GEOL 308L: Natural Hazards Lab
Lab 11: Volcanoes

In today's lab you will examine the volcanic hazards of your Country. You will look at the location of potentially active volcanoes, historic eruptions and will also visit several web sites to compile additional information about the volcanic history of your region. Email your digital presentation slides by next lab time.

Step 1: Tabulating Volcano Data in Excel

National Geophysical Data Center – Volcano Locations Database

Visit the National Geophysical Data Center and go to their Volcano Data Search at:
http://www.ngdc.noaa.gov/hazard/volcano.shtml

Visit the NGDC volcano data home page and select the Significant Volcanic Eruption data base. Search for your country's name, leaving everything blank except the latitude and longitude boxes. Copy the entire data table (minus the header row), open Excel, and paste the data into a new worksheet (don't reopen your volcano.txt file). If your country is not listed, try to select a region or an alternative nearby country.

Clean up the Excel table. Just keep the Name, Latitude & Longitude, and VEI columns. Add a header row labeled nam, lat, lon, vei. Format the numbers and save as a spreadsheet file. Call it something like 'eruptions.xls'. Save the file into your D drive as we typically do.

Step 2: Tabulation Eruption Data in Excel

Visit the NGDC volcano data home page and select the Volcano Location Data Base. Find the name of your country in the pull-down menu. Copy the data in the table – skip the headers.

Open Excel. Paste the data into Excel.

Clean up your Excel file – the only columns you need are Name, Latitude & Longitude. Delete all the other columns. Select the Lat & Lon columns, Format, Cells and select number with 3 decimal points. Now save as a spreadsheet file. Insert a header row and give the columns three letter names such as nam, lat, lon. Save the table give it a name like 'volcanoes.xls'. Close this file.

Step 3: Adding the Volcano Data to your ArcMap Project

a. Open a ArcMap project.
b. Select the 'add data button' (little black plus) and open the 'World_Physical_Map.lyr'. This file is currently located on the T drive, so you will need to copy this to your D drive.
c. Add the 'volcano.xls' file to the map – use the instructions below.
    i. Select Tools, Add XY Data
    ii. Click the folder icon to navigate your volcano.xls file.
    iii. Make sure the Longitude & Latitude show up in the drop-down menus
    iv. Click Edit, then Select, Geographic Coordinate Systems, WGS 1984
    v. Click Add, and then OK, OK, OK.
    vi. Right-click on the new file added to the TOC
    vii. Select Data, Export Data
    viii. Click the folder icon, name and save your file in a folder on the D drive named 'derived'

ix. Click Yes to add layer to the map
x. Remove the Volcano.xls file

d. Double click the Volcano layer, select Symbology and change the symbol to a nice green triangle.
e. Prepare an excellent map with the typical cartographic symbology that makes a map perfect.
f. Export this map as a pdf

Step 4: Adding the Eruptions Data Base to your existing ArcMap Project

Add the 'eruptions.xls' file your ArcGIS map using the same procedure as above. Right-click on this layer and select Data, Export Data, and name and save it your D drive. Select the symbology tab for this newly added layer and use a red triangle and the gradational symbol sorted by VEI. You should now have red triangle overlying the green ones for active volcanoes, with the larger the red triangle, the more explosive the eruption.

Create a map in the layout view – that illustrates all of your volcano information. Export the map as a jpeg and save it in your project folder. Use these images in your country PowerPoint.

Step 5: Digital Presentation – Creating Volcano Slides

Create two or three slides – one should include an ArcGIS volcano map and summarize the volcanoes of your country and the second (and third) should summarize the eruptive history. Things to consider:

- What is the deadliest volcano (during historic times) in your country?
- Were there other impacts such as a tsunami, landslides/lahars, drought/famine?
- What volcanoes are closest to population centers? They may be more hazardous. (Hint: Look at your ArcMap). You can use the identify tool to find out the names of nearby volcanoes.

You may wish to check online at the Em-Dat database http://www.emdat.be/

Try searching for some images online – search using the following syntax: "volcano 'your country' death." You are likely to find some excellent images of the volcanoes in your country you might want to use in your final country digital presentation. Copy them into your 'Image' folder - be sure to note the source! I like to keep a separate word document that contains a list of images with their corresponding source information (date accessed, location, etc.).

We will watch your presentation in class during our next lab.