



ON TARGET

GEOSPATIAL TECHNOLOGIES SEMINAR
UTAH GEOSPATIAL EXTENSION PROGRAM

PSC 5200 Lab #6 HGIS-Georeferencing v.9.51

Introduction

Imagery is an important element in a GIS. Many times it serves as the “Base Map” upon which all other layers seem to rely on. There are many different types of imagery that can be used in a GIS. It can be a scanned in Topo Map, known as a Digital Raster Graphic (DRG), High-altitude aerial photograph (DOQs, HROs, NAIP, etc), or it can be any other photo (scanned in or taken with a digital camera) that can be used to give spatial information. An example of the latter might be an image taken from an airplane window, or a scanned in map that was drawn to scale showing trails.

Up to this point in the class, all imagery was either given to you or downloaded with an associated World File. The World File is a document that tells a GIS where the image is located. Without the World File, a GIS has no idea where the image belongs. Imagery that you want to bring into a GIS needs to be georeferenced and have a World File created for it.

This exercise is meant to familiarize you with using HGIS to georeferenced imagery and create a World File (Corner File) for the image.

Setup

To begin, we need an image or some other layer that is georeferenced. We will need this layer to create **reference points** for the georeferencing of a **new** image that has no world file.

Download Data

On the class website located at:

<http://extension.usu.edu/nasa/htm/psc5200/>

Download the following files:
USU_HRO2009_1m.zip
USU-nonref.jpg

The first file is a zip archive that needs to be ‘expanded’ on your computer. After that file is expanded, transfer the contents of the zip file along with the USU-nonref.jpg image file to your iPaq.

With these files on the iPaq, open the **USU_HRO2009_1m.jpg** file. This will give you a reference image to draw points from.

Step 1-Create three reference Points

Select the **Draw tool** and create 3 reference points that you will use to adjust the non-referenced image.

Create the following points:

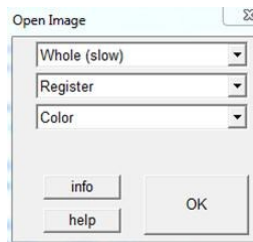
- 1- Create the first point in the intersection of 800 E and 1000 N (just east of Romney Stadium).
- 2- Create the second point in the center of the Quad.
- 3- Create the third point on Canyon Road in front of the entrance to Rudy’s Greenhouse.

Now Close the USU_HRO 2009_1m image and leave the three points you just created.



Step 2-Open non-referenced image

Zoom out until you can see all three points you just made within your current window. Now open the USU-nonref.jpg image that is on your memory card. It will give you the following dialog box. Open the whole image. The box that says Register means that you will need to register, or georeference, the image after you open it.



Click OK, and say Yes when it asks if you want to georeference the image.

When it asks if you want to zoom to layer, say NO unless you didn't zoom out to view the three points earlier. Then you would say yes.

Step 3-Geo-reference Image

In this step you will georeference the image. This is a three step process and you will need to progress through each step to finish and create a new World File for the non-referenced image.

To begin, select the Adv button on the pop-up dialog box. This will give you the options to zoom in and out (+, -) and pan (<, >, ^, v).

The first step is to drag the image to the first point. Let's choose the first point we made, next to the Stadium. Take the stylus and click on the image where 800 E and 1000 N intersect and drag your stylus to the first point.

(hint: Always drag the point on the image to its corresponding reference point. Never drag the image from a point with no corresponding point)

When that step is finished click Next.

The next step is the scaling step. Choose the point opposite of the first point. For our exercise, that would be the point by Rudy's Greenhouse entrance. Similar to the last step, click on the image and drag to its corresponding reference point.

Check your third point while doing this and ensure that it is pretty close to its position as well. When done, click Next.

The final step is the "rubber sheeting" or "adjust corner" step. This allows you to fix skew and other problems with a photo. This photo has already been fixed, so this step should probably be limited to a simple touch up so the points line up with the photo.

When finished, Click Done and say Yes to saving a georeference corner file with the image.

Check the image for accuracy

Now that the image is georeferenced, check its accuracy with the Center-line road shape file on your cards. The new image should line up quite well with the roads.

Do the roads line up well throughout the WHOLE image?

If not, why do you think they are misaligned in certain areas?

