UNIVERSITY MAP LIBRARY
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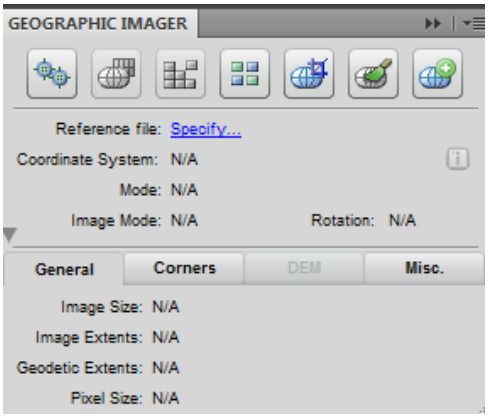
Instructions for Creating a Super Overlay in Google Earth Pro

Introduction: These instructions describe the process of georeferencing a high-resolution image, creating a geotiff file, using Google Earth Pro to make a super overlay and how to provide access to others.

Requirements:

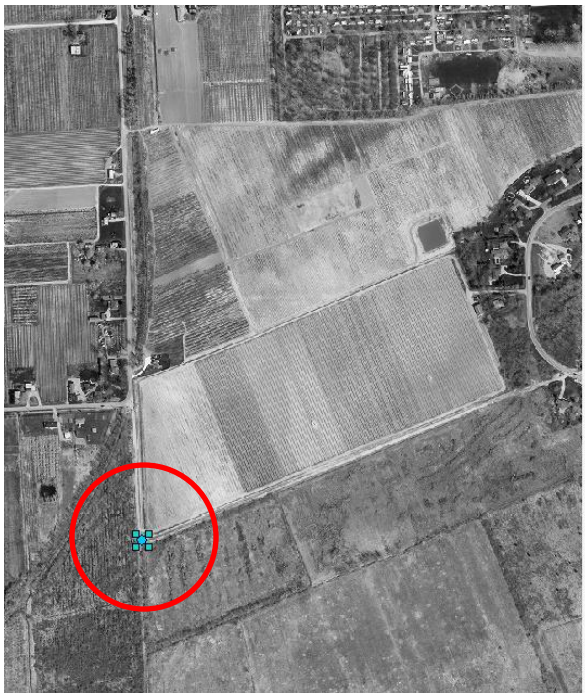
- Adobe Photoshop; Geographic Imager
- ArcGIS
- Google Earth Pro 6.0.1 or higher
- A high-resolution image that is larger than 4096 x 4096 pixels*

Part 1: Georeferencing in Adobe Photoshop using Geographic Imager

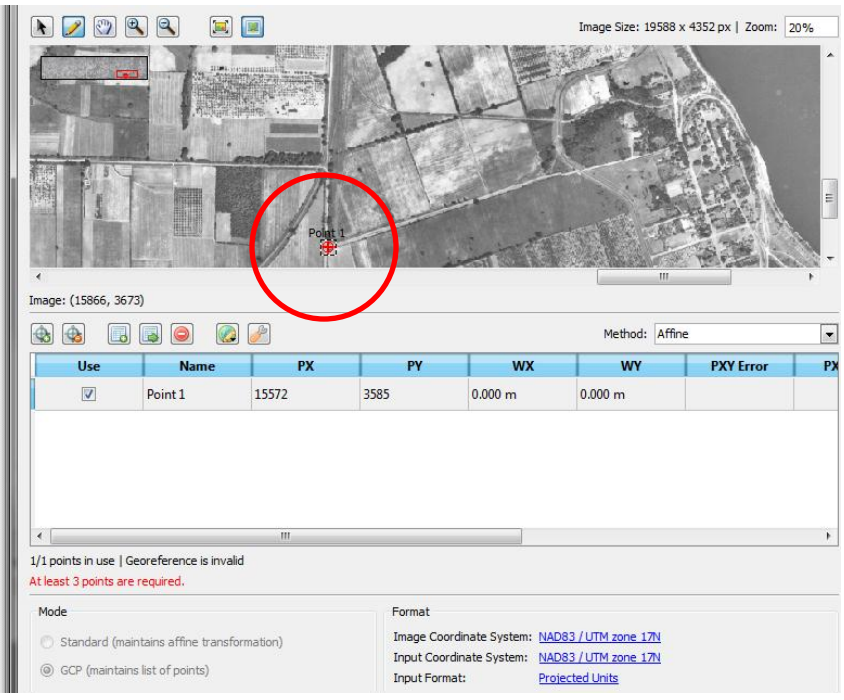


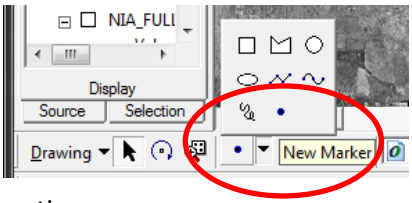
1. Run *Adobe Photoshop* with *Geographic Imager* extension.
2. Open the high-resolution tiff image.
3. Run *ArcGIS* with orthoimagery or street network to be used to acquire geographic coordinates for georeferencing.
4. Shift and resize the windows to view both software interfaces at once.
5. In Photoshop, select *Window* > *Extensions* > *Geographic Imager*.
6. In Geographic Imager, click the *Georeference* button  . The georeferencing diaolog box appears.
7. At the bottom of the window in the *Format* section, click Specify...
8. To identify the "image coordinate system" click the *Specify* button to access the list of projections. For Niagara, select **Projected > UTM > NAD83 > NAD83/UTM Zone 17N** and click OK**.**
9. Study the map image and the ArcMap layers to identify control points (locations that match on both the ArcGIS map and the image in Photoshop). Use the zoom tools in each program to identify a control point.

2010 imagery in ArcGIS

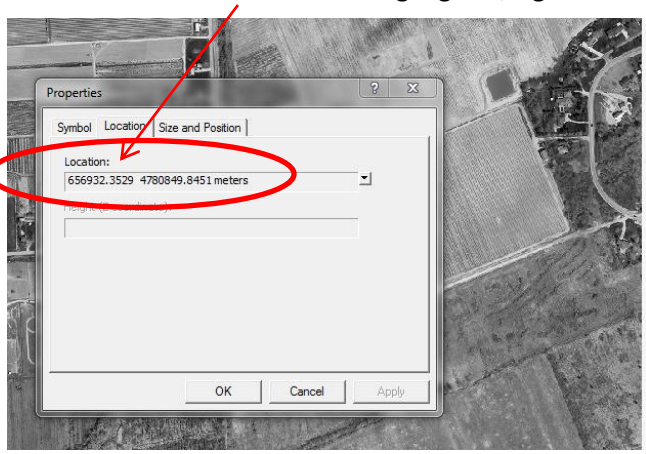


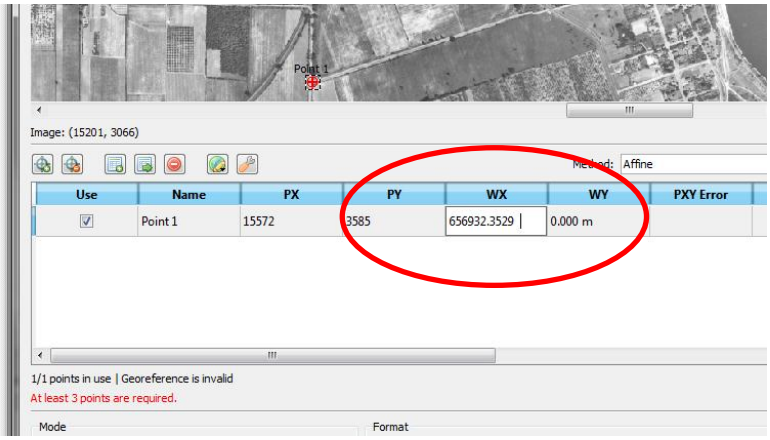
1934 image in Geographic Imager interface



10. In ArcMap select the *Draw tool – New Marker* 

and click to mark the first point.
11. Double-click the new marker to access the properties.
12. In the marker properties dialogue, click the *Location* tab.
13. Double click the *X location* to highlight it; right-click and select *Copy*.

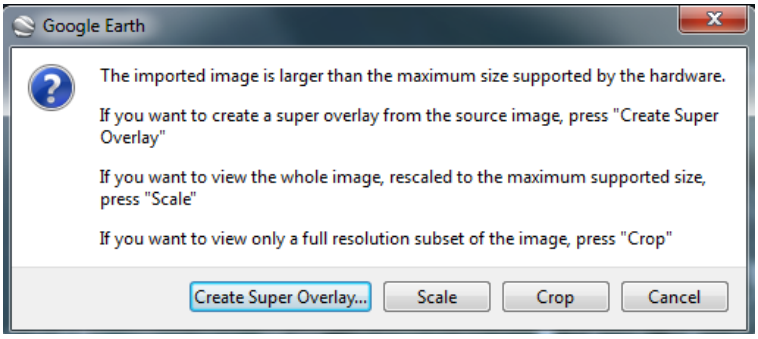




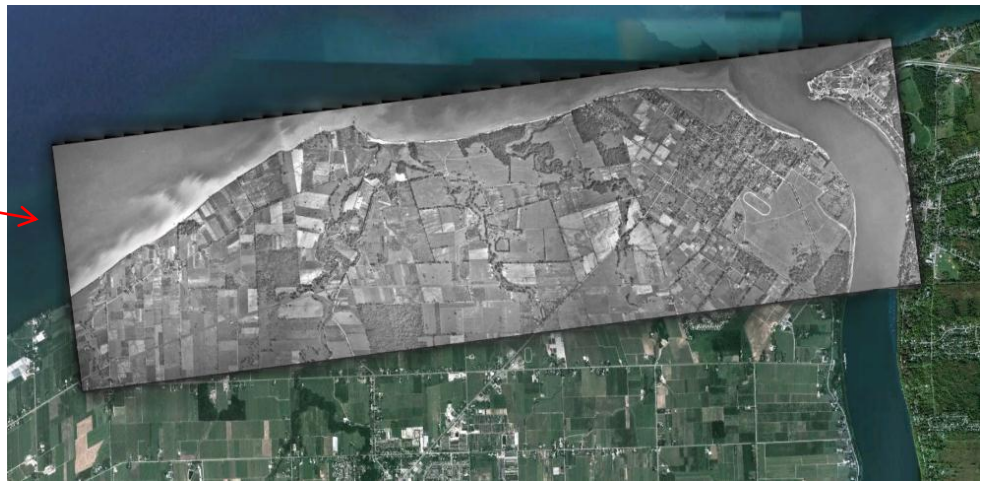
14. In *Geographic Imager*, zoom to the corresponding location.
15. Use the *Add Point* tool  and click on the image to add the control point.
16. Click in the *WX field* and hit *CTRL-V* to paste the X coordinate.
17. Repeat the above steps to copy/paste the Y coordinate.
18. Repeat steps 11-18 until 3 control points have been entered. Choose points such that the extent is well represented.
19. In Geographic Imager, click OK. If prompted with a warning, click NO.
20. In Photoshop, select *File > Save as….* Navigate to a location where the georeferenced TIFF will be saved. If prompted with a warning, click YES to complete the save process. The file is automatically converted to *geotiff* format.

Part 2: Google Earth Pro – Super Overlay

1. Run Google Earth PRO 6.0.1 or higher.
2. Select *File > Import*. Change the file format to GEOTIFF. Navigate to the geotiff file.
3. If you are prompted with a message saying the format isn't supported by 'this' version of Google Earth:
    a. Make sure you're running GOOGLE EARTH PRO 6.0.1 or higher;
    b. Re-open the image in Photoshop. From the **Geographic Imager** *Options* menu, save the georeference file as TFW, then select "Convert to GeoTIFF" from the Options menu. And try again.
4. Ideally you will see a status window that says "Flying to location". If the ***basic*** image overlay window appears, your image is smaller than the required dimensions (4096 x 4096).
5. At the prompt, click "Create super overlay".
6. Navigate to the location where the super overlay will be created.
7. Make a ***new folder*** with a suitable name and click OK. A super overlay includes hundreds of tiny images saved in KML files and they need to reside in a common folder.



8. Wait patiently for GE to import the data. The process may take a few minutes.

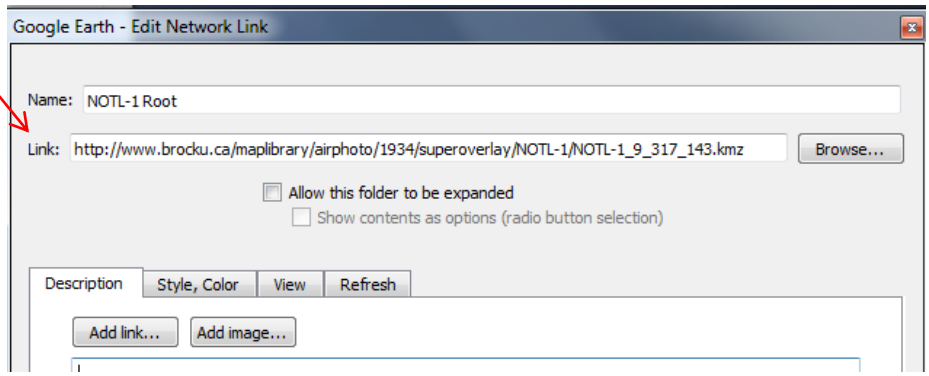


Part 3: Network Links – preparing the super overlay for public viewing from the Internet

1. When the super overlay is complete you will see a *Network Link* under *Temporary Places*.
2. Right-click the network link and *Save to My Places*.
3. Right-click the network link from PLACES and view PROPERTIES.
4. Edit the LINK path from a local directory to the appropriate URL where the files **WILL** reside on the Internet server. For example:

   This path C:/DATA/1934/superoverlay/NOTL-3/NOTL-hwy8_9_317_143.kmz

   Becomes this path
   http://www.brocku.ca/maplibrary/airphoto/1934/superoverlay/NOTL-3/NOTL-hwy8_9_317_143.kmz

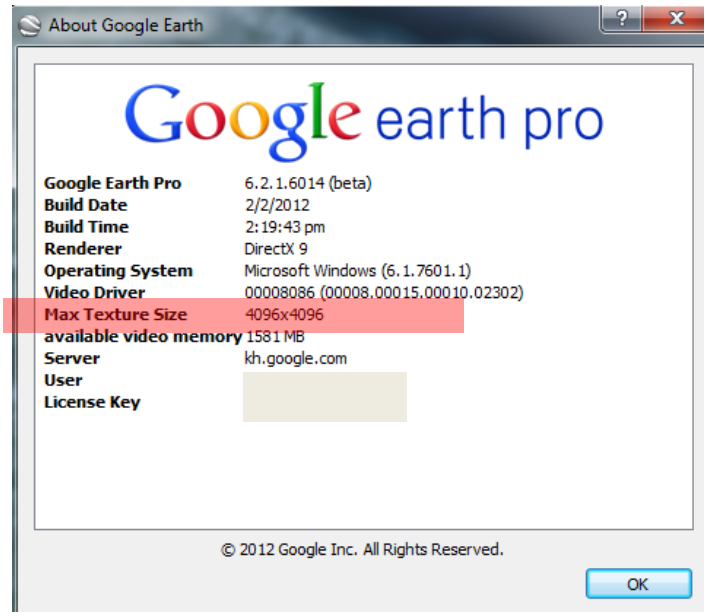


5. Click OK to accept the changes to the network link. The super overlay disappears because the network link is pointing to the *Internet* location. Before loading the files to the server, follow the next step.
6. Right-click the network link from PLACES and select SAVE PLACE AS… provide a suitable name and save the kmz in the **same folder as the super overlay files**. This new KMZ tells Google Earth where to find the super overlay files on the Internet.
   For example: http://www.brocku.ca/maplibrary/airphoto/1934/superoverlay/NOTL-1/NOTL-1.kmz
7. Run an FTP program and upload all of the super overlay files to the directory specified in step 4.
8. To share the super overlay with others, send them the URL path directing them to the KMZ saved in step 6.

When the user accesses the link they will be prompted to download/open the file in Google Earth. Remember this small KMZ file directs Google Earth to the location on the Internet where the super overlay files are stored; therefore an Internet connection is required.

A word about image resolution/pixel size

*The required resolution of your image is determined by the "Max Texture Size" defined by the graphics' card that is part of your computer system. The size defined by this tutorial meets the average computer requirements. A more robust computer system may require a larger 'max texture size'. To check the "Max Texture Size", run Google Earth; from the **Help** dropdown menu select **About Google Earth**. You will see **Max Texture Size** details here.



A word about software

Geographic Imager by Avenza Systems, Inc. is an extension of Adobe Photoshop that offers the power of image editing while maintaining geographic reference. http://www.avenza.com/category/tags/geographic-imager

A word about the 1934 Niagara Air Photo Super overlays

Digitizing historical collections of air photos has been a priority for the Brock University Map Library in recent years. Being able to explore the historical landscape in larger chunks rather than individual air photos seemed advantageous for all of our users. Adobe Photoshop software offered a quality tool whereby multiple images (4-10 at a time) were 'photomerged' into a seamless mosaic. The next obvious step was to georeference the images and take advantage of Google Earth Pro's *new* 'super overlay' tool available since December 2010. The only requirements for the imagery were high resolution (larger than 4096 x 4096) and geotiff format. Naturally, we explored ArcGIS options for creating geotiffs. However, a geotiff created by ArcGIS couldn't offer background 'transparency' when imported to Google Earth, so when Map Library staff stumbled upon *Geographic Imager*, an extension to *Adobe Photoshop*, the perfect union was accomplished: quality image editing with georeferencing options and geotiff output. Thousands of images and over a year and a half later, the 1934 Niagara super overlays were complete. A data sharing agreement with Google has been signed meaning one day you will be able to explore the historical landscape of Niagara using Google Earth's historical timeline. Now, on to the 1954 air photo series...

Download the project kmz here: http://www.brocku.ca/maplibrary/airphoto/1934/1934-Niagara-Mosaics.kmz

We would love to hear your feedback or questions: maplib@brocku.ca