



Georeferencing a raster dataset

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The general steps for **georeferencing** a raster dataset are:

1. [Add the raster dataset](#) that you want to align with your projected data.
2. Add control points that link known raster dataset positions to known positions in map coordinates.
3. Save the georeferencing information when you're satisfied with the registration.

For most rasters, the georeferencing information is stored in a separate file with the same name as the raster but with an .aux file extension. You can permanently transform the raster by using the Rectify command on the georeferencing toolbar. The coordinate system assigned to the raster is the same as the coordinate system defined on the data frame the raster is part of.

[Learn more about georeferencing](#)

▼ How to georeference a raster dataset

▶ Georeferencing a raster dataset

1. Add the layers residing in map coordinates and the raster dataset you want to georeference.
2. In the table of contents, right-click a target layer (the referenced dataset) and click Zoom to Layer.
3. From the Georeferencing toolbar, click the Layer dropdown arrow and click the raster layer you want to georeference.
4. Click Georeferencing and click Fit To Display.

This will display the raster dataset in the same area as the target layers. You can also use the Shift and Rotate tools to move the raster dataset as needed. To see all the datasets, you may have to adjust their order in the table of contents.
5. Click the Control Points tool to add control points.
6. To add a link, click the mouse pointer on a known location on the raster dataset, then on a known location on the data in map coordinates (the referenced data).

You may find it useful to use a Magnification window to add in your links. When working with two raster datasets, you may want to open the Effects toolbar and adjust the transparency or turn layers on and off in the table of contents to view each image as you add your links.

7. Add enough links for the transformation order. You need a minimum of three links for a first-order transformation, six links for a second order, and 10 links for a third order.
8. Click View Link Table to evaluate the transformation.

You can examine the residual error for each link and the RMS error. If you're satisfied with the registration, you can stop entering links.

9. Click Georeferencing and click Update Georeferencing to save the transformation information with the raster dataset.

This creates a new file with the same name as the raster dataset, but with an .aux file extension. It also creates a world file for .tif and .img files.

Tips

- To display the Georeferencing toolbar, right-click the Tools menu, point to Toolbars, and

click Georeferencing.

- You could look for road intersections, land features, building corners, or other objects that you can identify and match in your raster dataset and aligned datasets.
- You can delete an unwanted link from the Link Table dialog box. Press the Esc key to remove a link while you're in the middle of creating it.
- The Rotate and Shift tools are no longer available after you place the first link.
- You can permanently transform your raster dataset after georeferencing by using the Rectify command. Click Georeferencing and click Rectify.

► Entering specific x,y map coordinates

1. Click View Link Table on the Georeferencing toolbar.
2. Click the Control Points tool.
3. Click the mouse over the known location in the unreferenced image to add the first coordinate in the link.
4. Right-click the image and choose Input X and Y.
5. Enter the reference coordinates in the Enter Coordinates dialog box.
6. Click OK.

Tips

- To display the Georeferencing toolbar, right-click the Tools menu, point to Toolbars, and click Georeferencing.
- You can delete an unwanted link from the Link Table dialog box.
- Press the Esc key to remove a link while you're in the process of creating it.
- You can permanently transform your raster after georeferencing by using the Rectify command. Click Georeferencing and click Rectify. This creates a new raster dataset in GRID, TIFF, or ERDAS IMAGINE format.
- You can add specific values after you have clicked a control point on your raster dataset. Just right-click on your map and choose Input X and Y.
- The coordinate system assigned to the raster dataset is the same as the coordinate system defined for the data frame.