetScope Individual Scenes (XYZ Tiles)

Requirements:

• Internet access & web browser
• Planet account (for API Key and finding Scene ID)
• AGOL or ArcGIS Enterprise Portal account
• Ability to edit a URL (MS Word, notepad or notes will be sufficient)

Adding Imagery

1. **Web service URL format**
   a. We will be using Planet's The Basemap Tile Service, which allows for visualization of Planet imagery Basemaps in desktop or web mapping applications that support either the XYZ or the WMTS protocols. There are two URLs to use to find the specific Basemap WMTS URLs:
      i. **Basemap WMTS Catalogue Webpage:**
         https://api.planet.com/basemaps/v1/services?api_key={api-key}
         Navigate to this page in your browser to view all Basemap WMTS and XYZ available.
      ii. **Basemap WMTS Catalogue Access Request Structure:**
   https://api.planet.com/basemaps/v1/mosaics/wmts?api_key={api-key}
         This can be pasted into a Desktop GIS program (e.g., ArcMap or MapInfo) to display the entire WMTS Catalogue available with the current subscription.

2. **API Key**
   a. A valid Planet account is required to authenticate web services by providing a valid api_key as a query parameter. To find your api_key please login to https://www.planet.com/account/ in a new web browser.

b.   Navigate to *My Settings* > Copy API key
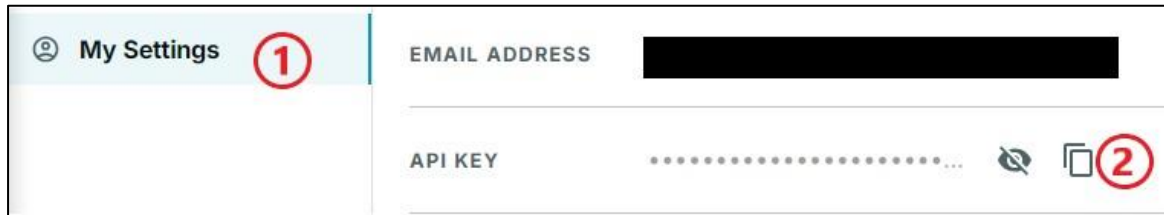
c.   Replace {api-key} in the URL above (step 1 a. i.) with your copied API key. Then paste the URL into a browser.

d.   Use the list to find a basemap of your choice.

3.   Installing CORS

a.   For Planet base maps to load in AGOL, we need to install an extension named CORS. Click on extensions → type 'CORS' → Add to Chrome/Edge

- For Chrome users: https://chromewebstore.google.com/detail/allow-cors-access-control/lhobafahddgcelffkeicbaginigeejlf Click on 'Add to Chrome'

- For Edge users: Allow CORS: Access-Control-Allow-Origin - Microsoft Edge Addons. Click on 'Get'
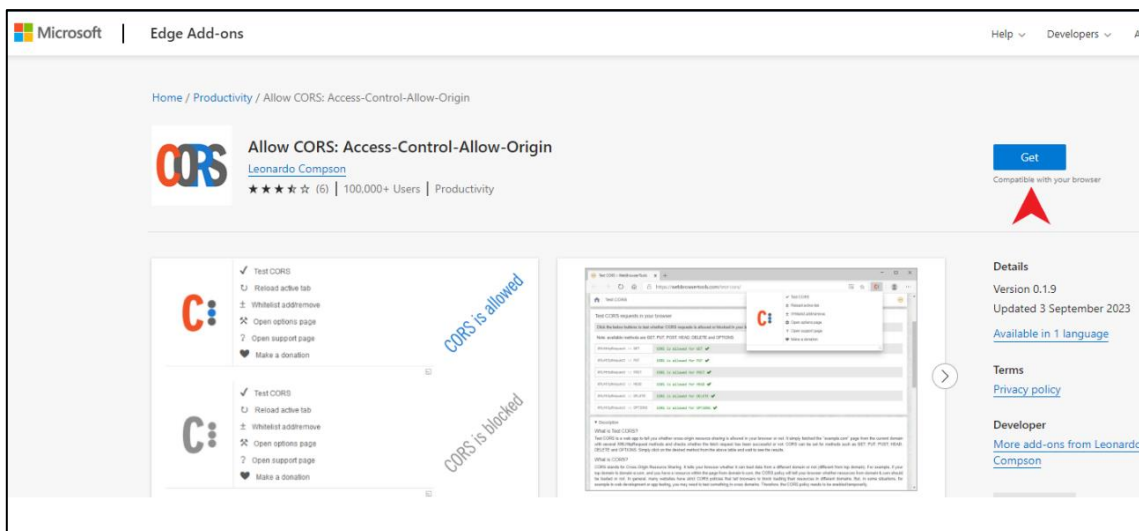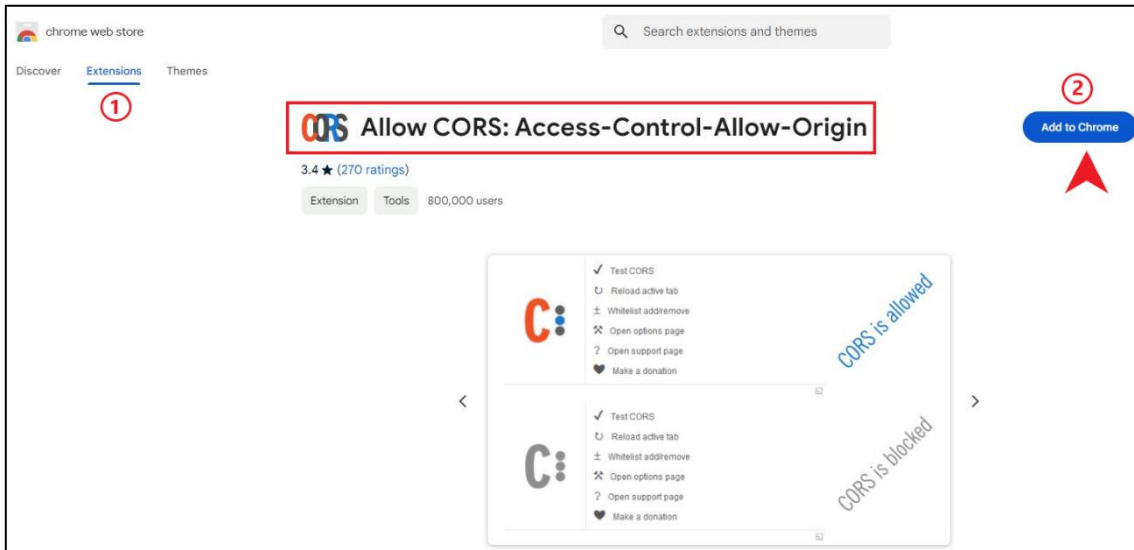
b. Find the newly installed CORS extension and pin it to the browser bar (Chrome and Edge)
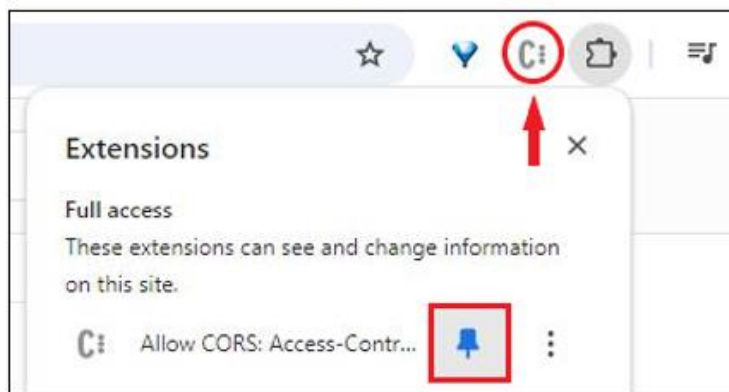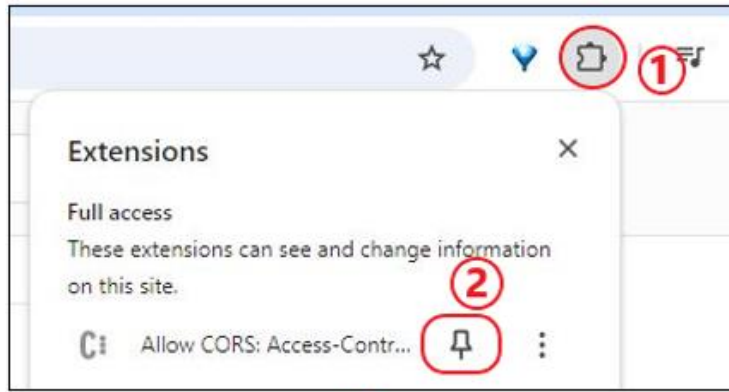
Chrome browser

Edge Browser

c. Once you have pinned the CORS extension to the bar, click on it to toggle ON/OFF. For CORS to work, you need to turn it 'ON'. The greyed-out C is when CORS is blocked (see images above). Click on the 'C' icon and toggle ON in the lower left corner. The greyed-out 'C' will turn to an Orange colour showing it is allowed now.
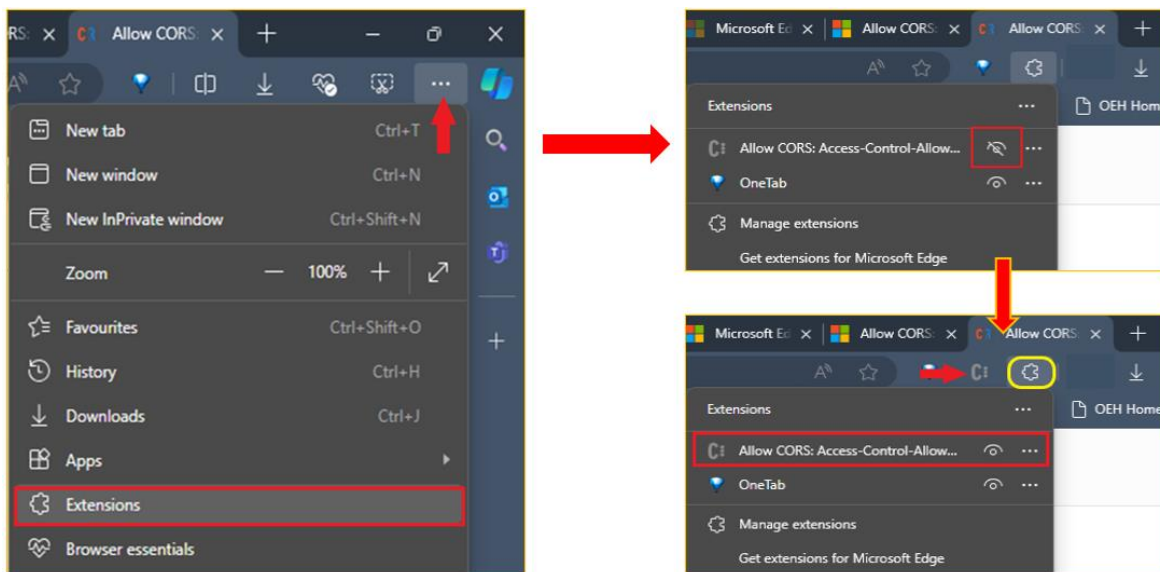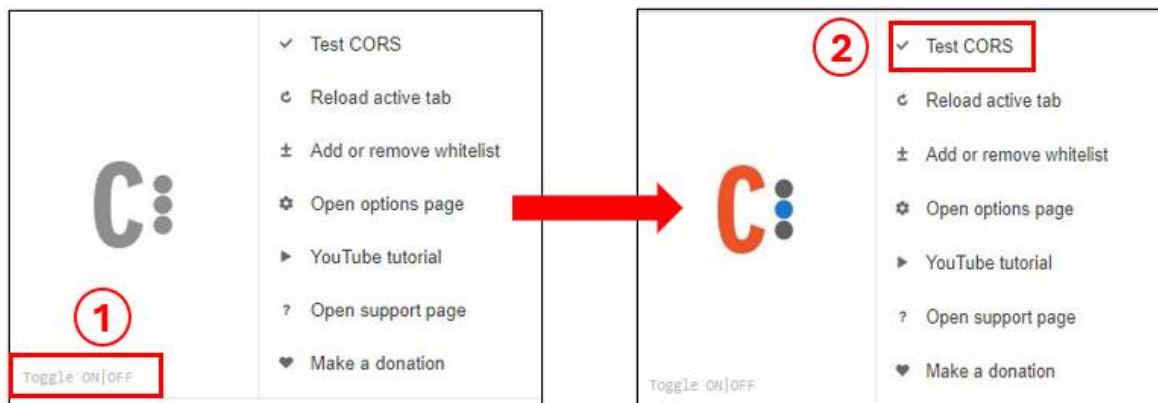

d. Now you need to test whether CORS requests are allowed or blocked by your browser CORS policy. In this test, you have to check the first six parameters- GET, PUT, POST, HEAD, DELETE, and OPTIONS request types. Click on each of these and they should turn green.
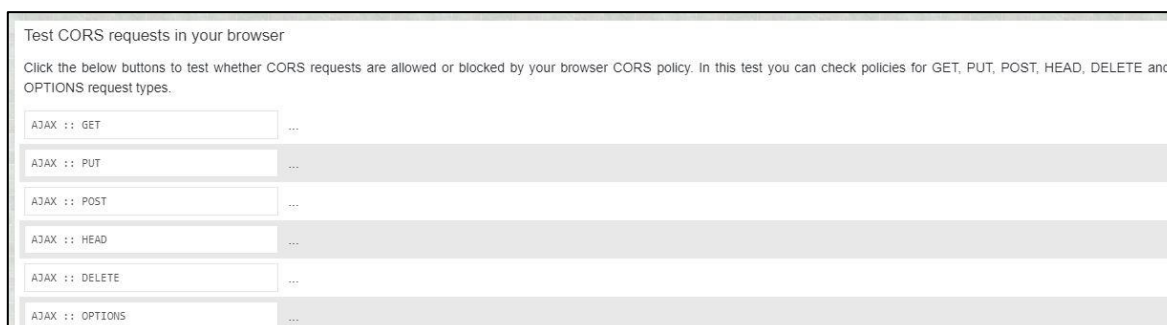
e. Once this is done, please wait up to 30 minutes to 1 hour for the changes to take effect and open imagery in AGOL.

4. **Add to AGOL**

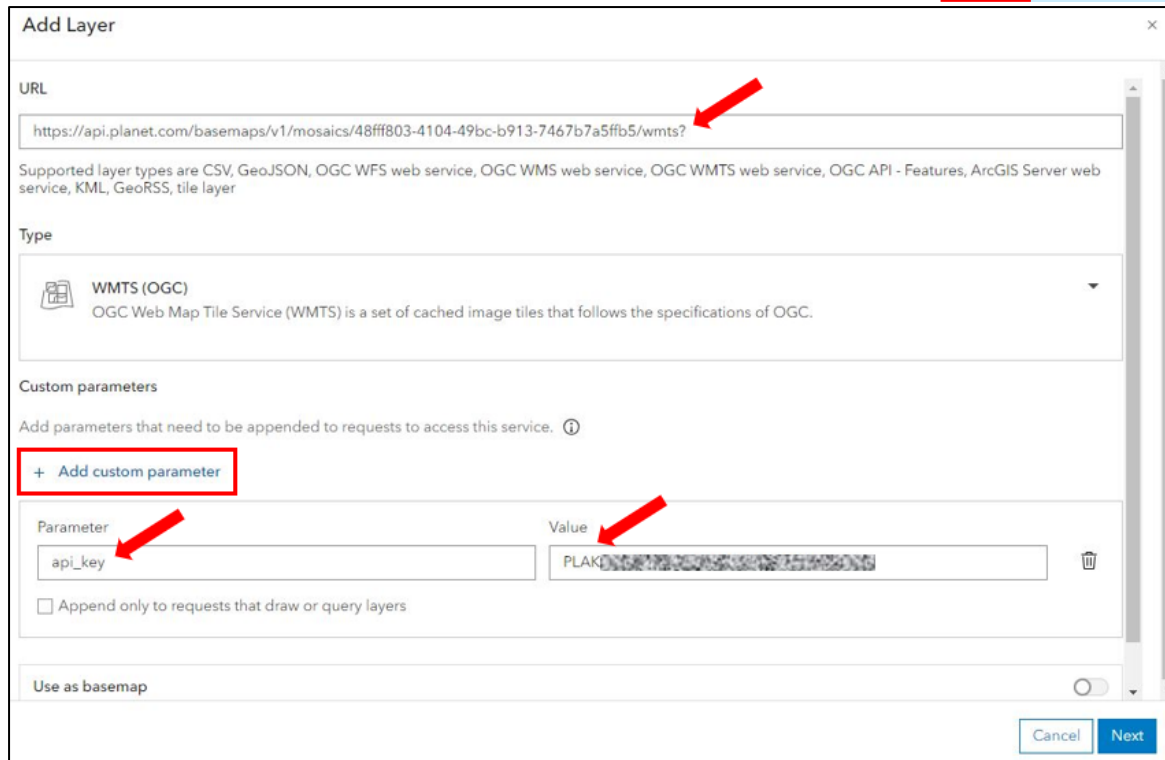   a. Open ArcGIS Online (http://www.arcgis.com/home/index.html) or ArcGIS Enterprise Portal and login.

   b. Open the Map Viewer window. You can use either the New Map Viewer or the Map Viewer Classic.

   c. If using the New Map Window, please select *Layers*, then *Add layer from URL*.

   d. Once added as items in your content, you can arrange into groups to display as custom basemaps (follow https://www.esri.com/arcgisblog/products/arcgis-online/mapping/custom-Basemap-gallery/).
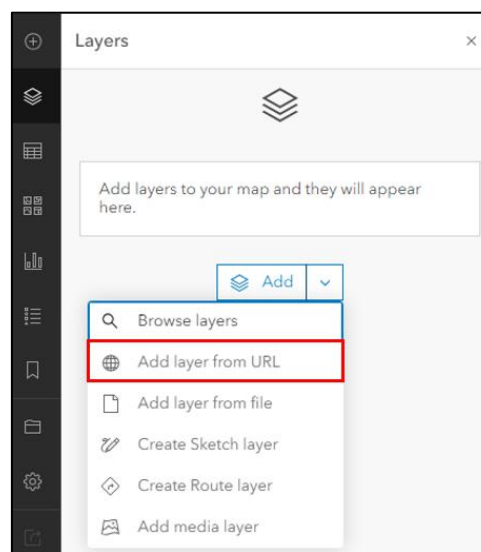
   e. Add your Basemap URL copied in Step 2 d but only until *'…wmts?'* https://api.planet.com/basemaps/v1/mosaics/wmts?

   f. Expand *"+ Add custom parameter."*

   g. Enter the *Parameter* = api_key and *Value* = Your {api_key}

   h. Add another parameter **'zmax'** and set its value as **'10'**. This is done to be able to zoom into the level of individual houses/buildings when we load the basemap in AGOL.

i. Click Next

j. Now select the map that is shown there and click '*Add to map*'. For example, in the image below Global monthly mosaic for January 2016 is being added.
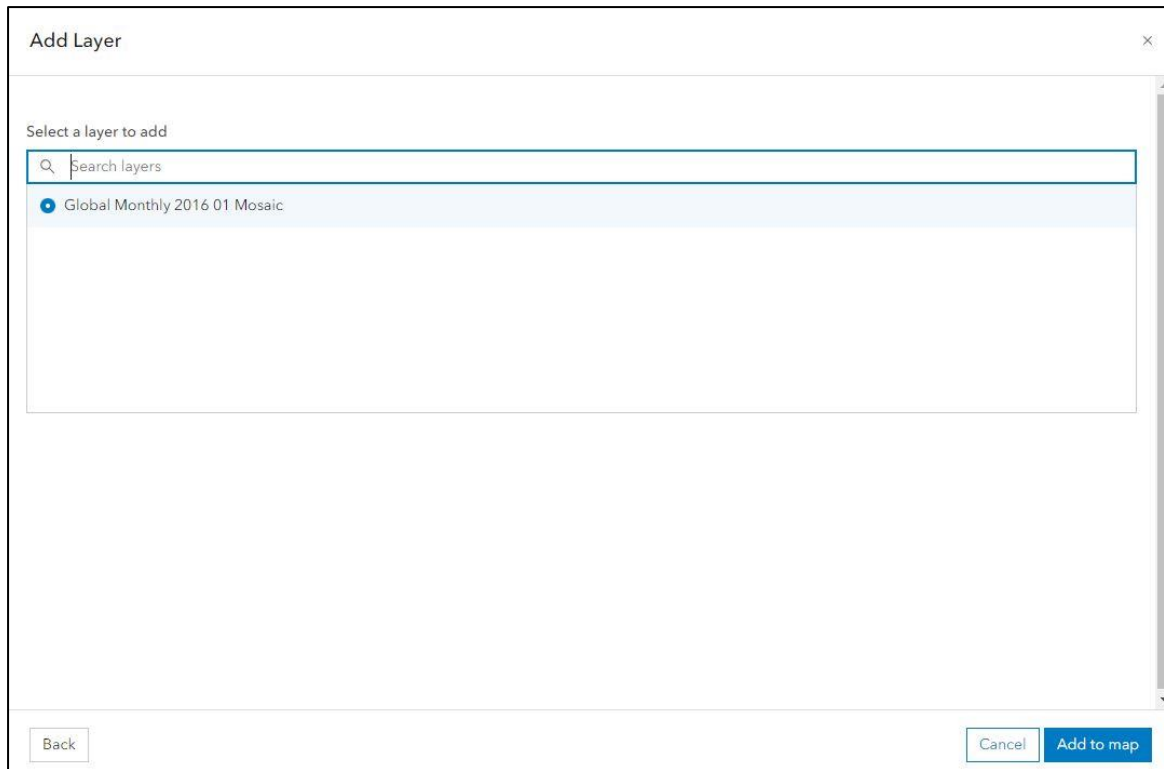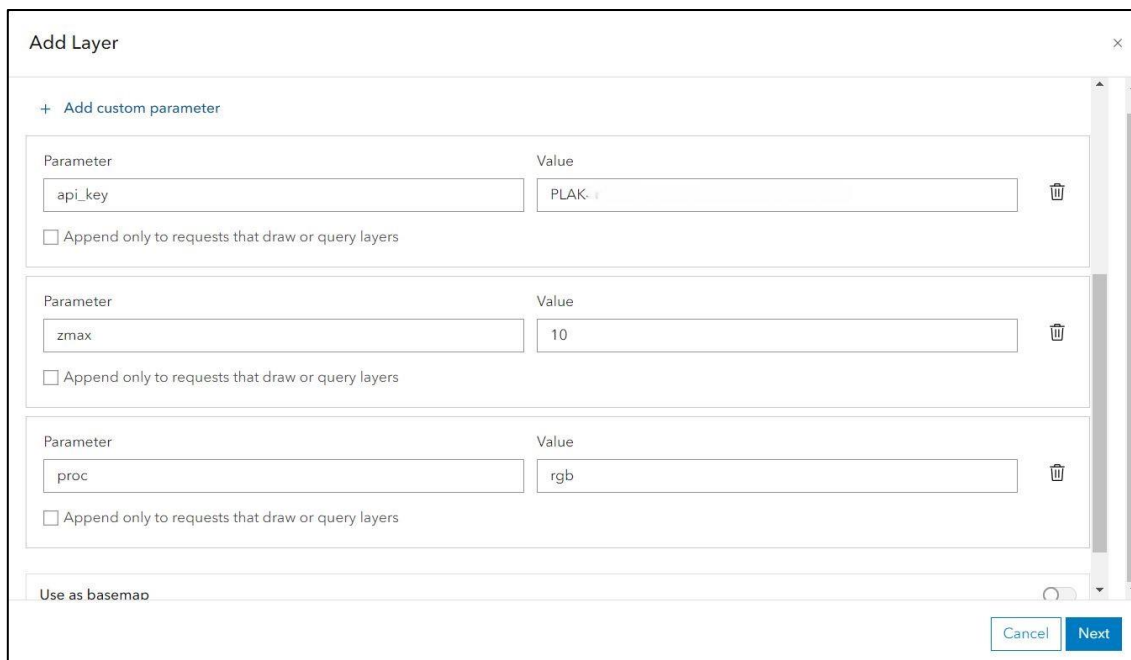
k. The map successfully loads into AGOL.
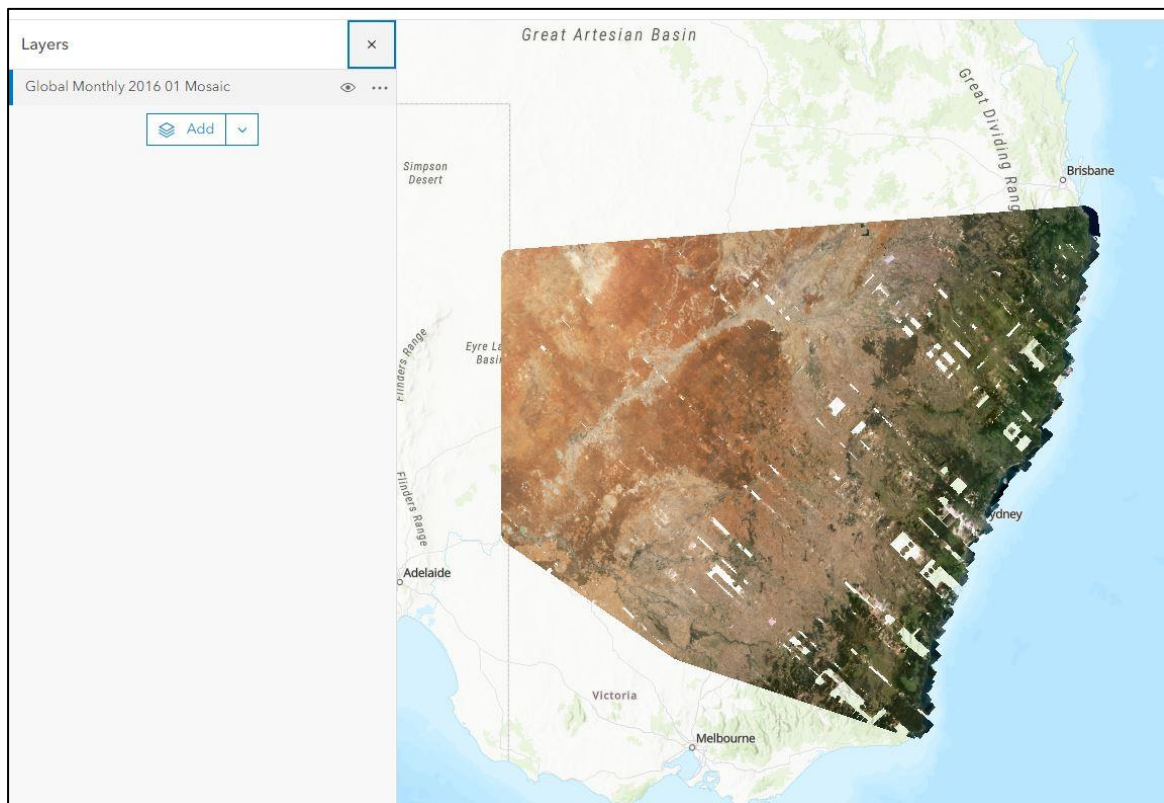
5. Adding Greater Sydney Skysat basemap to AGOL

The Greater Sydney Skysat basemap is available as '*Nsw Skysat Normalized Analytic 2023-12-01 To 2024-01-13 V2 Mosaic*'. This basemap has a higher resolution than the Planet monthly mosaics and could be added to AGOL using the above steps. By default, this basemap loads as a false colour composite. However, if you wish to load this bas map as a true colour then add another custom parameter '**proc**' and set its value as '**rgb**'.

The basemap will load in true colour.
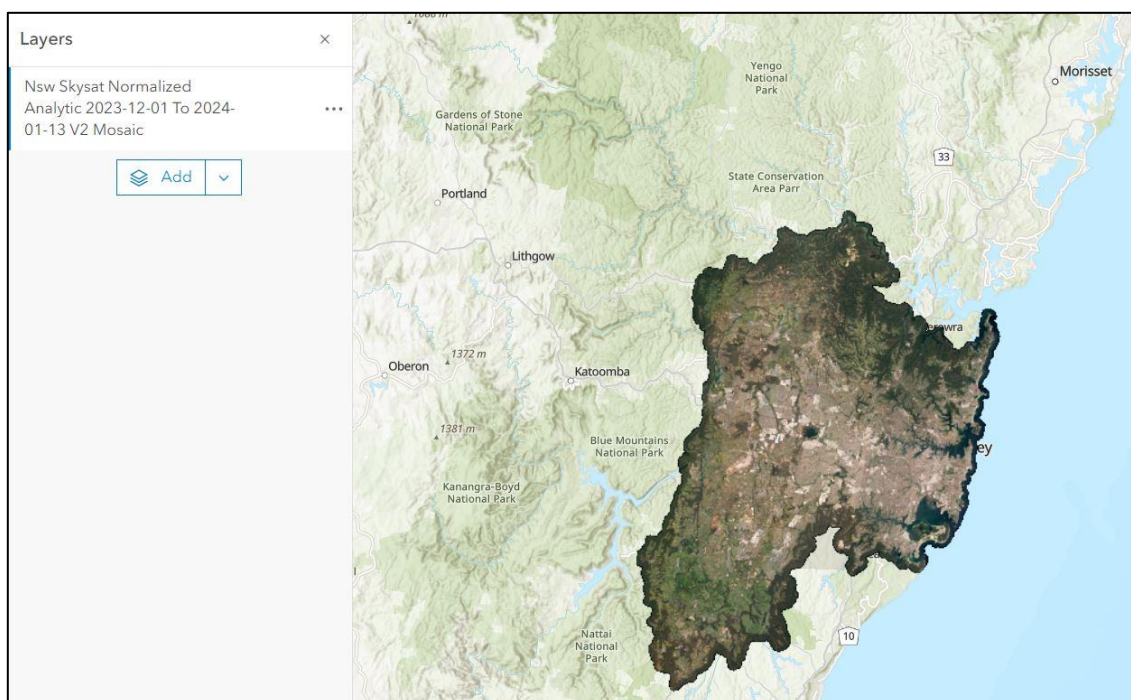
Adding PlanetScope Individual Scenes (XYZ Tiles)

1. **Web service URL format**
   a. We will be using Planet's <u>API Tile Service</u>. Open a Microsoft Word document or notepad and copy or note down the following URL:
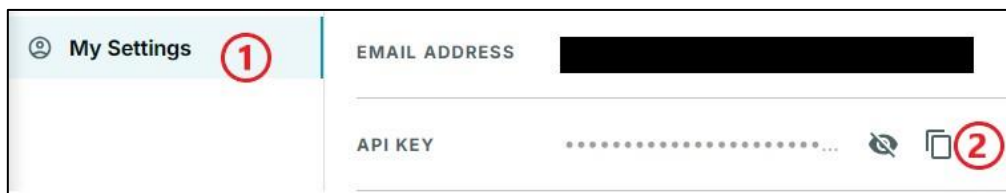   <u>https://tiles1.planet.com/data/v1/{item_type}/{item_id}/{z}/{x}/{y}.png?api_key ={api-key}</u>

2. **API Key**
   a. A valid Planet account is required to authenticate web services by providing a valid api_key as a query parameter. To find your api_key please login to <u>https://www.planet.com/account/</u> in a new web browser.
   b. Navigate to *My Settings* > Copy API key

   c. Replace {api-key} in the URL above (step 1) with your copied API key.

3. **Scene ID**
   a. Next find your Scene ID for the image you wish to add into AGOL. You can use Planet Explorer, the ArcGIS Pro Add-in or QGIS Plug-in (if applicable) to find the IDs for the selected imagery items. Today we suggest using Planet Explorer by logging into: <u>https://www.planet.com/explorer/</u>

   b. Search the Explorer interface for a Scene. For more information please see: <u>https://developers.planet.com/docs/apps/explorer/how-to-searchimagery/</u>

   c. Select the image in the window and click on "API".
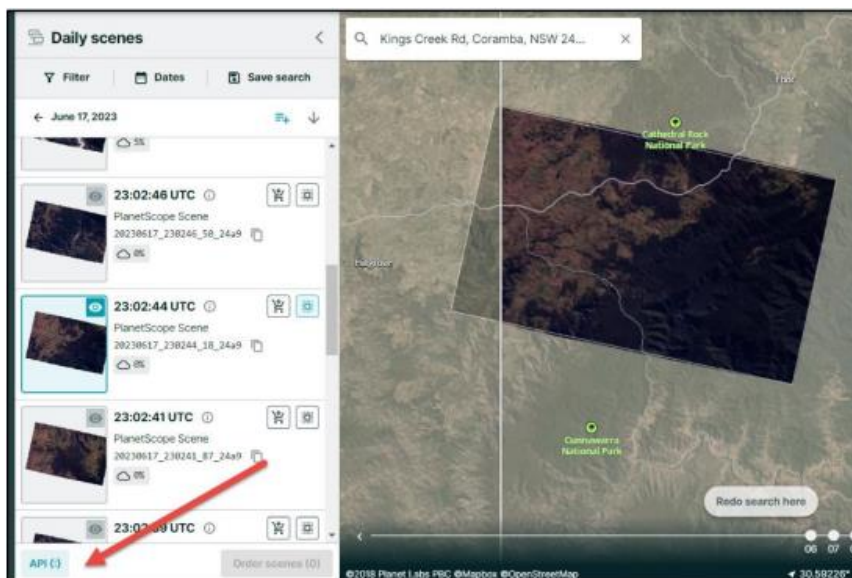
    d.   Copy the Selected Scene IDs
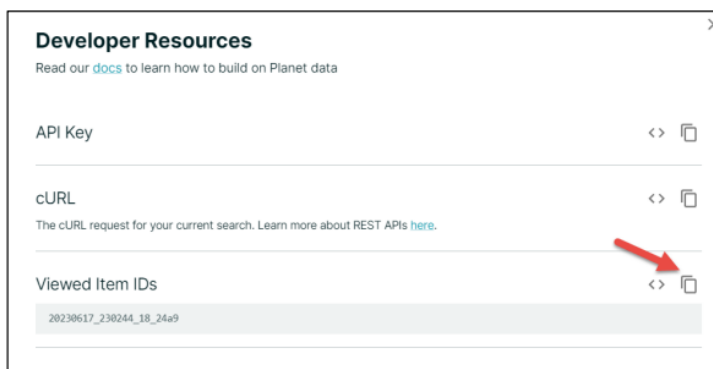
    e.   Replace {item_id} in the URL (step 1) above with your copied scene ID.

    f.   Next, update the {item_type} with the item name i.e. "SkySatCollect" for the mosaic, or "SkySatScene" for single items. For PlanetScope use "PSScene". For example: https://tiles1.planet.com/data/v1/PSScene/20230617_230244_18_24a9/{z}/{x}/{y }.png?api_key={api-key}

4. **Add to AGOL**

    a.   Open ArcGIS Online (https://www.arcgis.com/home/index.html) or ArcGIS Enterprise Portal and login.

    b.   Open the Map Viewer window. You can use either the New Map Viewer or the Map Viewer Classic.

    c.   If using the New Map Window, please select *Layers*, then *Add layer from URL*.
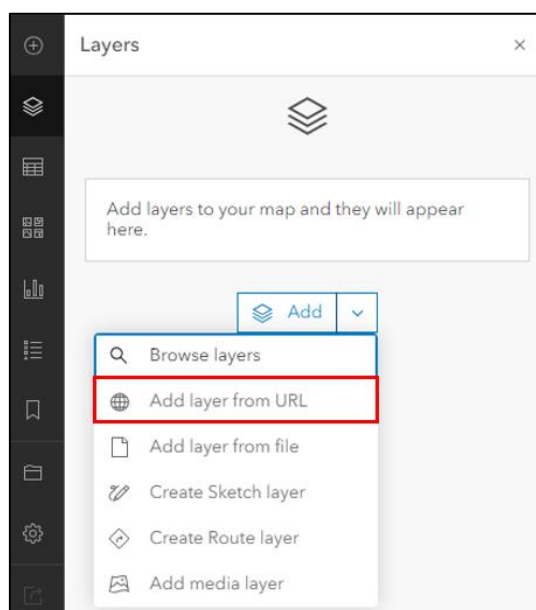
    d.   Add your newly created URL and select the type as "Tile Layer".
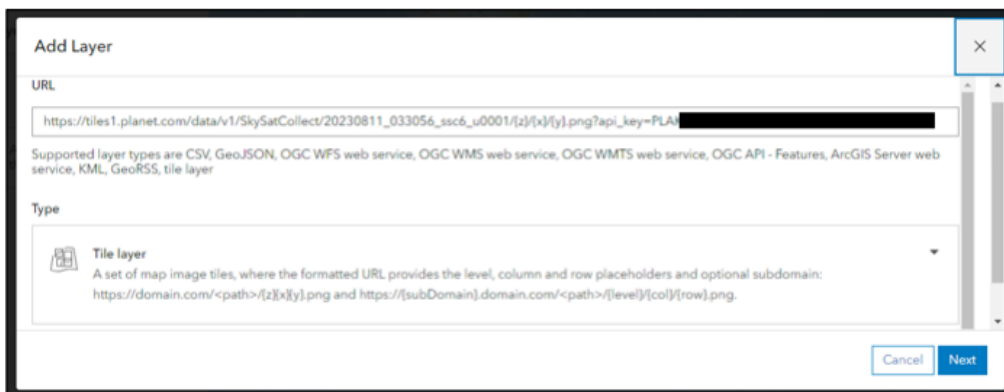
e. Fill in the Name, Attribution, and other options.

f. Once added to the map, zoom in to the image.
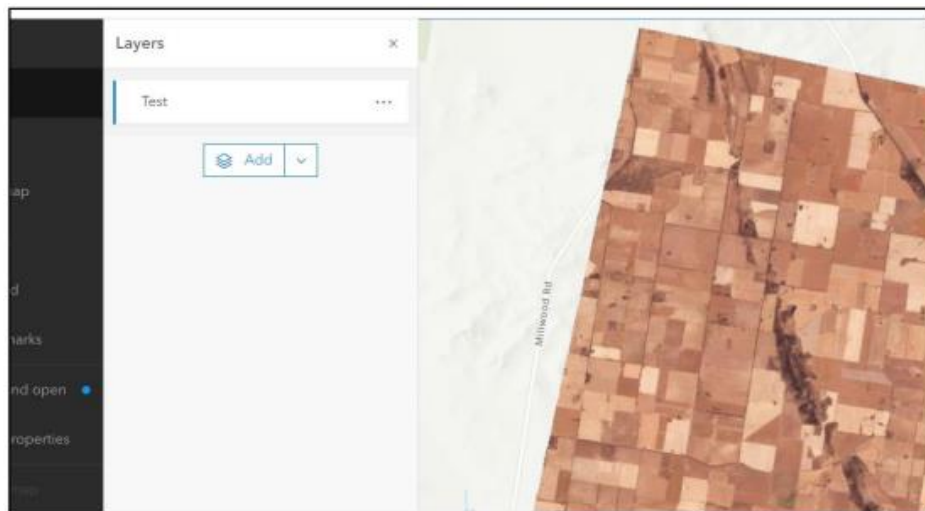
g. If using the Map Viewer Classic, please select "Add Layer from Web" and then select "A Tile Layer" from the drop-down.
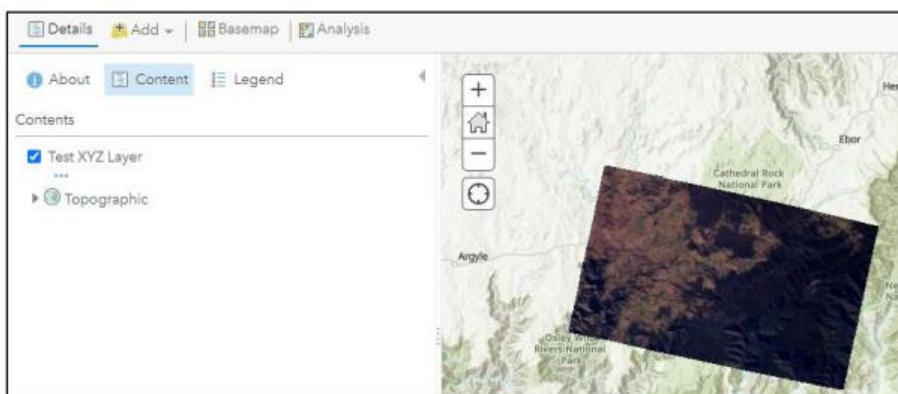
Notes

- Please note that Esri has limited functionality for saving XYZ tile layers into the Catalog for sharing with other groups and requires users to add XYZ services into maps directly.

- Further information on adding XYZ tile layers can be found here: https://esribelux.com/2021/04/16/xyz-tile-layers-in-arcgis-platform/

- We recommend this Tile Service approach over exporting the service from the Esri ArcGIS Pro Add-in or QGIS Plugin, as those services contain a token that expires. The option above will not expire as no token is required.

Further Information

For more information about loading imagery in AGOL, please email spatial.imagery@environment.nsw.gov.au or contact Sue Rea on 6640 2577