

ESRM430 Lab 2

Instructor: Dr. L. Monika Moskal

Lab Objectives:

- Introduction to spatial portals for remotely sensed data
- Introduction to Google Earth
- Georeferencing and simple change analysis

Tools:

- Google Earth software
 - Renton, WA.kmz and Renton_NW1937.jpg

What you will hand in:

- A Google Earth kmz file will be submitted using the digital course drop box

We will spend the lab session learning about how to import and manipulate imagery in Google Earth. You are encouraged to explore this software at your leisure as it will assist you with developing image interpretation skills. You will also learn how to import and visually adjust the placement of images (georeferencing) in Google Earth, as well as create simple placemarks (kml, kmz) files in Google Earth, and how to submit your lab assignments.

Google Earth is one of the many freely available image visualization software packages that rely on spatial data portals, additional data portals where you can view and even download free data are listed on the left hand side of the ESRM430 course website. These portals can be used by you in the future to obtain data for class projects and research. Some are free, but many are not. A list of free data portals maintained by Dr. Moskal's Remote Sensing and Geospatial Analysis Laboratory can be found here: <http://depts.washington.edu/iufa/>

Note: Kmz files are zipped kml (Keyhole Markup Language) files, which will start Google Earth and fly you to a specified location. For example see the [mining example of a kmz file](#) on the ESRM430 course website schedule under week 1.

Lab Exercise:

Step 1 – Open Google Earth

Step 2 – Import an image and create a .kmz file.

- a) Fly to Renton, WA by adding a placemark. To do this click File on the toolbar and then Open. Navigate to where to have saved the Renton, WA placemark from the course website double click on it to add it to Google Earth.
- b) Next use the Google Earth Image Overlay tool to incorporate the 1937 image of the Cedar River in Renton, WA. To do this click Add on the toolbar and click Image Overlay. Browse to where you have saved the Renton, WA file and double click to load it.



it. **Do not close this window.** Once you loaded the file move on to Step 3.

Step 3 – In the Edit image overlay window you can edit the Renton_NW1937.jpg file by making it more transparent (opacity) or adjusting its height above ground, location, or orientation. **Note:** If you have closed the image overlay interface you can reopen it by right clicking on the Image Overlay and then clicking on properties. The Edit Image Overlay interface will look like the window on the next page. With the Edit Image Overlay open you will see green lines around the Renton, WA image. Click and hold on these to adjust the image's latitudinal and longitudinal location.

- a) Move the image up, down, left, and right


You can also adjust the image's orientation by clicking and holding on the green diamond.

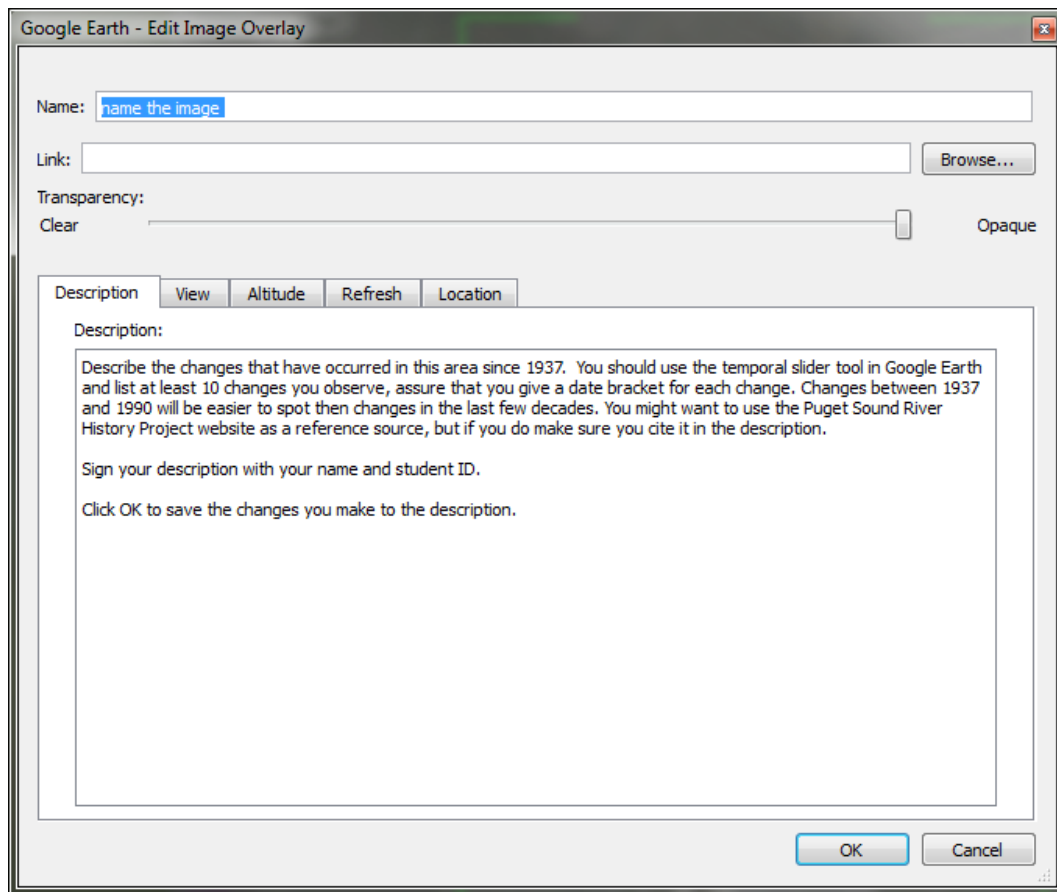
- b) Move the image around in a circle.

Lastly you can adjust the image's height above ground by clicking on the altitude tab in the Edit Image Overlay window and adjusting the Ground to Space slider.

- c) Move the image up and down by moving the Ground to Space slider back and forth

Your goal here is to match it as best as you can to the most current image of Renton, WA. Set up the most appropriate view of the 1937 aerial photograph that you imported to Google Earth using the zooming and tilting interface.

Step 4 – In the Edit Image Overlay window's Name field name the image with your last name and the lab number. In the 'Description' section: Describe the changes that have occurred in this area since 1937 until now. You should use the temporal slider tool in Google Earth  and **list at least 10 changes** you observe, assure that you **give a date bracket for each change** (e.g. 2012-2013: Roof resurfaced on large building west of highway, south of river). Changes between 1937 and 1990 will be easier to spot than changes in the last few decades. You might want to use the [Puget Sound River History Project](#) website as a reference source, but if you do make sure you cite it in the description.



Step 5 –Save the image. To save the Image Overlay .kmz file right click on it in the Places tab and click on Save Place as.... **Save it with your last name and the lab number.**

What you will submit to the course dropbox: An edited Image Overlay file with at least 10 changes that have occurred since 1937. Name the file with your last name and the lab number.

I suggest that as you explore the Google Earth software you change a few of the default settings to maximize the quality of the data you are viewing. To do so, go to the Tools>Options... menu and set the Terrain Quality to 'Higher' in the 3D View tab. Maximize the cache in the Cache tab (the size is dependent on the hard drive size of your computer so experiment to get the best results). You can also enhance the 3D effect by increasing the Elevation Exaggeration factor on the 3D view tab.

Congratulations, you have completed Lab 2!