Stereo Mapping Tutorial

Version 1.0

Available with Image Analyst license in ArcGIS Pro.

Collecting and editing 3D features in stereo leverages the existing editing tools. After setting the stereo model and adjusting other stereo-related parameters on the Stereo Map tab, you can switch to the Edit tab to collect features. Stereo 3D feature editing supports concurrent editing and versioning. You can edit points, multipoints, polylines, and polygons as follows:

* You can create features using the Create tool.
* You can modify features using the Modify tool.
* Define XY tolerance for snapping.

For more information about editing, see [A quick tour of editing](https://pro.arcgis.com/en/pro-app/help/editing/a-quick-tour-of-editing.htm).

The z-coordinate of the stereo map is based on the stereo model of the source data, which is the z-coordinate at which the stereo images will be adjusted. At ArcGIS Pro 2.1, in order to collect features, you need to create the feature classes with the following vertical coordinate system:

* For satellite data sources, define the vertical coordinate using Ellipsoidal WGS84.
* For aerial and drone data sources, define the vertical coordinate as same coordinate system as your GPS or GCP control points.

In this workflow, you will set up your stereo environment, use the stereo map to view the stereo model, create 3D buildings, and view your buildings in a scene. This workflow has five steps:

1. [Download sample data](https://pro.arcgis.com/en/pro-app/help/analysis/image-analyst/feature-compilation-using-stereo-mapping.htm#GUID-B5AEE142-9B40-4914-9501-CB001A4A4F5F)
2. [Set up the stereo environment](https://pro.arcgis.com/en/pro-app/help/analysis/image-analyst/feature-compilation-using-stereo-mapping.htm#GUID-3621AFE0-EF18-4959-B67D-5CF6481CC690)
3. [Set up your stereo map collection](https://pro.arcgis.com/en/pro-app/help/analysis/image-analyst/feature-compilation-using-stereo-mapping.htm#ESRI_SECTION1_F6785EDBB9B343C0A6F6E8947770A93C)
4. [Edit features in a stereo map](https://pro.arcgis.com/en/pro-app/help/analysis/image-analyst/feature-compilation-using-stereo-mapping.htm#GUID-C7B21C83-7E90-4063-8E2B-57D676B41E73)

# Prerequisites

1. ArcGIS Pro 2.1 or higher
2. Local access to Drive c (c:\)
3. Internet access
4. You must have either active shutter eyewear or anaglyph 3D glasses.
5. If you are using active shutter eyewear, you will need the [appropriate hardware](https://pro.arcgis.com/en/pro-app/help/analysis/image-analyst/stereo-mapping-in-arcgis-pro.htm)

# Download sample data

1. In a web browser, open the [Stereo Mapping Sample Data](HTTP://LINKS.ESRI.COM/STEREODATASAMPLE) website.
2. Click the Download button in the upper-right corner. Optionally right-click the .zip file and click Download.
3. Once the download is complete, unzip the .zip file to C:\temp\StereoTutorial.
4. Confirm c:\SampleData\Vexcel-Hollywood\0\_MosaicDataset\VexcelHollywood.gdb exists. If you cannot place your data in this location, you will need to place the data in an appropriate location and [repair the paths](https://pro.arcgis.com/en/pro-app/tool-reference/data-management/repair-mosaic-dataset-paths.htm) for the mosaic dataset to your location.

Now you have sample data to use in your stereo workflow.

# Set up the stereo environment

# To display data in stereo mode in ArcGIS Pro, you need to turn on the correct stereoscopic mode. This task only needs to be performed once, and the application will always use this mode for new projects you create until you change modes.

1. Click the Project tab.
2. Click Options.
3. Click the Display tab.
4. For Stereoscopic mode, choose either 3D cyan/red glasses or 3D shutter glasses, depending on the type of eyewear you are using. If you are using shutter glasses, make sure that your system meets the display [requirements](https://pro.arcgis.com/en/pro-app/help/analysis/image-analyst/stereo-mapping-in-arcgis-pro.htm#ESRI_SECTION2_CB3688E7D0334670846463A68E6B2517).
5. Click OK and wait for the program to restart.

Your application is now ready to display data in stereo using the type of stereo viewing glasses you have specified.

# Set up your stereo map collection

The sample from the data download site is a mosaic dataset that has a stereo model already built.

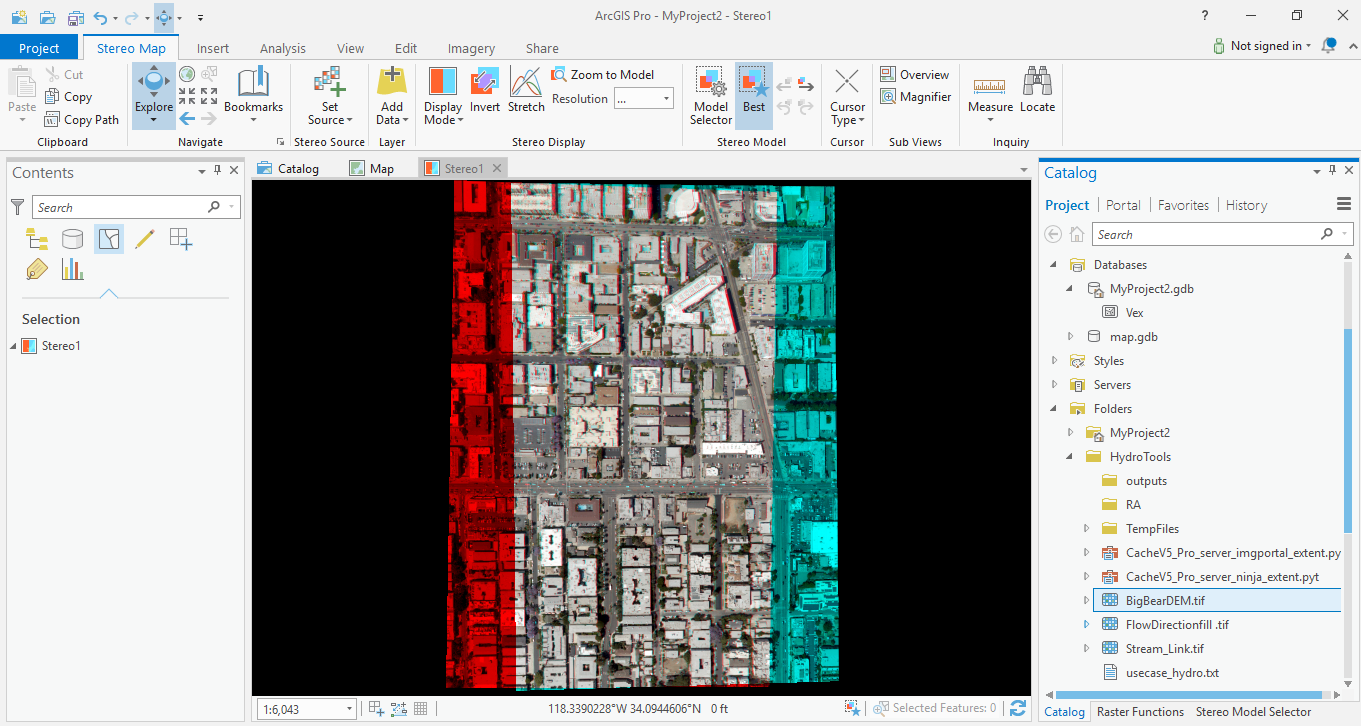
1. Click the **Insert** tab.
2. Click the **New Map** New Mapdrop-down arrow and click **New Stereo Map** New Stereo Map.

A new stereo map opens in your display, and the Stereo Map tab is now available to use in the stereo map.

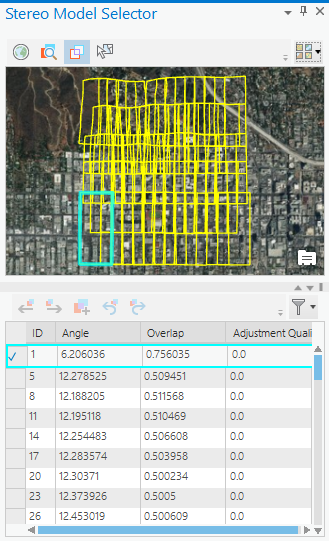
1. On the Stereo Map tab, click **Set Source** Set Source.
2. On the Set stereo source dialog box, set Source Type to Stereo model collection.

This option filters the browse results to show only mosaic datasets.

1. Click the Browse Browsebutton and browse to c:\SampleData\Vexcel-Hollywood\0\_MosaicDataset\VexcelHollywood.gdb and choose the VexcelHollywood\_Stereo mosaic dataset.
2. Click the mosaic dataset, and click OK to select it.
3. Click OK to close the Set stereo source dialog box, and load the mosaic dataset with a stereo model.
4. Wear your stereo glasses so you can see the stereo pair in 3D.



1. When a stereo model selection is added to the stereo map, the **Stereo Model Selector** pane is available. The **Stereo Model Selector** pane is used to select the stereo pair that you want to work with from your mosaic dataset source.



Once you have selected the stereo pair you want to work with, you can set it as your stereo source and add it to the stereo map using the **Add to stereo**  button

1. Temporarily change the stereo pointer mode from roaming to fixed by pressing F8.

This allows you to navigate the map without panning the mouse.

1. To return to roaming mode, press F8 again.
2. Use the map navigation tools to zoom in and pan around until you focus on the object of interest, such as the rooftop of a building. Press and hold the Ctrl key and rotate the mouse wheel to zoom.
3. If necessary, adjust the x-parallax by pressing and holding Ctrl+Left Arrow or Ctrl+Right Arrow until the objects look clear.

Your stereo environment is now set up with a stereo pair. You can now start your 3D editing workflow. Click [here](https://pro.arcgis.com/en/pro-app/help/analysis/image-analyst/stereo-map.htm) for more information on stereo map navigation and keyboard shortcuts.

# Edit features in a stereo map

Now that your stereo model is set up, you are ready to collect 3D features in stereo mode.

1. Add any feature classes you want to edit. You can add existing feature classes using the Add Data button Add Data, or you can create a new feature class.
2. Optionally open the Magnifier Magnifierand Overview Overviewwindows to help you navigate around the stereo model.
3. Click the Edit tab to view all the editing tools.
4. Turn on Snapping List By Snapping. The XY tolerance, in the Snapping Settings, controls the snapping tolerance for 3D feature collection.
5. Hover the cursor over a corner of the base of a building structure and rotate the mouse wheel to adjust the z-coordinate. To increase the z-value, rotate the wheel backward. To decrease the z-value, rotate the wheel forward. You will have the correct z height when your two stereo cursors are positioned over the same location in the left and right images.
6. Click the Create Features tool Create Featuresto open the Create Feature pane.

For more information about editing, see [A quick tour of editing](https://pro.arcgis.com/en/pro-app/help/editing/a-quick-tour-of-editing.htm).

1. In the list, click the feature class where you want to save the edits.
2. Click the Polygon tool Polygon, and create the necessary vertices on the display by controlling the floating mark. To finish the feature, right-click and click Finish Finish, or press the F2 key.
3. Once you finish collecting your features, click the Save Edits button Save Edits.

You have completed creating 3D features. You can load the features and view them in map and scene view.

**Related topics**

* [Introduction to stereo mapping](https://pro.arcgis.com/en/pro-app/help/analysis/image-analyst/introduction-to-stereo-mapping.htm)
* [Stereo mapping in ArcGIS Pro](https://pro.arcgis.com/en/pro-app/help/analysis/image-analyst/stereo-mapping-in-arcgis-pro.htm)
* [Stereo map](https://pro.arcgis.com/en/pro-app/help/analysis/image-analyst/stereo-map.htm)
* [Stereo Model Selector pane](https://pro.arcgis.com/en/pro-app/help/analysis/image-analyst/stereo-model-selector-pane.htm)
* [Sterep map navigation](https://pro.arcgis.com/en/pro-app/help/analysis/image-analyst/stereo-map.htm)