



Imaging Active Tectonics Unit 2: Useful skills - supplemental student handout

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1. Accessing LiDAR data through OpenTopography

The OpenTopography portal (www.opentopography.org) is a collection of open access LiDAR data. Over 150 raw data sets (i.e. point clouds) are available and can be manipulated and processed into more useful products, such as bare earth DEMs, with specialized software (e.g. the latest version of ArcGIS; this is beyond the scope of this lab, but detailed instructions on how to do this can be found online—let me know if you are interested.) For around 30 of the data sets, kmz files of hillshade bare earth images are available, which are perfect for our purposes. To access these:

- Visit www.opentopography.org.
- Click on the Data tab beneath the logo at the top of the page.
- Click on the Google Earth Files link that will appear beneath the Data tab.
- A list of download links should appear below. You can filter them by location (state), if that is useful. For instance, if you want data from the major faults in California, you might download:
 - EarthScope Southern & Eastern California LiDAR Imagery (#24)
 - EarthScope Northern California LiDAR Imagery (#28)
- To download these two files, right-click on the links and choose “Save Link As” (or the equivalent in your browser).

2. Exporting imagery from Google Earth

If you have found a particularly useful or instructive view and would like to save the on-screen image in Google Earth (perhaps to include in a project report), it turns out that this is straightforward:

- Under the File menu, highlight Save with the mouse pointer; from the submenu that should appear, select Save Image.
- Choose a suitable file name and place to save it and click OK.
- You now have a jpeg screenshot!

3. Producing annotated images online

Producing annotated jpeg or png images is fairly easy when you have access to packages such as Adobe Photoshop or Illustrator. However, in the absence of these, there are some online alternatives. One that does a good job is Pixlr Editor (pixlr.com/editor). Here, you can upload an image to the site from your computer, add simple line and text annotations, and save it to your computer, all with an interface reminiscent of Photoshop. Be sure to make the text of your annotations big enough to be legible when your image is imported into a word processor. [If you are familiar with other online tools that can do a similar job, please let the instructor know.]

4. Plotting a histogram online

Various free methods are available online for the simple plotting of histograms. Excel is another option.

1. Excel - you can use Excel's Analysis Tool Pack to make histograms. A good overview is at <https://www.excel-easy.com/examples/histogram.html>
2. Making histogram online also works well. One easy option is: <http://www.shodor.org/interactivate/activities/Histogram/>
 - From the drop-down menu “Select a data set” choose My Data.
 - Click the Clear Title and Clear Data buttons.
 - Enter an appropriate X-axis title under Title.
 - Enter your data in the large window at the bottom, one data point per line. (It is probably best if you do this as you go along, i.e. enter data as you collect it, otherwise it gets a little tedious.)
 - Enter an appropriate interval (bin) size under Interval Size, and click Update Interval.
 - Enter an appropriate X minimum value (ideally a multiple of your interval size).
 - Once you are happy with your histogram, make a screen grab of it:
 - Press Shift+Print Screen to take a screen grab and copy it to the Windows clipboard.
 - Open Microsoft Paint, and paste the screen grab into the window (Control+V).
 - Use the select tool to select the area of the plot.
 - Click on the Crop icon to crop the image to the selection area.
 - Save the image as a png or jpeg file to your computer.