Image rectification using ArcMap - basic instructions 27/1/2006 ECC

Preparation

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.

   Note:

   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.

Add Ground Control Points (GCP's)

1. Click the Control Points tool to add control points. 

2. To add a link (ie: link a known location in the image with a know location in the reference system data eg: roads layer) -

   Click the mouse pointer on a known location on the **raster dataset**, then on a known location on the data in map coordinates (the reference data) eg: **roads layer**.

3. 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.

4. Click View Link Table  to evaluate the transformation.

5. 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.

Rectify the image

1. Note the cell size of the image

   Right on image in TOC. Properties -> Source and get the cell size.
   The cell size to a rounded number approximating the image cell size eg: cell size is 5.2 X 6.3, set to 5

2. To complete rectification, go Geo-referencing toolbar -> Rectify

   - Give appropriate name
   - Set cell size (eg of 5 using above example)
   - Nearest neighbour as re-sampling type

3. Save GPC's.

Click  & go to save option. Saves a text file with GCP's in it. Handy if you need to revisit the task.

Alternative approach to saving rectified image **(NOT TESTED)**

1. In the georeferencing toolbar -> click Georeferencing -> then click Update Georeferencing to save the transformation information with the raster dataset.

2. 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.

Miscellaneous 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.