Airbus OneAtlas Data Downloader User Guide

September 19, 2021

Contents

Overview

The Airbus OneAtlas Data Downloader is a custom Toolbox used in ArcGIS Pro. The toolbox automates download, and decompression of products ordered through OneAtlas Data. The decompression step is optional. Once downloaded, ArcGIS Pro provides extensive 2D and 3D raster visualization and analysis capabilities. ArcGIS Pro also provides a powerful publishing wizard – 'Create Hosted Imagery Layer',

which publishes imagery to ArcGIS Image for ArcGIS Online. In addition to streaming full band count & bit depth raster data, Hosted Imagery Layers also present a rich set of raster capabilities in support of 2D and 3D visualization, custom band composites, band indices, stretch, classification, and extensive support for analysis.

Getting Started

The toolbox is used in ArcGIS Pro and makes use of an API key that you create using your OneAtlas Data Subscription. Please visit the OneAtlas Developer Portal at https://api.oneatlas.airbus.com/ to create your API key. This key enables the toolbox to display a listing of products that have been ordered through OneAtlas Data and delivered to your 'My Data' workspace.

Install ArcGIS Pro

The Toolbox can be run using ArcGIS Pro version 2.7 or above. ArcGIS Pro installation software can be accessed by logging in to https://my.esri.com/

If you will be using ArcGIS Pro to publish Hosted Imagery Layers to ArcGIS Online, it will be important to use version 2.9 (or higher) to access the "Create Hosted Imagery Layer" wizard.

Considerations with ArcGIS Pro version 3.0 and above

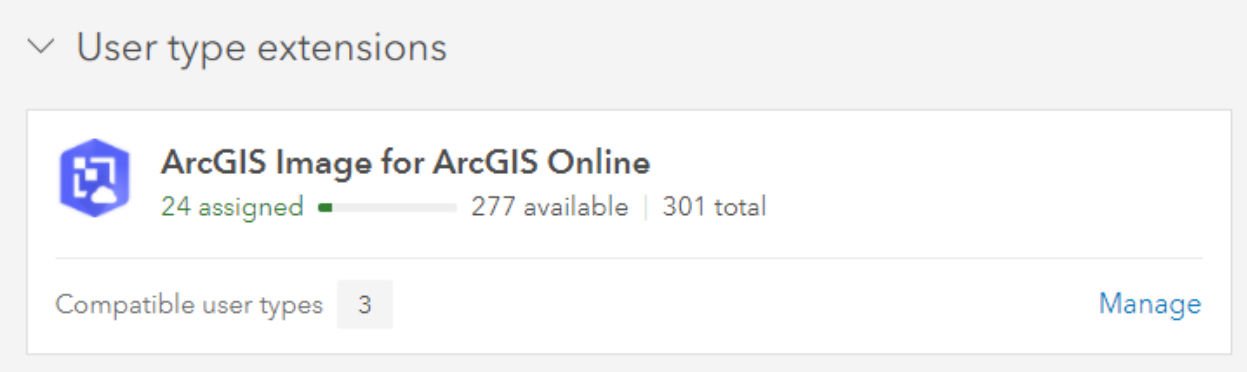
Dynamic interaction between the Active Map in ArcGIS Pro and the selected OneAtlas product(s) in the toolbox is enhanced if using ArcGIS Pro 3.0 (or higher).

If you will be publishing Pleaides Neo data as Hosted Imagery Layers, you will need to use ArcGIS Pro 3.0 (or higher) which includes support for the Pleiades Neo product type. Other Living Library data such as SPOT 6, SPOT 7, Pleiades-1a and Pleaides-1b are fully supported with publishing Hosted Imagery Layers in version 2.8 and above

ArcGIS Online Organization

Publishing Hosted Imagery Layers in your ArcGIS Online organization also requires the ArcGIS Image for ArcGIS Online user type extension. A member with administrator role for the ArcGIS Online organization can check if it has been authorized using this URL pattern (be sure and replace YOURORG with your actual organization name) https://YOURORG.maps.arcgis.com/home/organization.html?#licenses

Scroll to the 'User type extensions' section and look for ArcGIS Image for ArcGIS Online extension.



If you do not find this user type extension, you can learn more about how to get it here: https://www.esri.com/en-us/arcgis/products/arcgis-image/options/arcgis-online

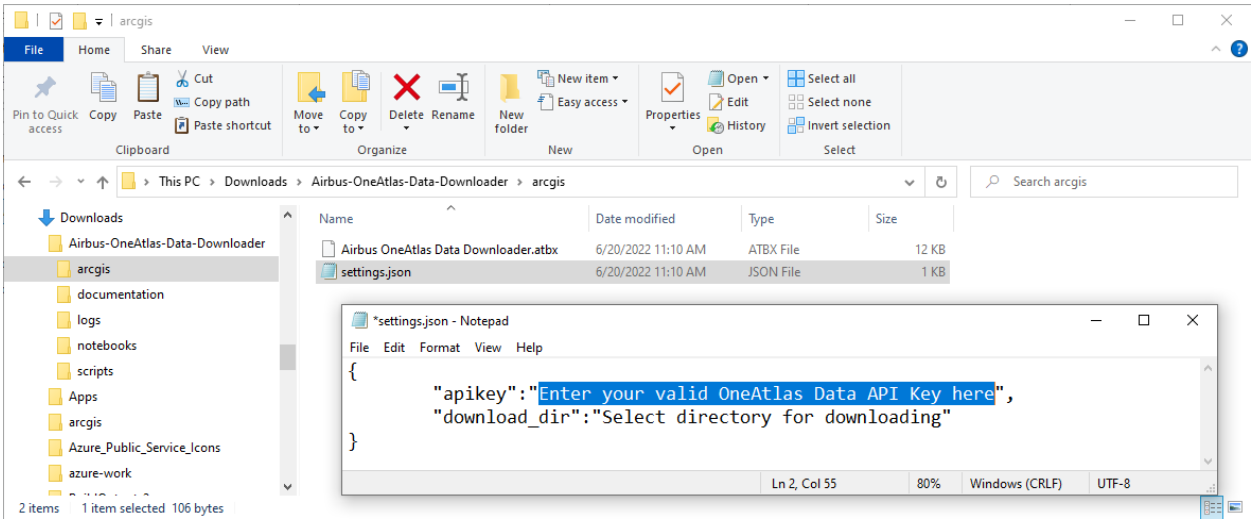
This page has a contact section at the bottom to connect with an Esri representative for licensing your ArcGIS Online organization with ArcGIS Image for ArcGIS Online.

Extract the Toolbox ZIP Archive to Local Disk

After obtaining a copy of the Airbus OneAtlas Data Downloader toolbox, extract it to a local folder in which you have **full permission** to read, write, and delete files.

Add Your OneAtlas Data API Key to the settings.json File

The settings.json file is located in the 'arcgis' subdirectory of the extracted toolbox archive. **This file is maintained automatically when these parameters are entered into the dialog when running the script in ArcGIS Pro**. If desired, users can also edit the settings file directly by opening it in a text editor and replacing the text ***Enter your valid OneAtlas Data API Key here*** with your OneAtlas Data API key. If editing the download_dir parameter directly in the text file be sure and follow the convention of using double slashes in the path (e.g. C:\temp should be specified as C:\\temp replacing the text ***Select directory for downloading***). When editing the settings.json file directly, be sure and save it with the text editor after making any changes.

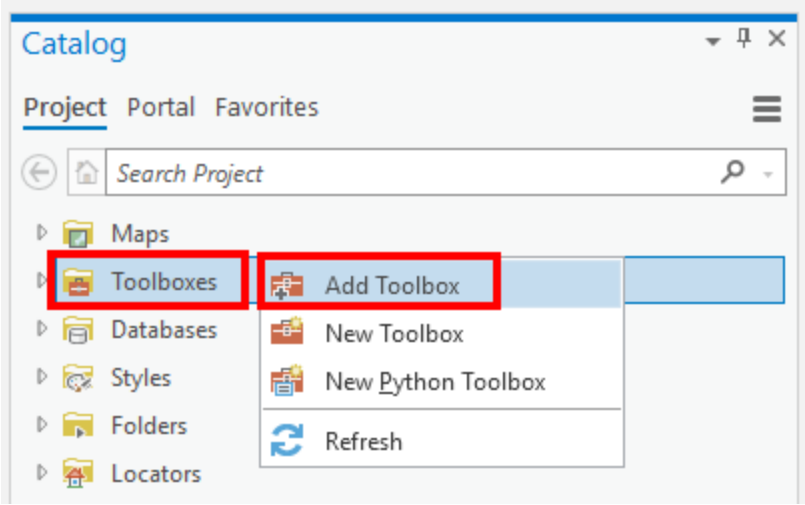


Using the Toolbox

With your OneAtlas Data API key in hand (or previously specified in the tool or the settings.json file), the toolbox is now ready to be used.

To add the toolbox to your project:

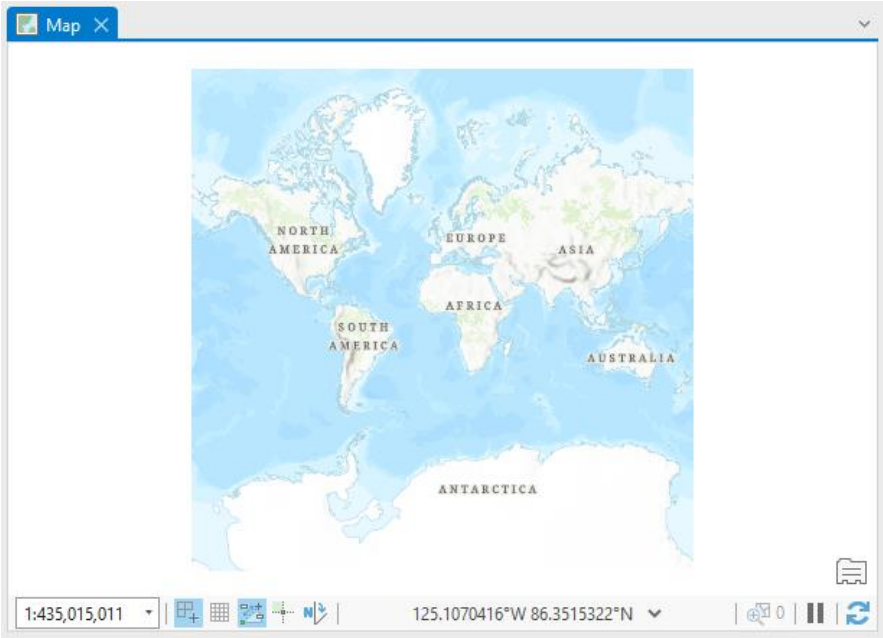
- In the 'Catalog' pane, right-click on the 'Toolboxes' item, and select 'Add Toolbox'



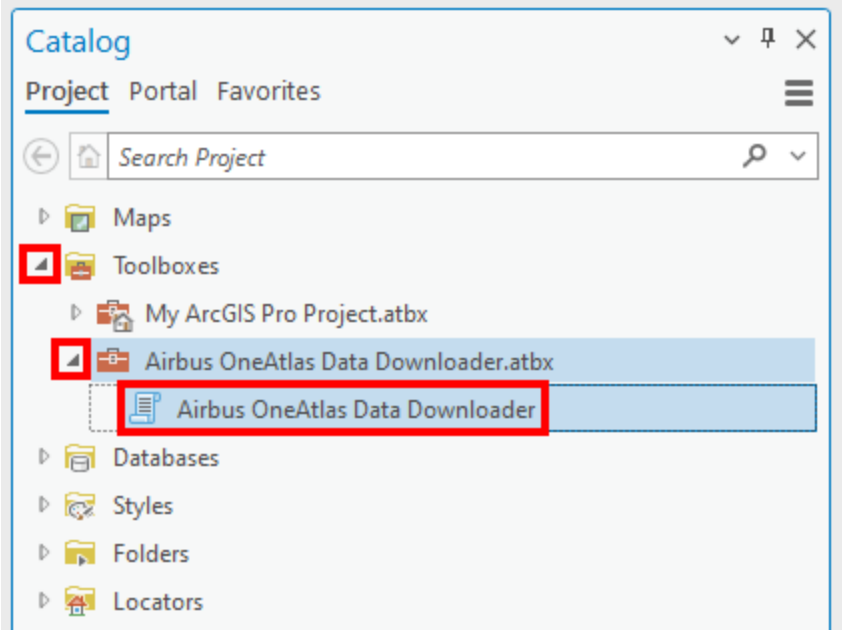
- Browse to the location on disk where the toolbox was extracted and select the 'Airbus OneAtlas Data Downloader.atbx' file

To launch:

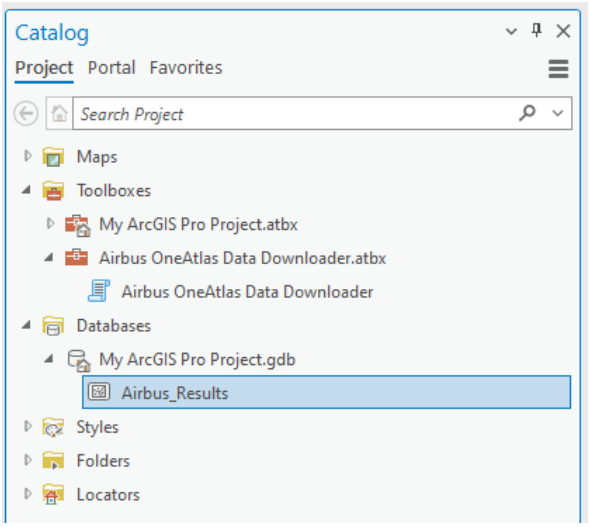
- Create a (or open an existing) Project in ArcGIS Pro, and make sure that a Map has been created.
- Make sure that the Map is open in the project which will present a map pane. Activate the Map by clicking on the tab with the Map name. this will highlight the Map tab (in the screengrab below the Map is named 'Map' and is highlighted in blue once activated.)

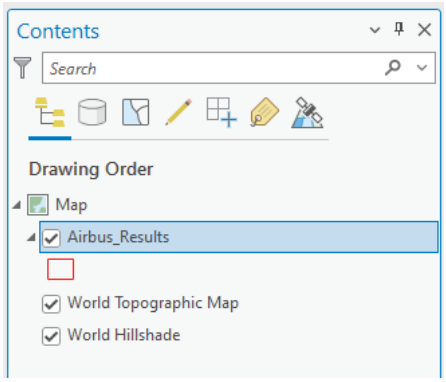


- In the 'Catalog' pane, expand the 'Toolboxes' item
- Locate the 'Airbus OneAtlas Data Downloader toolbox and click to expand
- Double-click the 'Airbus OneAtlas Data Downloader' script

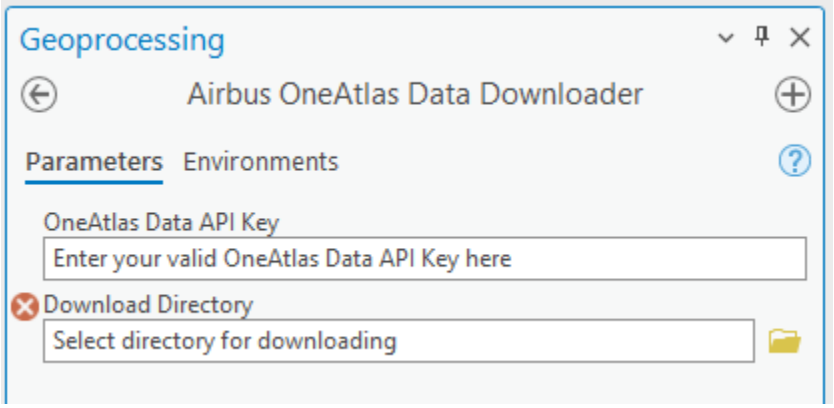


- The Airbus OneAtlas Data Downloader GeoProcessing Tool is opened
- A feature class (Airbus_Results) is added to the Project's default geodatabase, and loaded into the 'Contents' pane. This layer will be used to show selected product(s) geometry on the map when making selections.





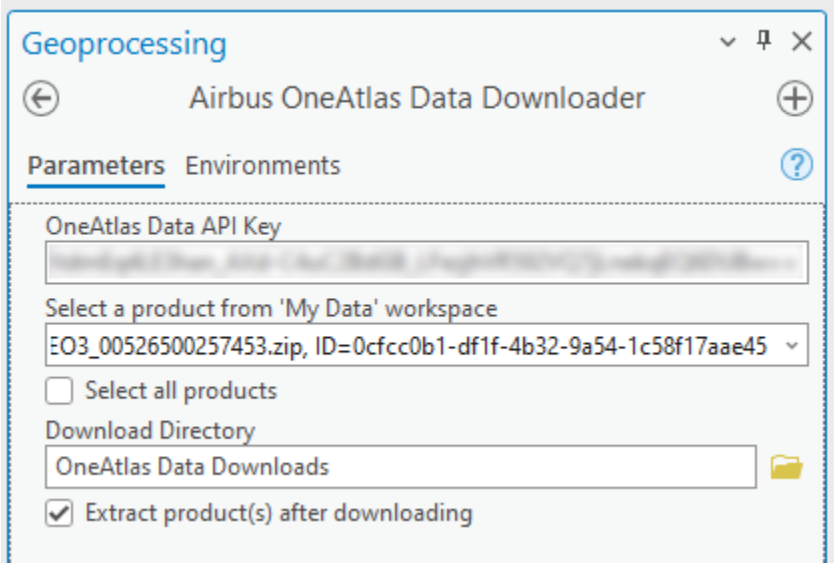
- Before the tool can be used for the first time, the 'OneAtlas Data API Key' parameter must be set: *This value must be a valid API Key obtained from the OneAtlas Developer Portal at* https://api.oneatlas.airbus.com/



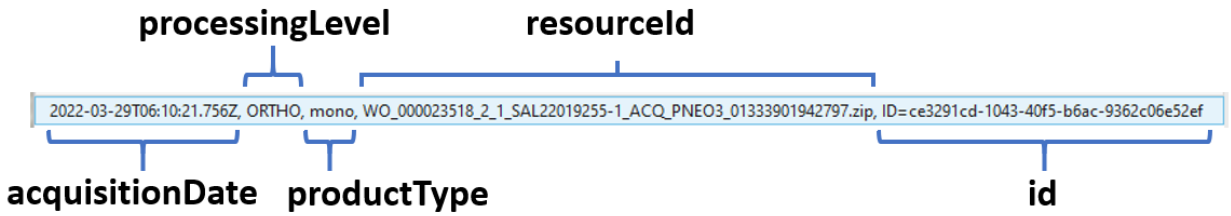
- NOTE: After specifying (or respecifying) this parameter, it is written to the settings.json file for future recall when using this toolbox
- Once this parameter has been satisfied correctly, additional tool parameters will be shown for selection of product(s)

Selecting a Product

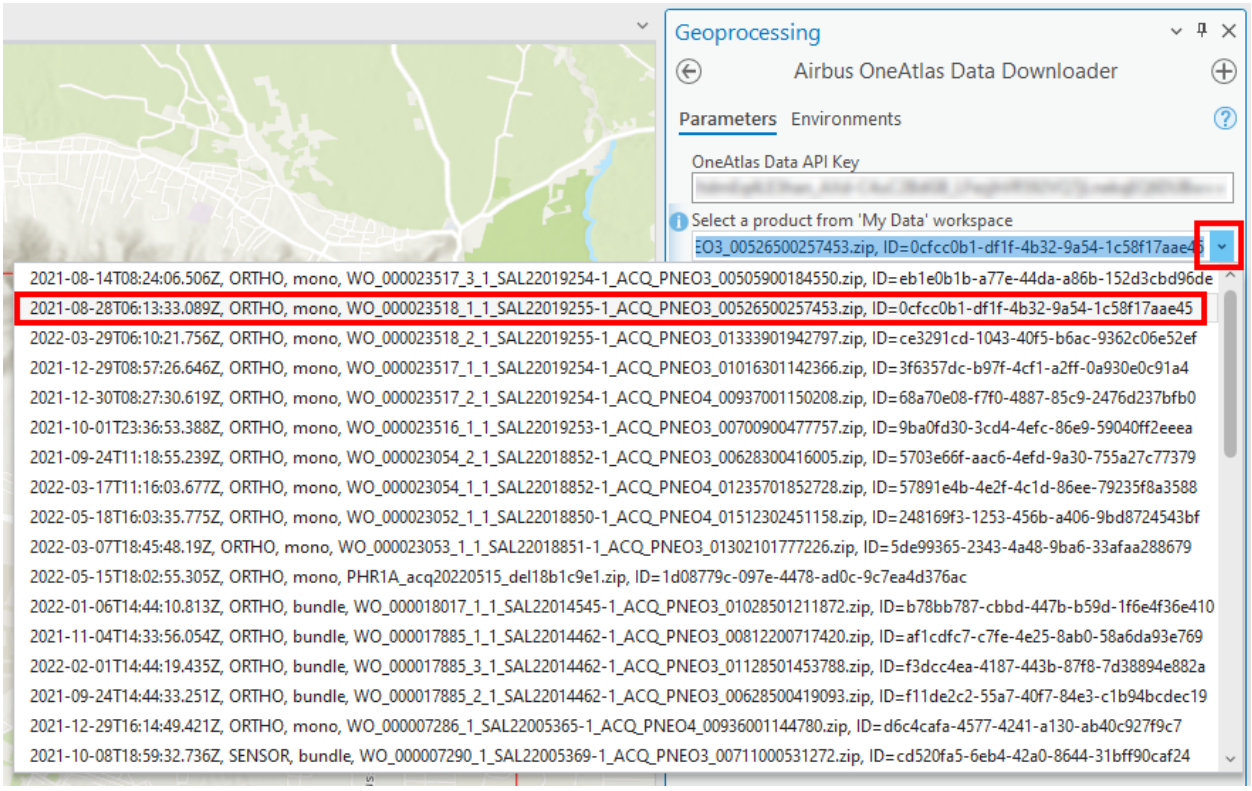
- Use the Select a product from 'My Data' workspace parameter to choose any single product
- If downloading and extracting all products in the workspace, check the 'Select all products' parameter



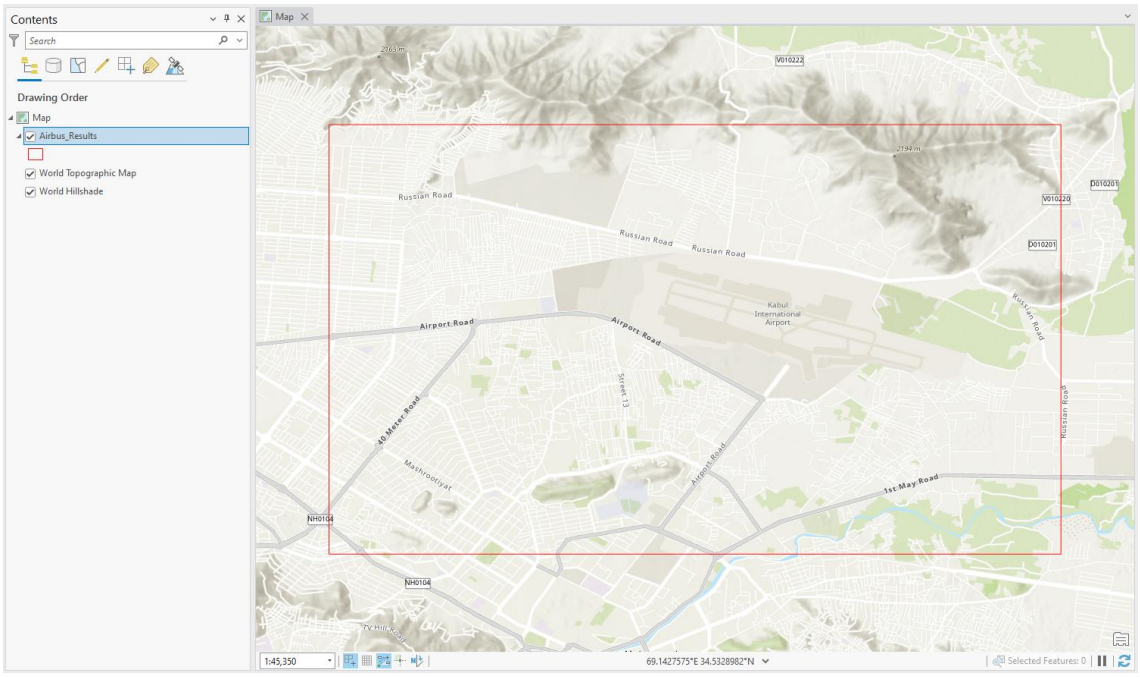
The Select a product from 'My Data' workspace control contains a list of the products available for download. It lists key information about each product including 'acquisitionDate, 'processingLevel', 'productType', 'resourceId', and 'id'.



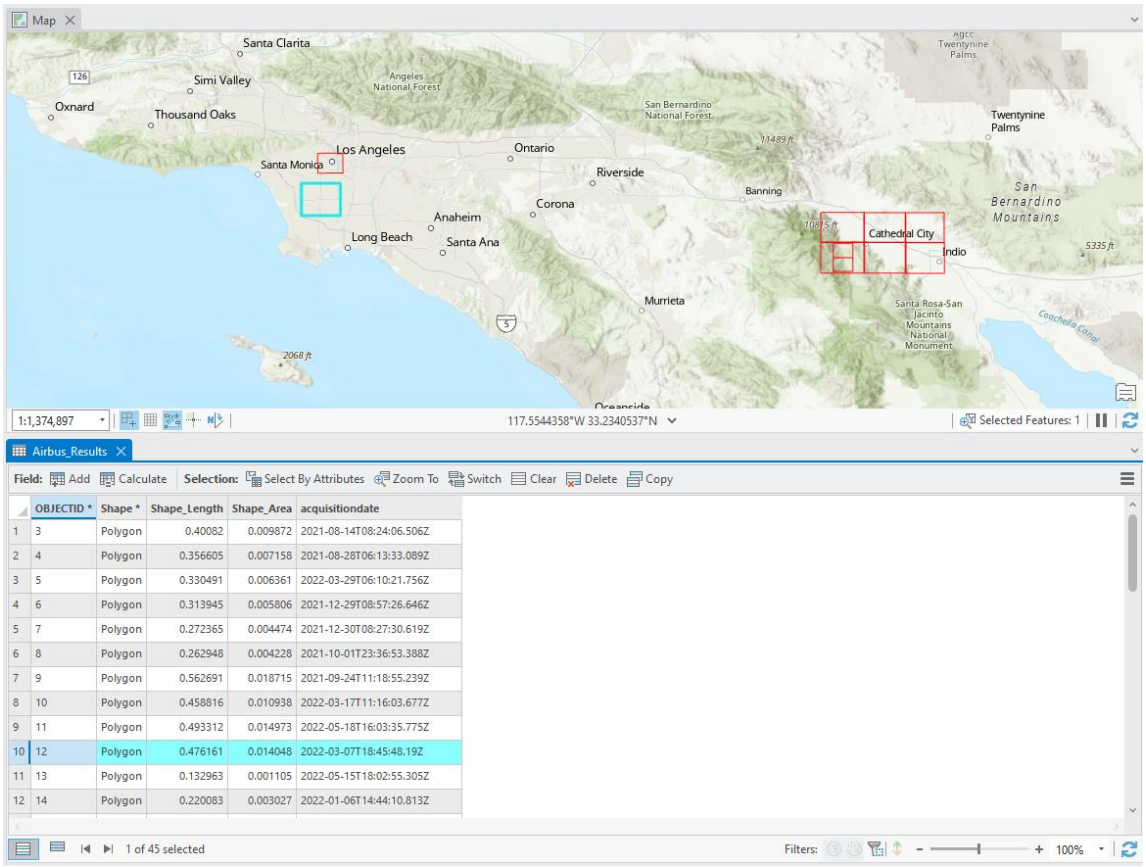
- Click the control and select one of the available products



After a selection is made, additional information is accessed from OneAtlas Data API including the product geometry (also known as the footprint). This polygon geometry is loaded into the Airbus_Results feature class, and the active Map automatically zooms to the selected product's extent. Any new product selection will flush the previous geometry, load the new one, and zoom to its extent on the map. This footprint location info can be helpful in deciding which product(s) you need to work with.



Attributes are also managed in this feature class based on the selected product(s). When 'Select all products' is checked, the feature class will be updated with the polygons and attributes for all products in the 'My Data' workspace.

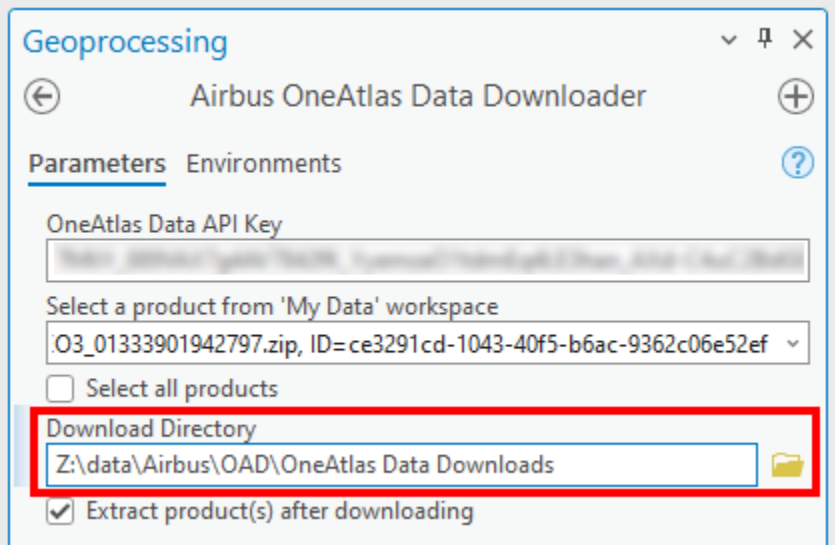


	OBJECTID *	Shape *	Shape_Length	Shape_Area	acquisitiondate
1	3	Polygon	0.40082	0.009872	2021-08-14T08:24:06.506Z
2	4	Polygon	0.356605	0.007158	2021-08-28T06:13:33.089Z
3	5	Polygon	0.330491	0.006361	2022-03-29T06:10:21.756Z
4	6	Polygon	0.313945	0.005806	2021-12-29T08:57:26.646Z
5	7	Polygon	0.272365	0.004474	2021-12-30T08:27:30.619Z
6	8	Polygon	0.262948	0.004228	2021-10-01T23:36:53.388Z
7	9	Polygon	0.562691	0.018715	2021-09-24T11:18:55.239Z
8	10	Polygon	0.458816	0.010938	2022-03-17T11:16:03.677Z
9	11	Polygon	0.493312	0.014973	2022-05-18T16:03:35.775Z
10	12	Polygon	0.476161	0.014048	2022-03-07T18:45:48.19Z
11	13	Polygon	0.132963	0.001105	2022-05-15T18:02:55.305Z
12	14	Polygon	0.220083	0.003027	2022-01-06T14:44:10.813Z

Downloading

Before downloading, the 'Download Directory' parameter must first be set. *This value must be a directory accessible from the computer running ArcGIS Pro, and must grant the user both read and write permissions*

- Click the folder icon on the 'Download Directory' control and select a location to store your OneAtlas Data product downloads. The selected directory will be stored in the settings.json file for future recall when using this toolbox

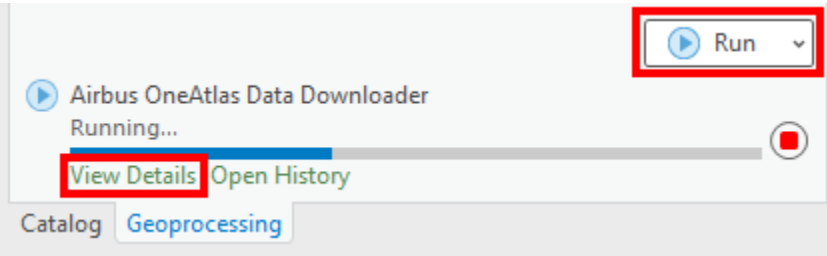


- By default, the 'Extract product(s) after downloading' parameter will be checked. If you do not wish for the product ZIP archive(s) to be extracted automatically by the toolbox, uncheck this option

Download a single product

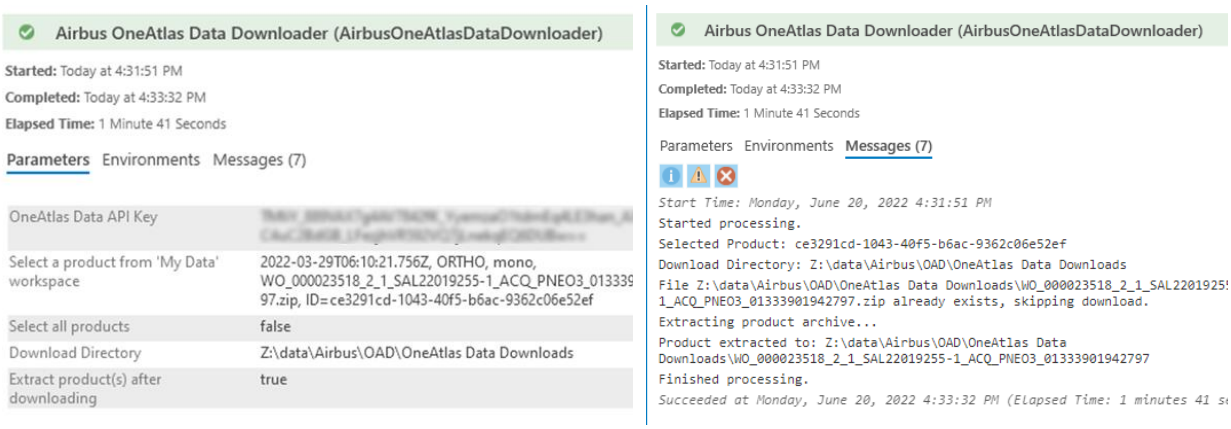
To download the selected product:

- Click the 'Run' button



While the process is running (and also when complete), messages are available to view by clicking on the 'View Details' text link. This opens process details panel including information for:

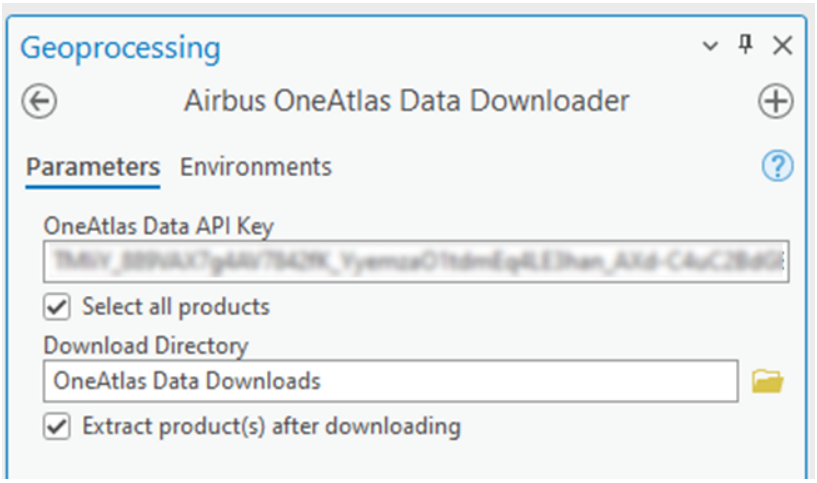
- 'Parameters' used
- 'Messages' from the processing



Downloading all products

To download all products from the 'MyData' workspace:

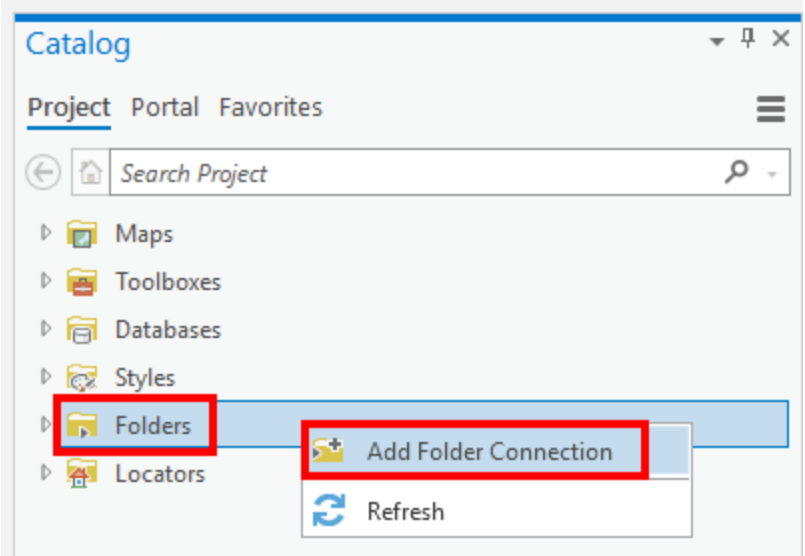
- Check the 'Select all products' Parameter. *NOTE: While checked, the 'Select a product from My Data workspace' parameter is disabled. To return to single product selection, just uncheck the 'Select all products' parameter.*
- Click the 'Run' button



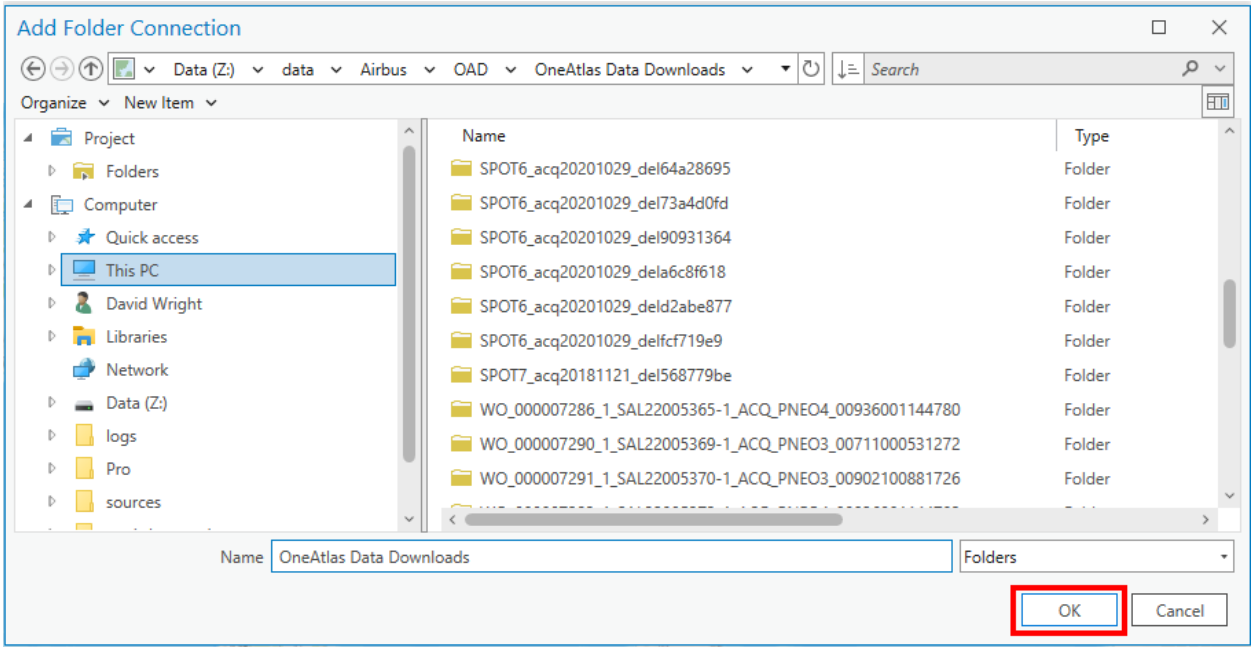
Making a Folder Connection to the Download Directory

After downloading, ArcGIS Pro can most effectively exploit OneAtlas Data products by making a Folder Connection.

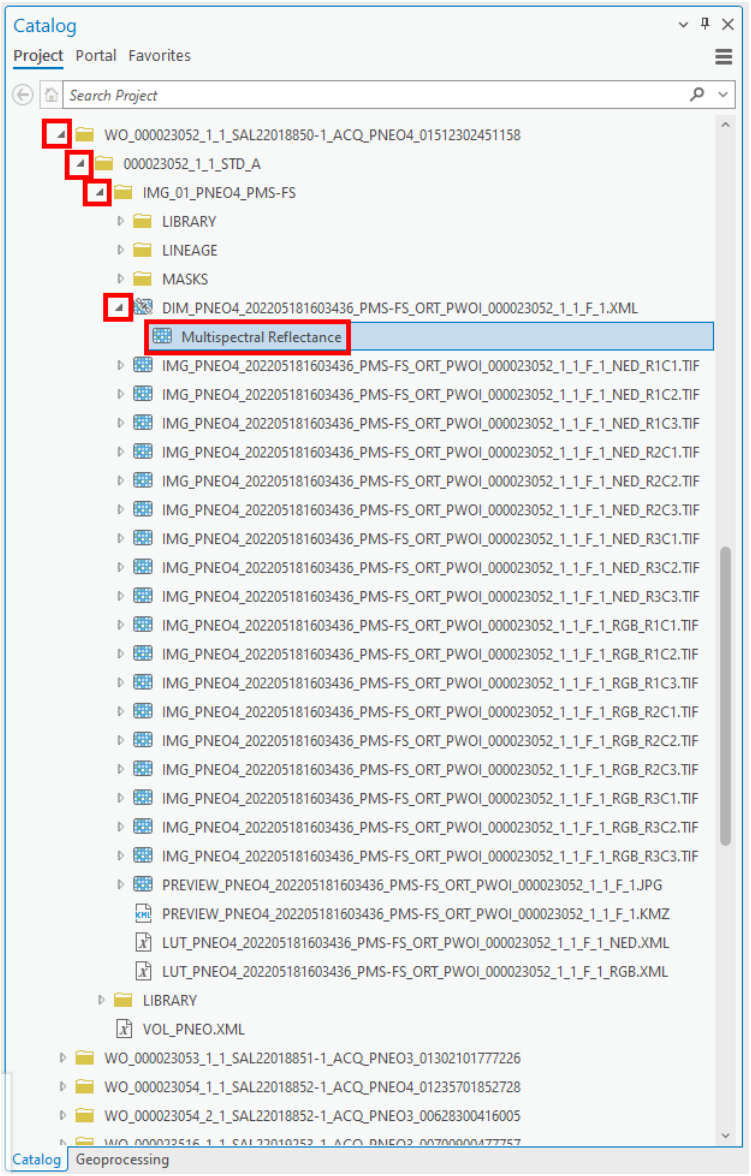
- In the 'Catalog' pane right-click on the 'Folders' item
- Select 'Add Folder Connection'



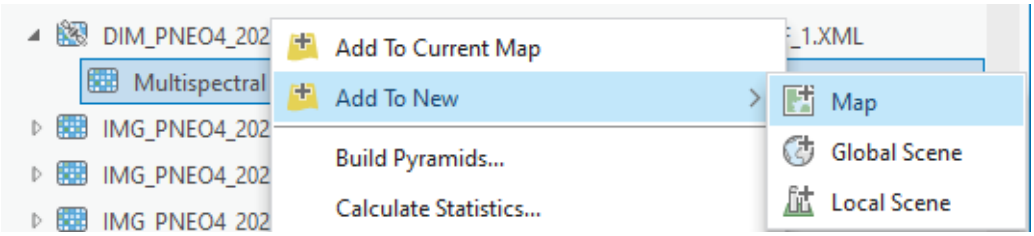
- Browse to, and select the same directory that was specified in the 'Download Directory' Parameter
- Click the 'OK' button



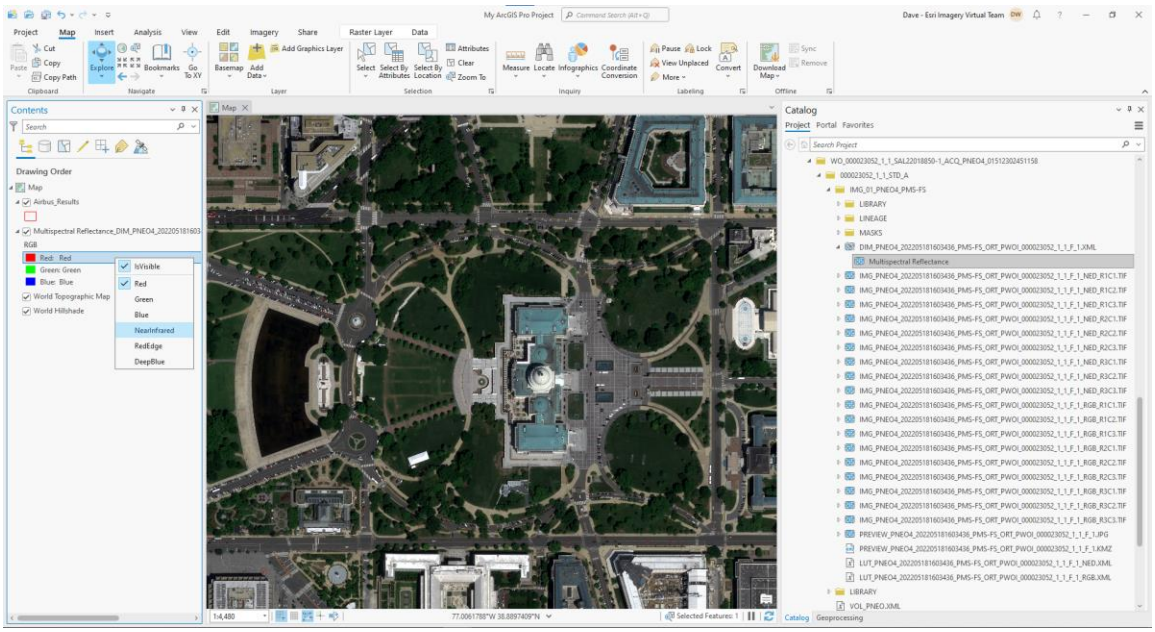
- In the 'Contents' pane, expand this new folder connection to reveal all of the downloaded products
- Expand one of the products until the DIM_* file(s) are exposed
- Expand the DIM_ * file to reveal the processing templates that are available for that product



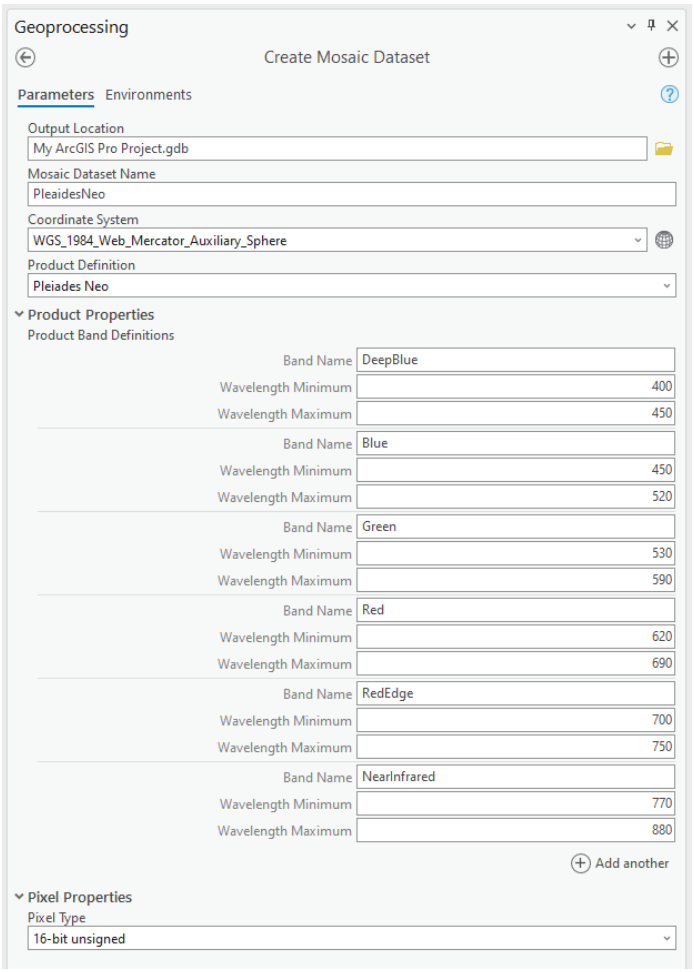
- Click, then drag-and-drop the processing template onto your Map. You can also right-click the processing template and choose ‘Add To New’ > Scene to support 3D visualization



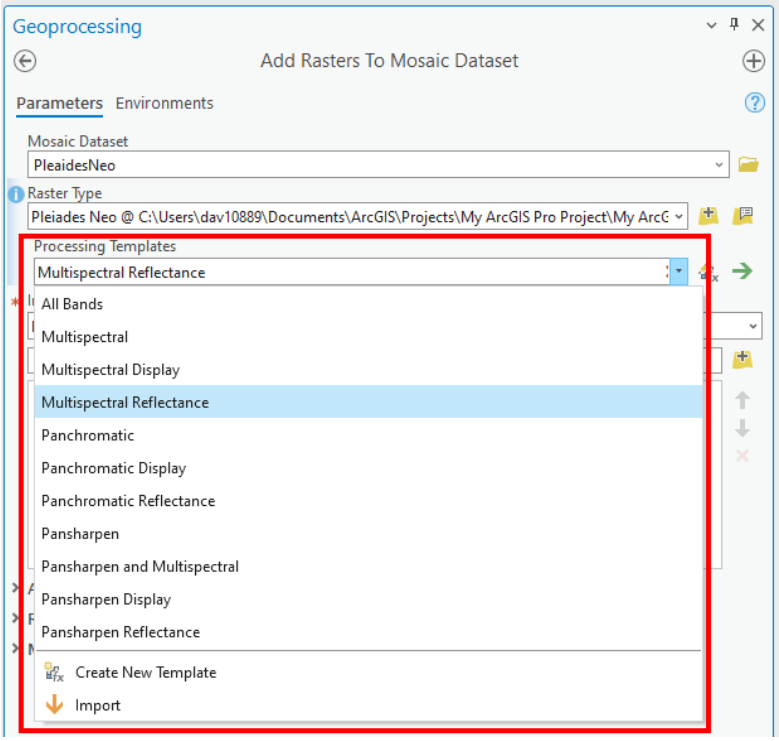
- The product will be loaded for visualization and analysis



- The downloaded products can also be added to Mosaic Datasets where rendering control can be accomplished on a set of imagery products. While SPOT and Pleiades-1 have been supported in ArcGIS Pro for many years, full Product Definition for Pleiades Neo requires ArcGIS Pro 3.0 or above.

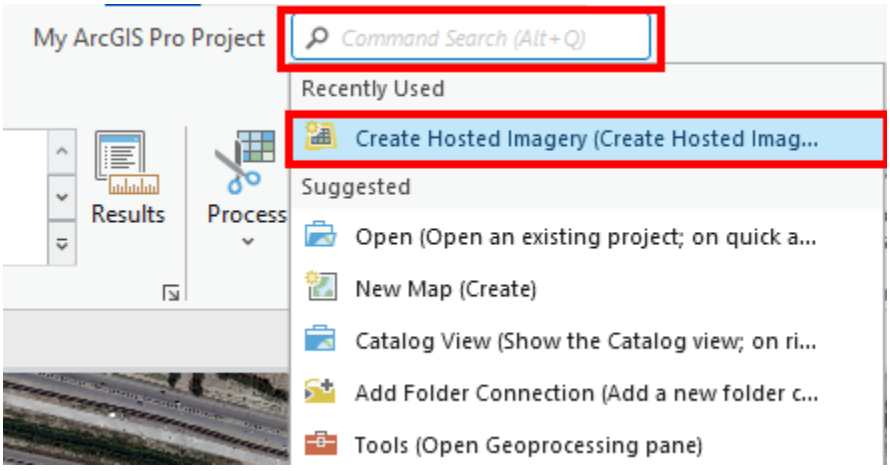


- Another benefit of ArcGIS Pro 3.0 and above with respect to Pleiades Neo is that the full set of Pleiades Neo Processing Templates are available when using the 'Add Rasters' tool for a Mosaic Dataset

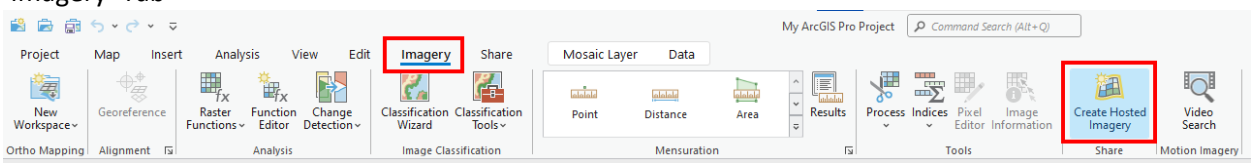


Publishing Hosted Imagery Layers

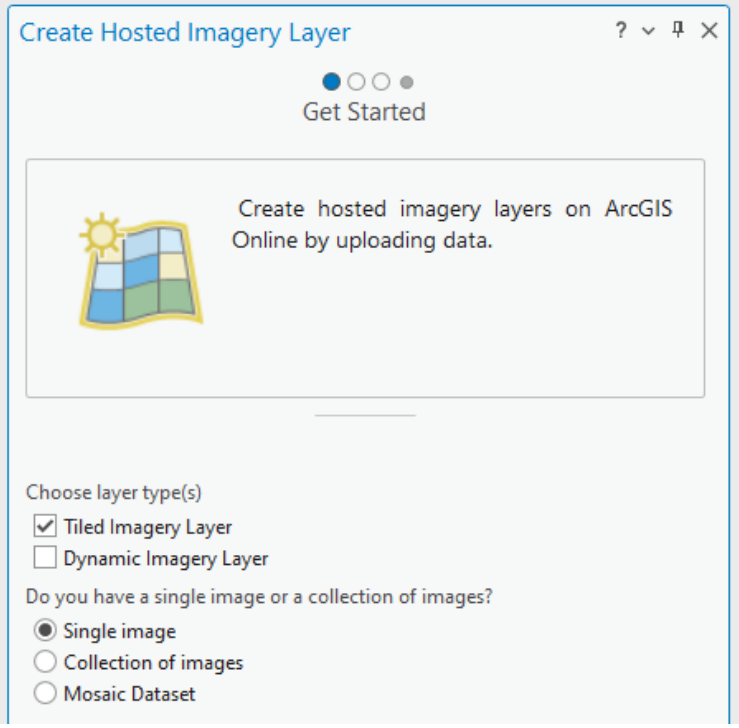
To publish a Hosted Imagery Layer to ArcGIS Online, the 'Create Hosted Imagery Layer' wizard is used. This tool is only available when signed into your ArcGIS Online organization as the Active Portal in ArcGIS Pro. It can be accessed in ArcGIS Pro 2.9 and above using the Command Search bar.



In ArcGIS Pro version 3.0 and above, this tool can also be accessed in the main Ribbon under the 'Imagery' Tab

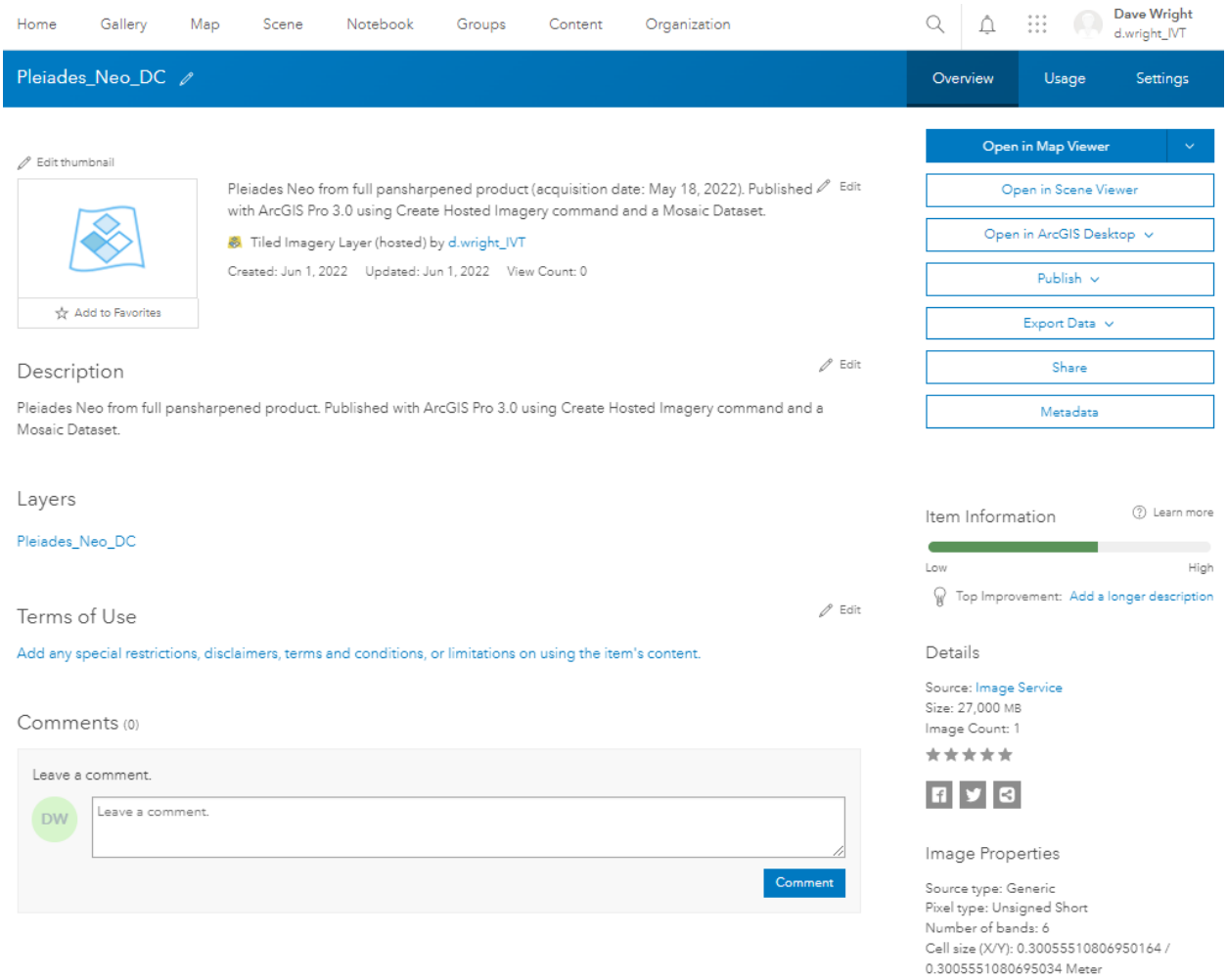


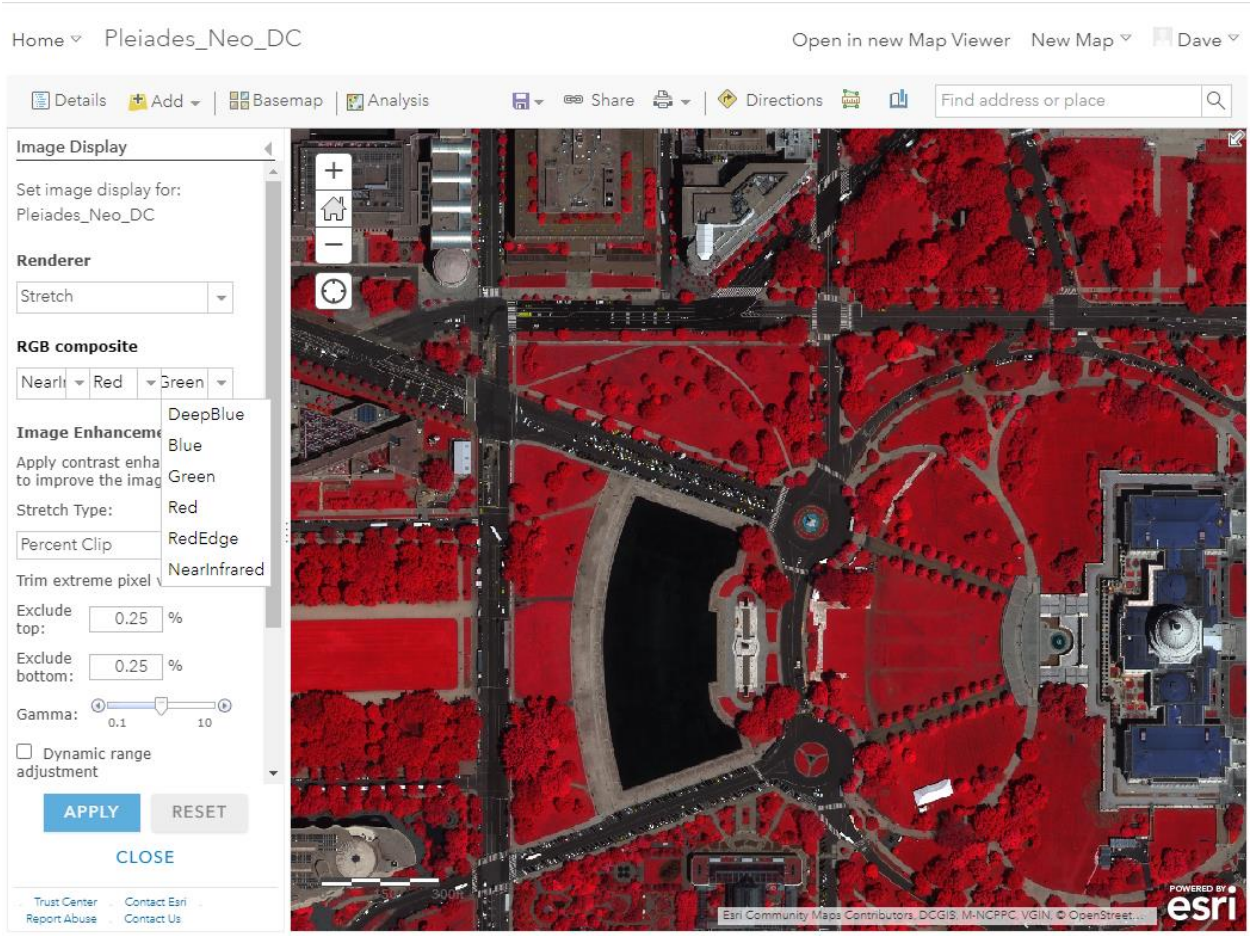
The functionality of this tool closely resembles the ArcGIS Online web user interface workflow for creating a new Imagery item from the Content page. This workflow is maintained as a core part of ArcGIS Pro and is fully documented here: https://pro.arcgis.com/en/pro-app/latest/help/sharing/overview/publish-hosted-imagery-layers.htm



- *NOTE: When creating Dynamic Imagery Layer that is an Image Collection, uploaded images will **not** be converted to Cloud Raster Format (like all other configurations of Hosted Imagery Layers)*
- *To create a high-performance image collection as a Hosted Imagery Layer, all input data should first be converted to a cloud optimized raster format such as Cloud Optimized GeoTIFF (COG), Meta Raster Format (MRF), or Cloud Raster Format (CRF). You can read more about these formats here: https://doc.arcgis.com/en/imagery/workflows/best-practices/storing-imagery-in-the-cloud.htm or download a free conversion repository – Optimize Rasters at: https://github.com/Esri/OptimizeRasters*

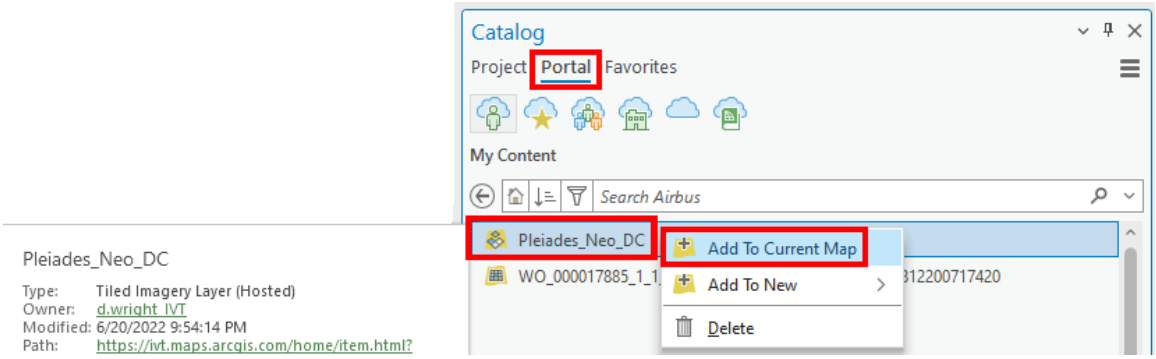
When complete, you can view the newly published Hosted Imagery Layer in ArcGIS Online by logging into your organization's portal, and clicking the 'Content' tab. The new layer will be listed and made available for visualization and analysis in web maps, web apps, and can be shared with others.


Home
Gallery
Map
Scene
Notebook
Groups
Content
Organization
Dave Wright
d.wright_IVT
Pleiades_Neo_DC
Overview
Usage
Settings
Edit thumbnail
Add to Favorites
Pleiades Neo from full pansharpened product (acquisition date: May 18, 2022). Published with ArcGIS Pro 3.0 using Create Hosted Imagery command and a Mosaic Dataset.
Edit
Tiled Imagery Layer (hosted) by d.wright_IVT
Created: Jun 1, 2022 Updated: Jun 1, 2022 View Count: 0
Open in Map Viewer
Open in Scene Viewer
Open in ArcGIS Desktop
Publish
Export Data
Share
Metadata
Description
Edit
Pleiades Neo from full pansharpened product. Published with ArcGIS Pro 3.0 using Create Hosted Imagery command and a Mosaic Dataset.
Layers
Pleiades_Neo_DC
Item Information
Learn more
Low
High
Top Improvement: Add a longer description
Terms of Use
Edit
Add any special restrictions, disclaimers, terms and conditions, or limitations on using the item's content.
Details
Source: Image Service
Size: 27,000 MB
Image Count: 1
Comments (0)
Leave a comment.
DW
Leave a comment.
Comment
Image Properties
Source type: Generic
Pixel type: Unsigned Short
Number of bands: 6
Cell size (X/Y): 0.30055510806950164 / 0.3005551080695034 Meter



Hosted Imagery Layers can also be discovered, and consumed in ArcGIS Pro.

- In the 'Catalog' pane, click the 'Portal' tab



- Navigate folders or filter content using the tool buttons
- Hover on an item to see the layer type and other information
- To add the Hosted Imagery Layer to a map, right-click it and select 'Add to Current Map'. You can also 'Add to New' (Map or Scene)

Logfiles

When the toolbox is used, a logfile is generated in the same directory structure as your *.atbx file providing output on the toolbox operations. The 'logs' folder will get created at the same directory level as the arcgis folder level. The log file will be created as a *.txt file using a current datetime stamp as the base file name. The logfile can be a useful resource for understanding the workflows, and for technical support.

Example: ..\logs\log-20220620-144427.txt

Python Notebooks

Key API methods used in this toolbox are also available as a learning resource. The Notebooks can be found in the same directory structure as your *.atbx file. The 'notebooks' folder is at the same directory level as the arcgis folder level.

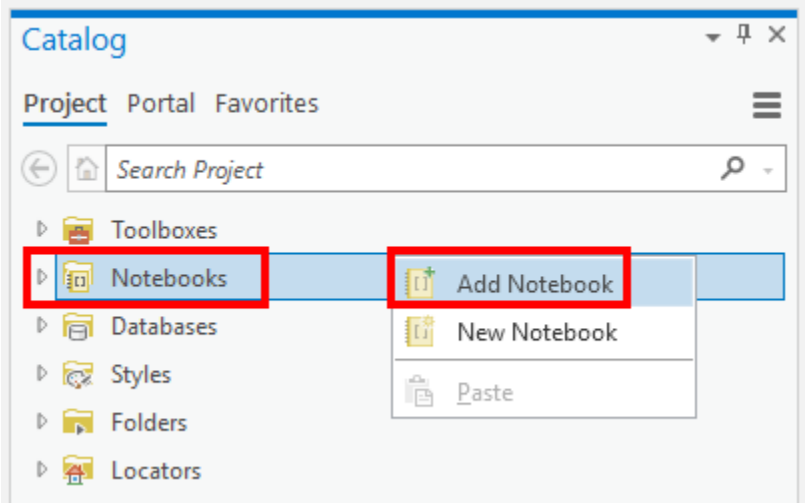
Notebooks included:

- ..\notebooks\OneAtlas_Data_methods.ipynb
- ..\notebooks\Publish_Airbus_Imagery_Layers.ipynb

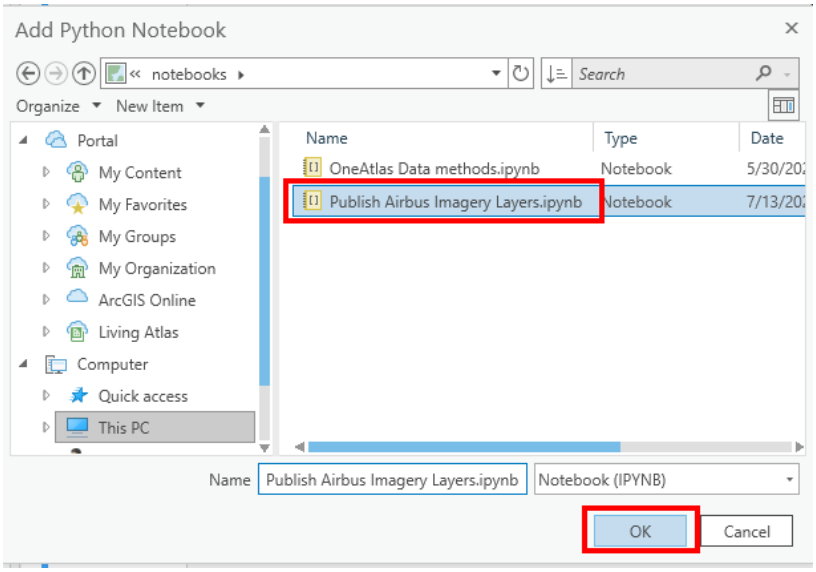
These notebooks can be loaded in ArcGIS Pro and executed cell by cell to better understand the respective Airbus and Esri APIs and the bridge that this toolbox builds between them.

To load a notebook in ArcGIS Pro:

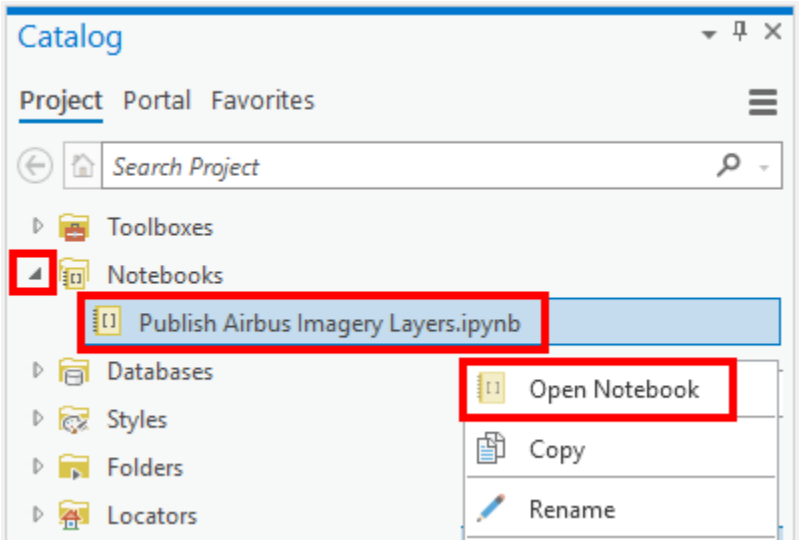
- In the 'Catalog' pane right-click on the 'Notebooks' item
- Select 'Add Notebook'



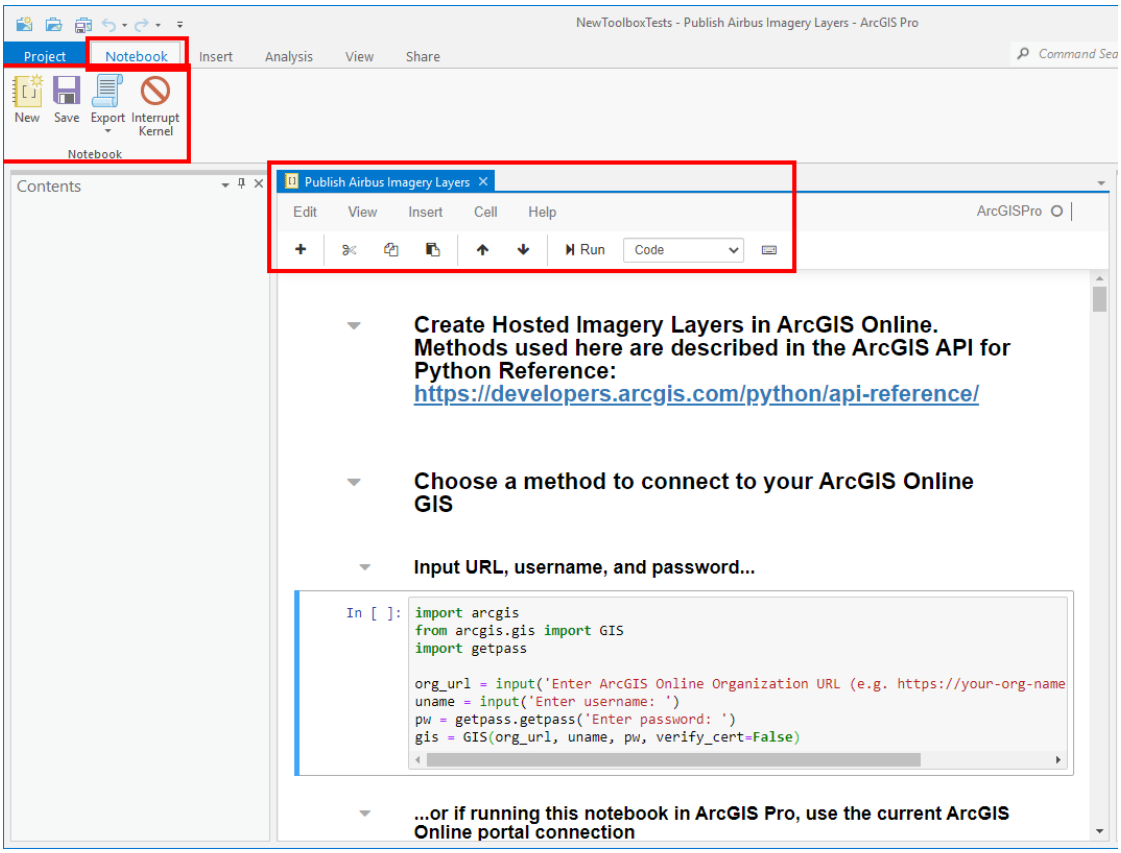
- Browse to, and select the one of the *.ipynb files in the dialog



- Click the 'OK' button
- Expand the 'Notebooks' item to reveal the new notebook
- Right-click the notebook and select 'Open Notebook'



- The Notebook is opened in a new tab in ArcGIS Pro, along with text menu items for help including keyboard shortcuts. Also, a new 'Notebook' tab is enabled in the main ribbon toolbar to save edits, export, and interrupt the kernel



Direct Publishing with the ArcGIS Notebook

- A third notebook (..\notebooks\Publish Airbus Imagery Layers.ipynb) is included that is meant to be run as a hosted ArcGIS Notebook within ArcGIS Online
    - This notebook is for publishing directly from OneAtlas Data to ArcGIS Online without having to first download the imagery
    - The entire process is described in this ArcGIS blog: https://www.esri.com/arcgis-blog/products/arcgis-online/imagery/arcgis-notebooks-to-arcgis-image-online/
    - *Note: There are three cells in the notebook that together are a workaround to accurately publish all six bands in Pleiades Neo data. In an upcoming release of the ArcGIS API for Python, the Pleiades Neo Product Type and Processing Templates will be included (as they are starting in ArcGIS Pro 3.0) shortening these three steps into one single publishing step that specifically references the Pleiades Neo Raster Type.*

Toolbox Workflow Dependencies

The Airbus OneAtlas Data Downloader Toolbox supports automation of multiple workflows, which have various requirements listed in the table below.

Toolbox Workflow	Requirement(s)	Notes
Connect to the OneAtlas Data 'MyData' workspace for a list of delivered products	• ArcGIS Pro minimum version 2.7 • Subscription for OneAtlas Data + API key	

Download product(s) from the OneAtlas Data 'My Data' workspace	• ArcGIS Pro minimum version 2.7 • Subscription for OneAtlas Data + API key	Download and extract products to local storage for direct use in ArcGIS Pro
Publish Hosted Imagery Layers using the Airbus Create Hosted Imagery Layer wizard	• ArcGIS Pro minimum version 2.9 • ArcGIS Online Creator license • ArcGIS Image for ArcGIS Online user type extension	Version 3.0 includes the Pleaides Neo Product Type, and Processing Templates
Publishing Hosted Imagery Layers using the Python Notebooks	• ArcGIS API for Python minimum version 1.8.3 • ArcGIS Online Creator license • ArcGIS Image for ArcGIS Online user type extension	Python Notebooks can be run using ArcGIS Pro, ArcGIS Online, or Jupyter
Direct Publishing of Hosted Imagery Layers using hosted ArcGIS Notebook	• ArcGIS Online Creator license • ArcGIS Image for ArcGIS Online user type extension	ArcGIS Notebooks are hosted in ArcGIS Online, and download OneAtlas Data directly

References

Item	**Reference**
OneAtlas Data API Reference	https://api.oneatlas.airbus.com/api-catalog/oneatlas-data/index.html
ArcGIS API for Python	https://developers.arcgis.com/python/api-reference/
ArcGIS Image for ArcGIS Online	https://www.esri.com/en-us/arcgis/products/arcgis-image/options/arcgis-online
Create Hosted Imagery Layer Wizard	https://pro.arcgis.com/en/pro-app/latest/help/sharing/overview/publish-hosted-imagery-layers.htm
Blog: Introducing ArcGIS Image for ArcGIS Online	https://www.esri.com/arcgis-blog/products/arcgis-online/imagery/introducing-arcgis-image-for-arcgis-online/
Blog: Direct Publishing of Airbus Imagery to ArcGIS Image for ArcGIS Online using ArcGIS Notebooks	https://www.esri.com/arcgis-blog/products/arcgis-online/imagery/arcgis-notebooks-to-arcgis-image-online/