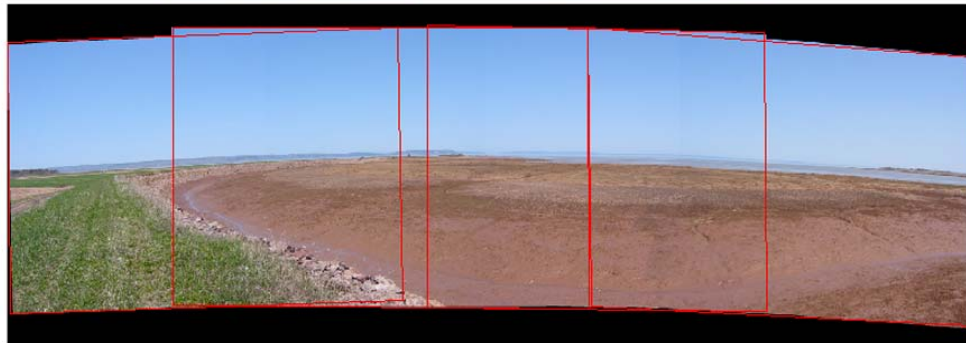


TUTORIAL

Often PCI users need to quickly assemble images together that can not be georectified such as oblique images or areas where there is no reference information. In previous versions of Geomatica the only method of performing this task was with the outdated GCPWorks program and in OrthoEngine it was required that all projects use georeferencing information to correct and mosaic the input images into one output image. Now in Geomatica version 10 you have the ability to mosaic imagery together into a non-georeferenced output image.

The following example involves creating one image from four input images that were taken from a digital camera from the same spot but rotated slightly from the previous one. A tripod is recommended to provide better results and it will make the processing steps easier as well. Also note that this procedure although pretty straight forward can be difficult to perform with some images.



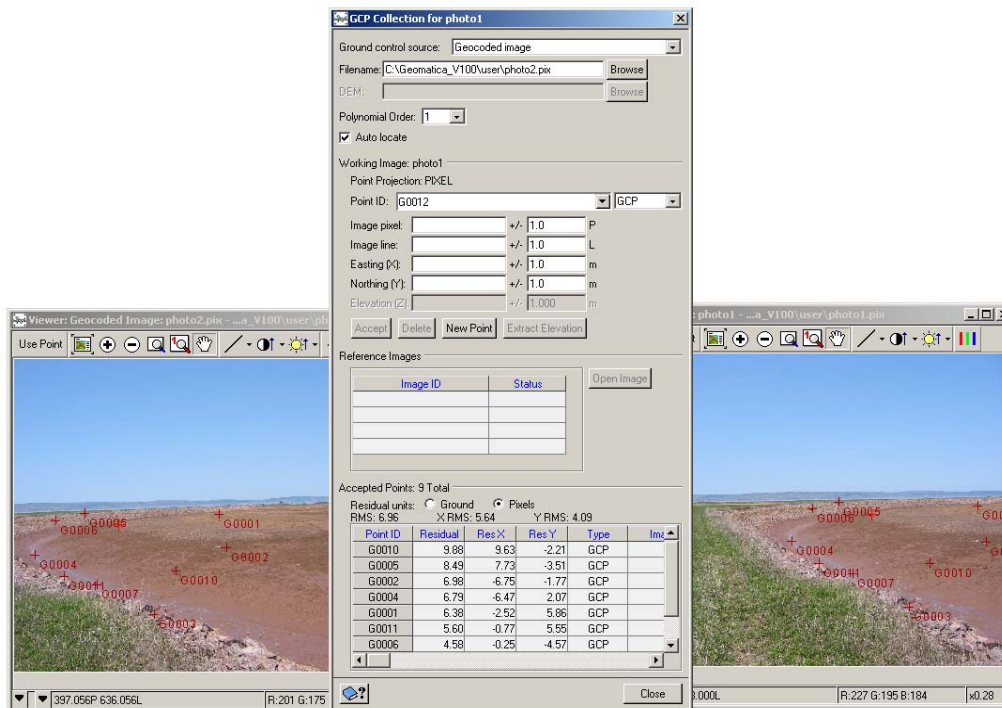
Step1 (Create a new Project)

- Start OrthoEngine and create a new project with a **Polynomial Math Model**
- Select **PIXEL** as your output and GCP projection and enter a value of 1 for the Output Pixel and Line Spacing


Step2 (Collect GCPs):

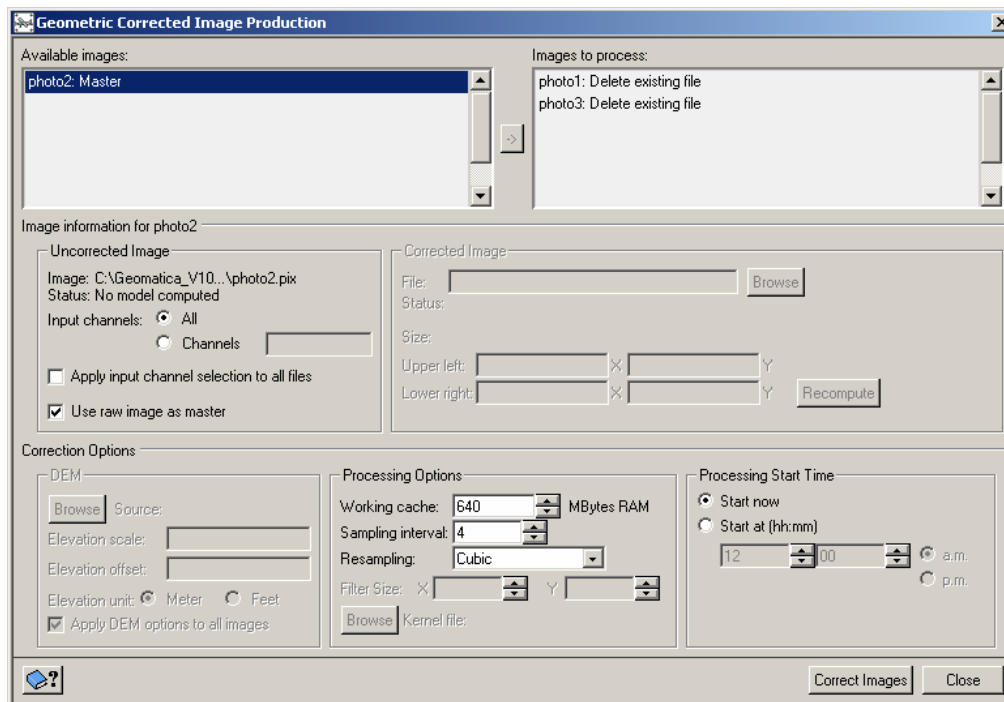
- Start by adding your images to your project and then open them up to work with (Note: You may find that it is better to work with PIX format data so I have imported the original jpg photos into PIX files before starting the procedure).
- Open the collect GCPs manually window, select **Geocoded Image** as type of source
- Use the Browse button to locate and choose your second image as the source image to collect GCPs from
- Open the first image and locate a common feature of both images, center the + cursor on top of it, click the **Use Point** Button, switch over to the geocoded image (image2) and find the same feature, click the **Use Point** button, and then click the **Accept** button in the GCP collection panel. The GCP should then appear down into the Accepted Points list near the bottom of the window

Repeat the above tasks until you have collected an even amount of GCPs across the common area of the both the first and third images, then save your project and close the GCP collection window.



Step3 (Correct Images)

- Open the **Geometric Correction** panel
- Highlight the images (image1 and image3) that you collected GCPs from and click the  button to move the images to the **Images to Process** side of the window
- Highlight the image that you used as the source image (image2) and then click the option box for **Use Raw Image as Master**
- Click the **Correct Images** button to continue and close the window when the process is complete




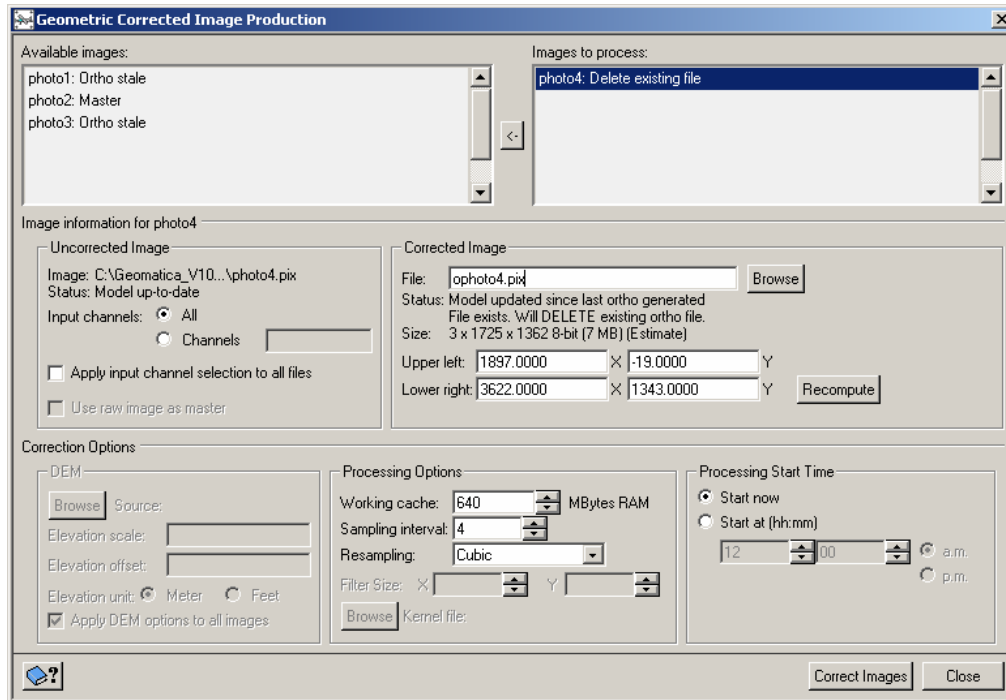
Step4 (Adding more images)

As you get further away from your master image (image2), you will find that you will not be able to collect GCPs from it anymore. Therefore the trick is to generate your geocorrected images in stages and then constantly use the resultant geocorrected image as the source of your GCPs.

- Open the collect GCPs manually window, select **Geocoded Image** as type of source
- Use the Browse button to locate and choose your last geocorrected image (e.g. geocorrected image 3) as the source image to collect GCPs from
- Open your next image (e.g. image4) and locate a common feature of both images, center the + cursor on top of it, click the **Use Point** Button, switch over to the geocoded image (image2) and find the same feature, click the **Use Point** button, and then click the **Accept** button in the GCP collection panel. The GCP should then appear down into the Accepted Points list near the bottom of the window

Repeat the above tasks until you have collected an even amount of GCPs across the common area of the both the fourth image and the geocorrected image, then save your project and close the GCP collection window.

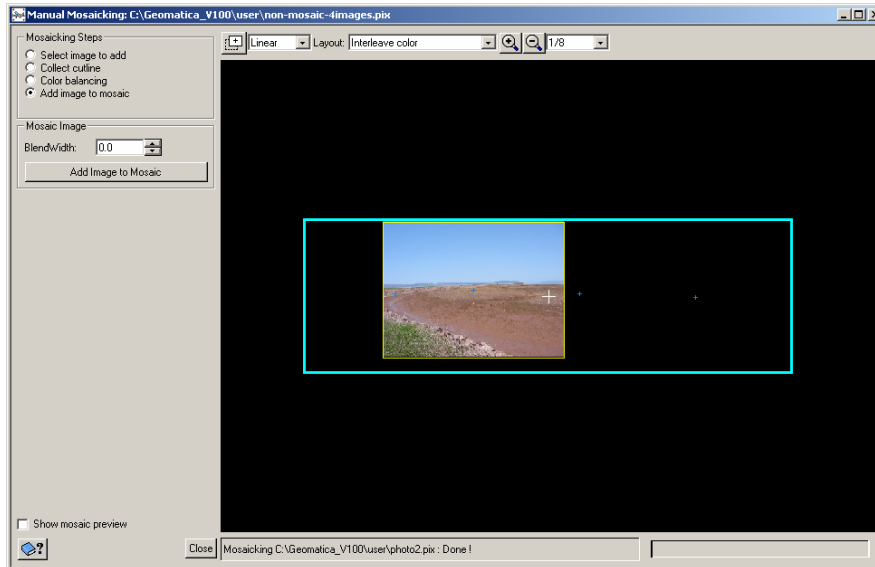
- Open the **Geometric Correction** panel
- Highlight the last image (image4) that you collected GCPs from and click the  button to move the image to the **Images to Process** side of the window
- Click the **Correct Images** button to continue and close the window when the process is complete



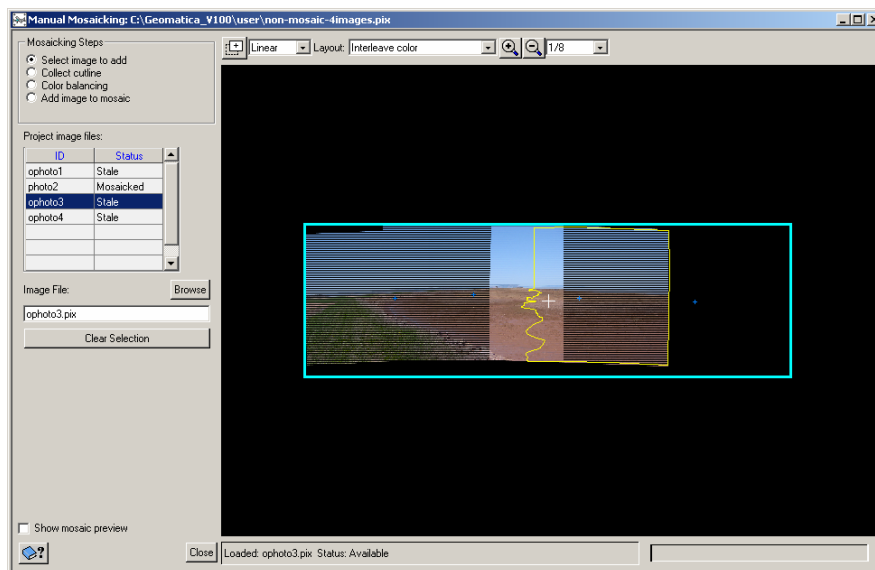
If you have more images then continue the above process until you have included all of the images. Note: You must use the geocoded images that you create for the GCP source for your images once you get further away from your master image. If you use the original images as your GCP source images then it will not align them correctly in your output mosaic.

Step5 (Mosaic Images)

- Switch to the Mosaic processing step, **create a blank mosaic file** large enough to hold the input images that you want to mosaic together
- Open the Manual mosaic window
- Select an image and define a cut line around the extent or the image and click **Add image to mosaic**

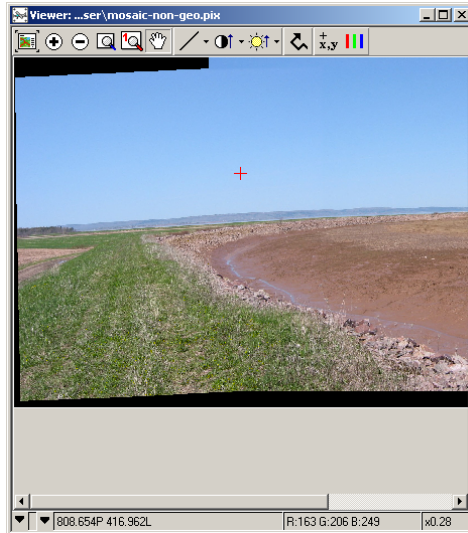


- Select a second image and then define a cut line for it interweaving around common features in the overlap area to help hide the mosaic line from being visible in the final mosaic. If the color needs to be adjusted then use Color Balancing and add the image to the mosaic
- Continue with the third and fourth image, defining cut lines and adding them to the mosaic

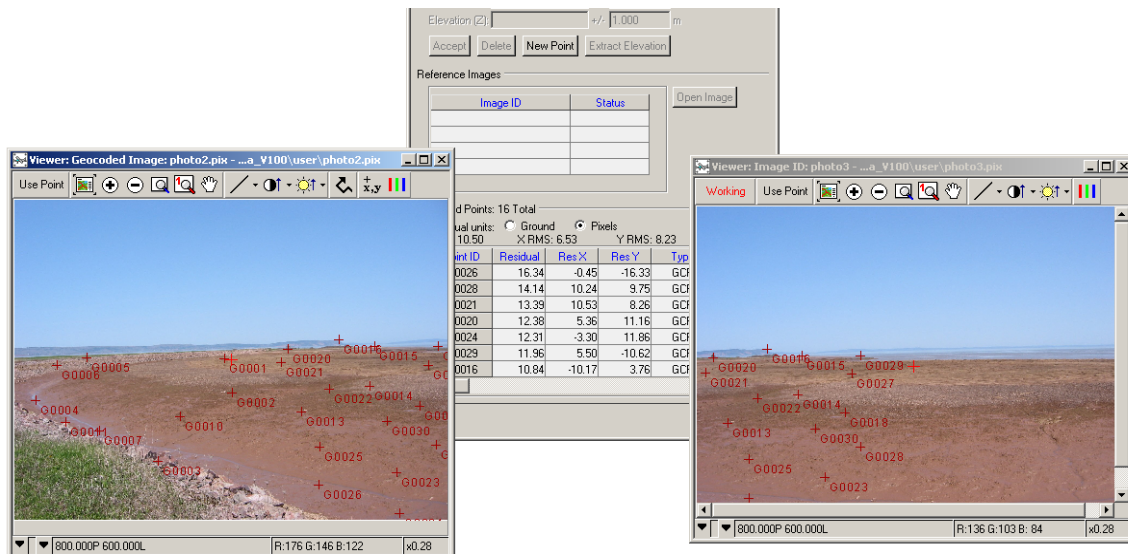


Step6 (Examine Results)

Open up the mosaicked image into Focus or a viewer and examine the fit between the two images in the mosaicked image.



If the fit between the photos, is not satisfactory enough, then go back to the GCP stage and collect more GCPS or delete bad ones etc and keep in mind that some photos will not align perfectly especially if they were not taken from the same location.



Point ID	Residual	Res X	Res Y	Typ
0026	16.34	-0.45	-16.33	GCP
0028	14.14	10.24	9.75	GCP
0021	13.39	10.53	8.26	GCP
0020	12.38	5.36	11.16	GCP
0024	12.31	-3.30	11.86	GCP
0029	11.96	5.50	-10.62	GCP
0016	10.84	-10.17	3.76	GCP

Repeat the above procedures for any other photos that you wish to include in the output mosaic.

When you have finished your mosaic, chances are that it will not have even edges. You can go into Focus and use clip/subset to produce an image with even edges and then export it back into a jpg or any other format that you need to have the file stored in for use with other software.

