

Georegistration and Correction

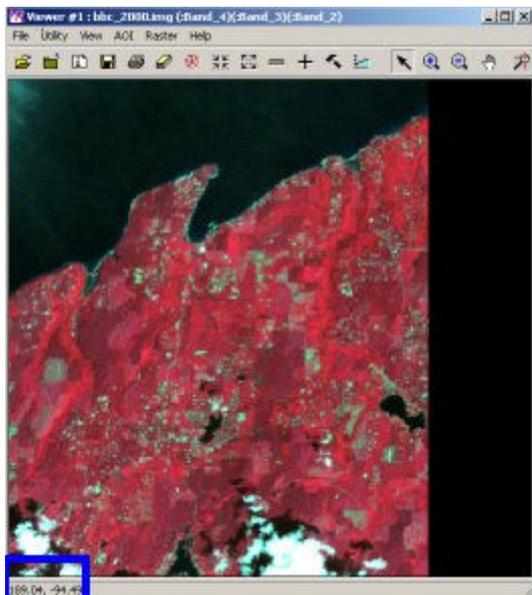
ERDAS Example

By this time you should be able to open for display an image file, select the band combinations that work best for your purpose, and examine the spectral and spatial profiles of the data. If not, you should refer to the earlier exercises.

The basic procedure will be to:

- display files
- start Geometric Correction tool
- record Geometric (ground) Control Points (GCPs)
- resample the image
- verify

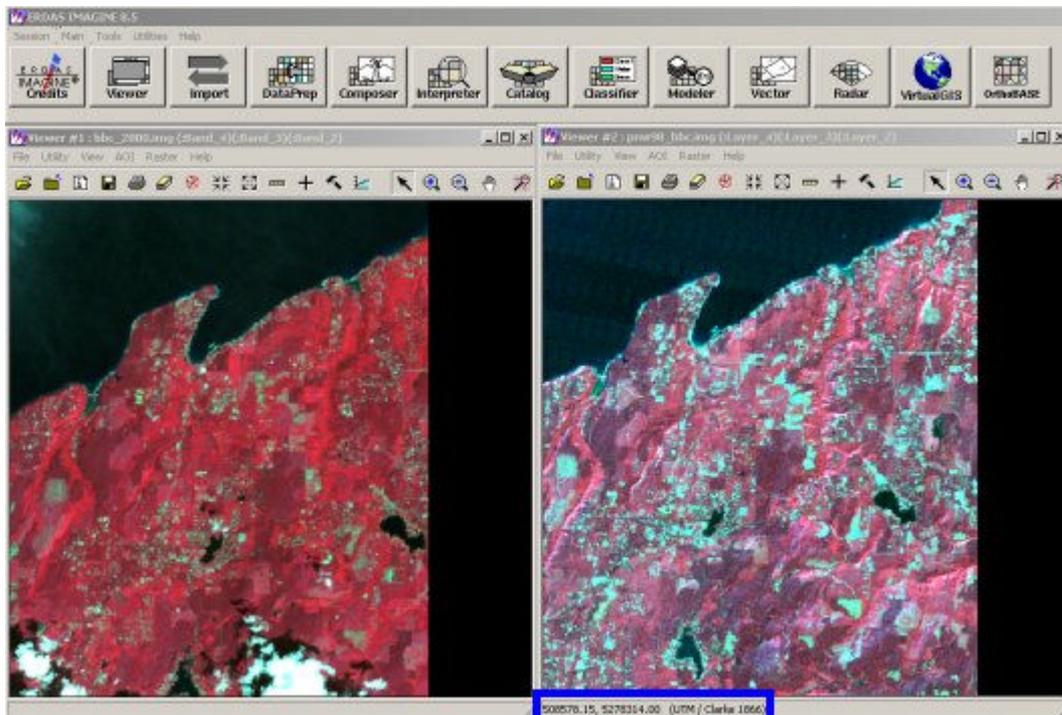
1.) Begin by opening the file which you wish to georegister. (This may be `r:\lawers\data\landsat\bbc\bbc_2000.img`) and display it and "fit" it in a viewer. As your mouse moves within the display window note that the coordinates displayed in the lower left of the viewer are in "row" and "column".



Again, note the pixel coordinates in the lower left.

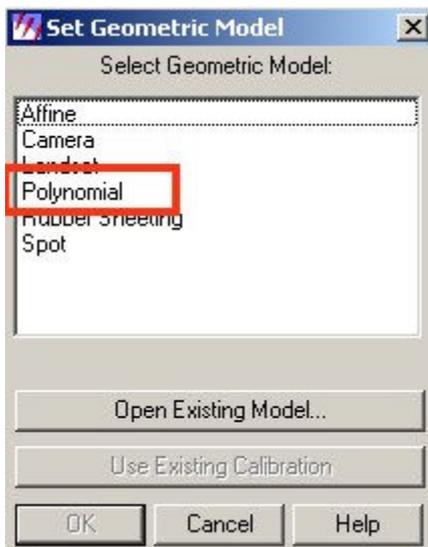
2.) Display an existing georegistered image in a second viewer. (This may be `r:\lawers\data\landsat\bbc\pnw98_bbc.img`). Once again, note the coordinates in the lower left of the viewer for this georegistered image. This image is georegistered to the UTM projection

and coordinate system. If you don't feel you understand map projections you may wish to visit the USGS site call [Map Projections](#)



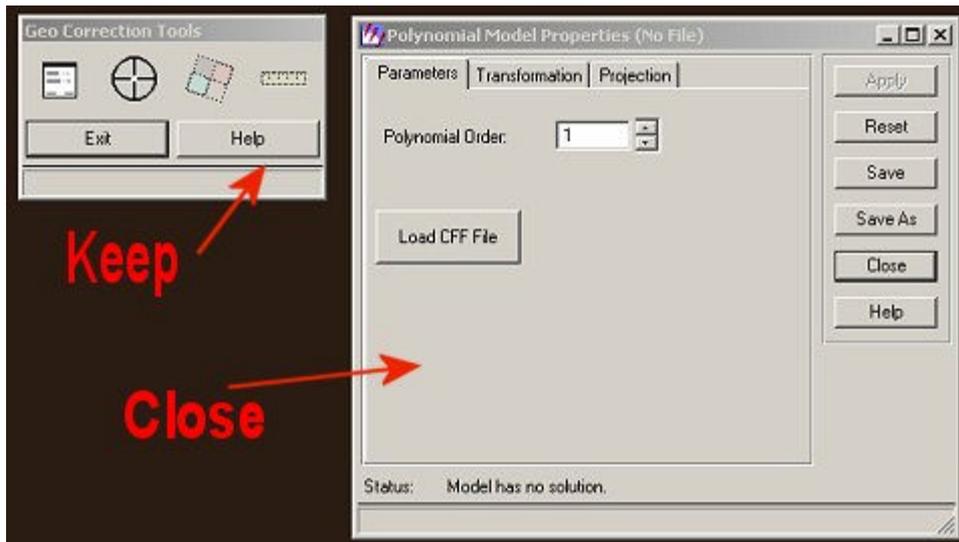
3.) Start the Geometric Correction tool from the [viewer displaying the file to be rectified](#).

Select RASTER > Geometric Correction from the viewer's menu bar and Polynomial from the dialog box.

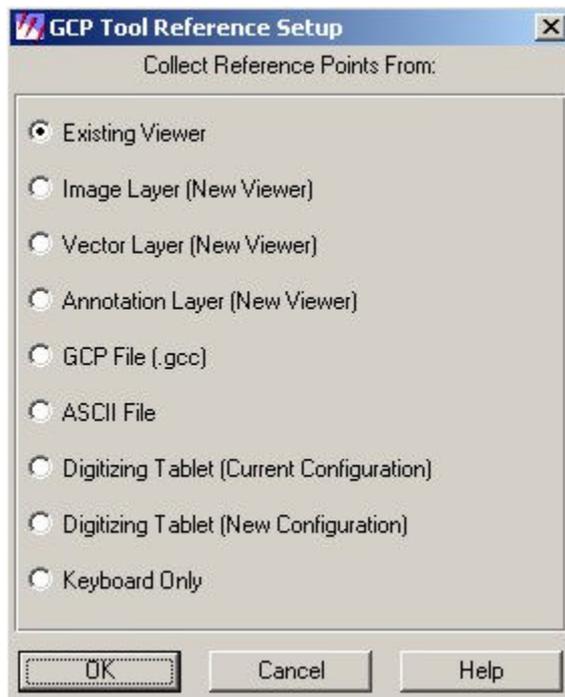


Each of these geometric models relate to specialized tasks. The polynomial model has the most general application.

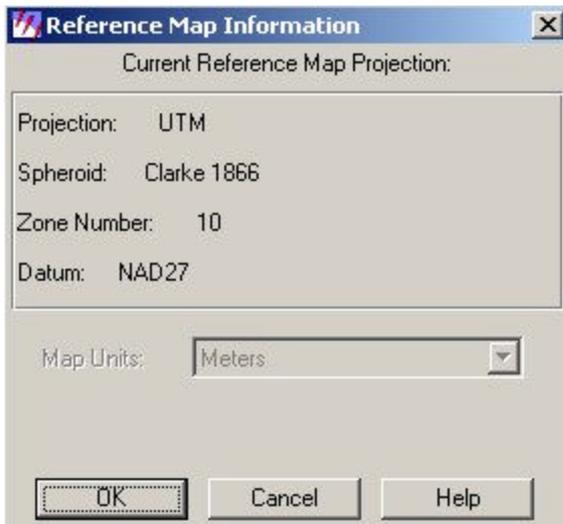
4.) Two dialog boxes will appear. The Geo Correction Tool menu will be used now. You can close the Polynomial model Properties (you will be selecting these parameters later)



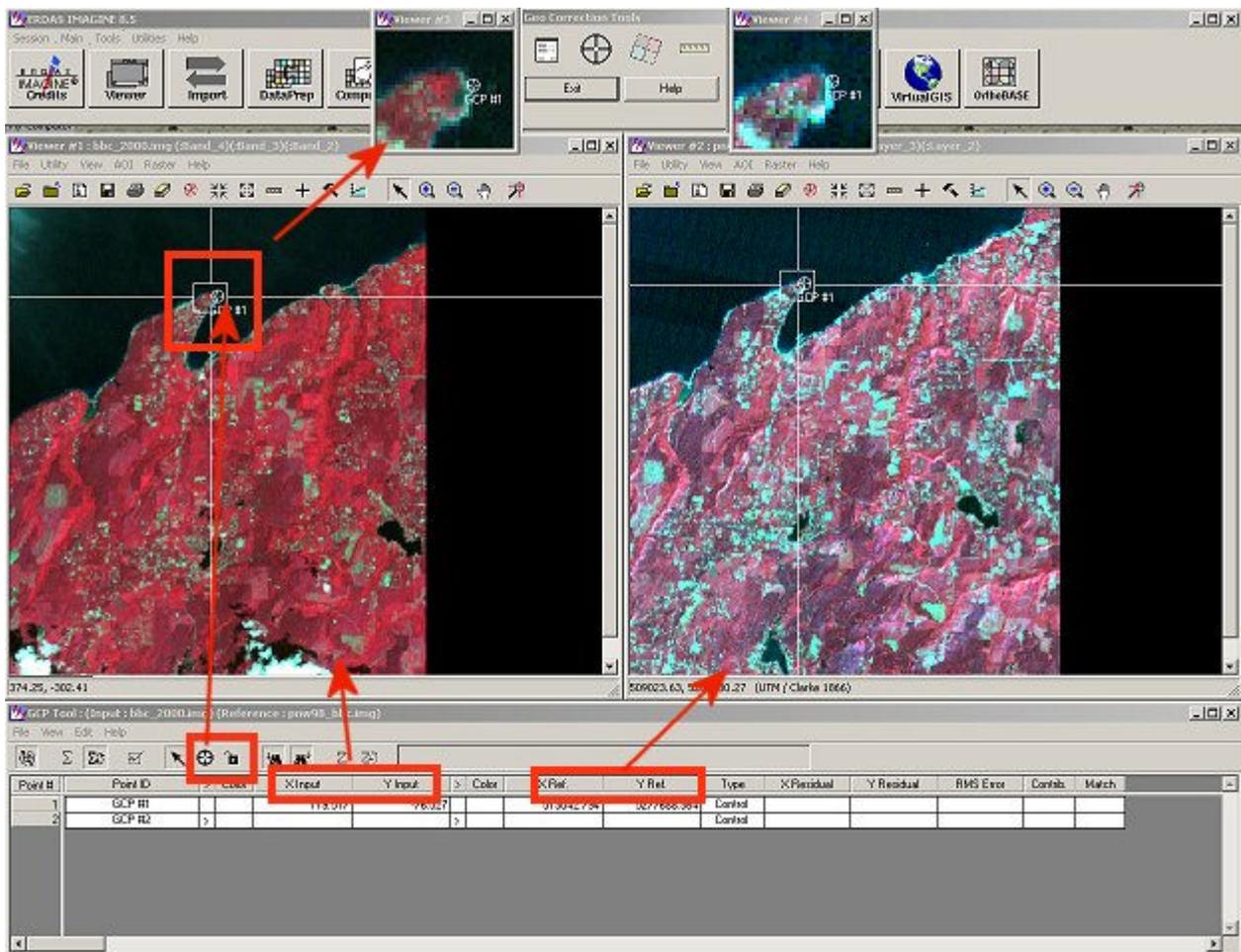
5.) The next dialog box is the Reference Setup dialog. Note all the different way in which you can collect reference points. Select (or accept) the option to use the Existing Viewer and click **OK**.



You will be prompted to click in the Viewer from which you wish to select the reference coordinates. Click in your second view - the pnw98_bbc.img. The reference map information dialog will open. Make sure the information is correct (which it is) and click OK.



6. You are now ready to begin assigning real world coordinates to the non-geographic registered image. Your display will be filled with widows!



First, each viewer now has it's own "zoom" window above it. The zoom window display that part of the image which is inside the "box" (some time called the link box). The Ground Control Points (GCPs) are the small targets which are place on the image using the GCP tool.



It is a good idea to click on the "non-registered" image first. You can move the GCP with

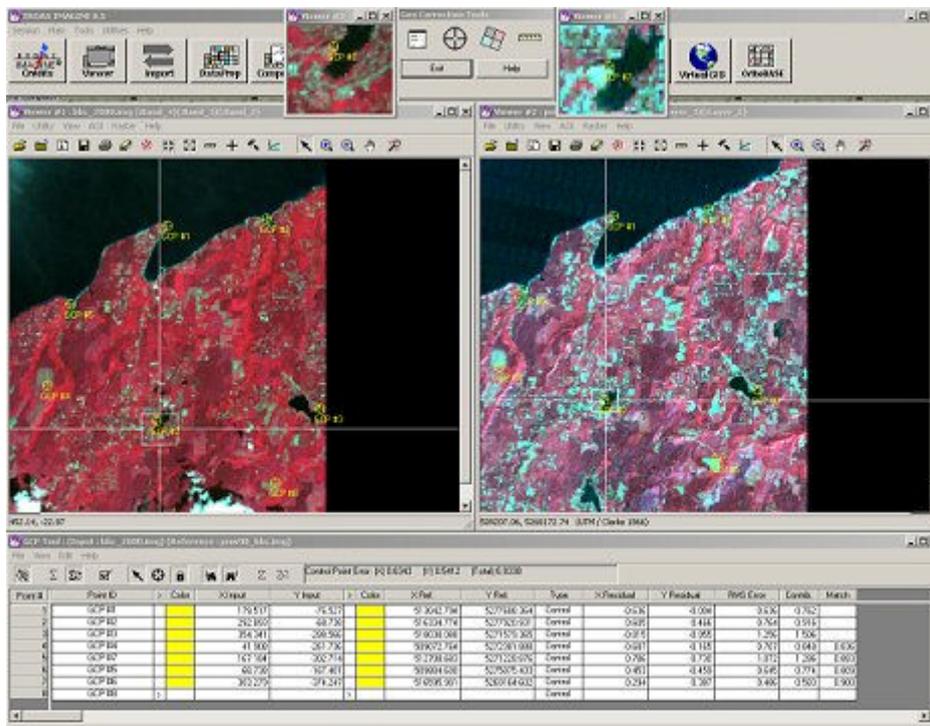
your mouse, and the GCP can be placed in either the Viewer or in that viewer's zoom window. The coordinates for each GCP is place in the GCP Tool CellArray (the table in the lower third of your display). The Xinput and Yinput are the coordinates of the image to be registered and the Xreference and Yreference are the coordinates of in the image that has already been registered.

Your procedure is click on the GCP icon  and then click on a location in the first viewer that are easily identifiable in both images (the GCP #1 will be placed at that point and it's coordinates will be filled into the CellArray). Then click again on the GCP icon and this time click on the same location in viewer two (a coresponding GCP #1 will be placed at that point along with it's real world coordinates in the CellArray) REMEMBER, you can move the GCPs in the zoom window for better placement. Just click on the arrow icon .

You see that after you have collected Three or more matching pairs the software will begin to place GCPs for you in an automatic mode. Also, you can right-hold you mouse button in the Color column of the CellArray table to change the color of the GCP points.

Repeat this procedure until you have all the points you want. (try to get 7 or 8 at a minium). To delete a GCP, select the GCP in the CellArray and then right-hold in the POINT # column to select Delete Selection.

When you have finished your points should spread out over the image.

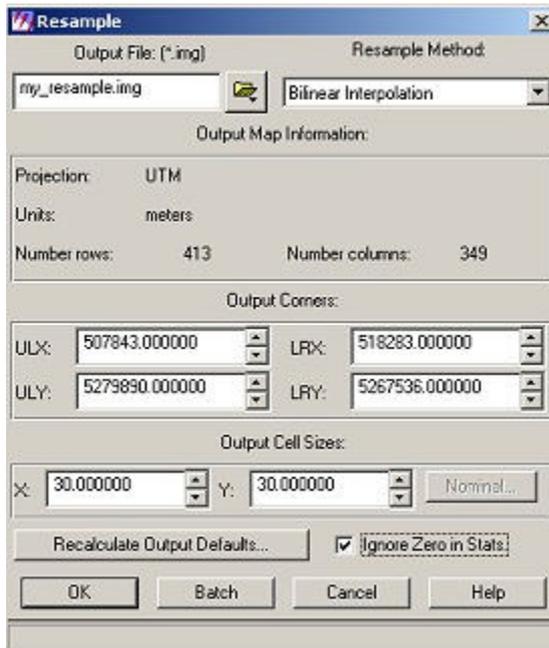


7.) Clearly there is much more you can do with this tool. For now we will accept the limited number of points and accept the solution to the transformation. Our next task is to resample the image . Resampling is the process of calculatin the values for the rectified image and creating the new file. All of the raster data layers (all bands) in the source file are resampled.

The best known algorithms for resampling are Nearest Neighbor, Bilinear Interpolation, and Cubic Convolution. We'll use the Bilinear algorithm.

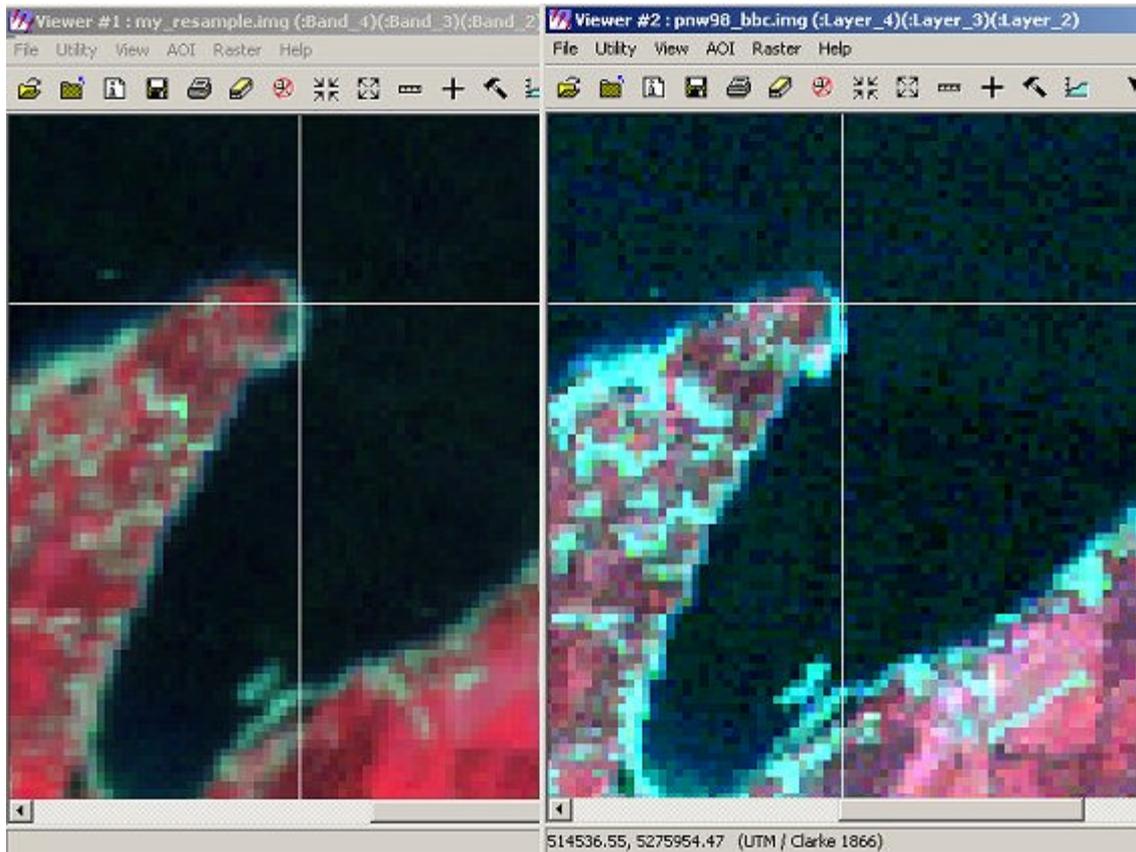


Click on the resampling icon from the Geo Correction Tool Menu. The resample dialog opens. Enter a file name for the output (know where on the drive you will put the file) - select the Bilinear Interpolation resampling method - click to exclude zero file values in the statistics. Also set the Output cell size to 30.00 (we will be using a 30 meter DEM in the later exercises). Click OK. This shouldn't take much more that a minute or two for this size of file.



A job status dialog opens to let you know when the processes is complete.

8.) Verify the rectification by displaying the new image in a viewer and Geo. Link the reference image with the new image and use an Inquire Cursor to check that they are georegistered to each other.



I did really well!

If you don't like your finished product, you may use the image I just made for other exercises.
(r:\lawers\data\landsat\bbc\my_resample.img)