**Instructions for Practical 1**

Download and read this PDF guide to complete Exercise #1. This guide accompanies material from Lecture 1 and comprises what you will be doing in class with Simon on Thursday November 3rd.

I have also included a checklist here with all the relevant files you must load into your QGIS project when you begin the exercise. These files will be found in the corresponding ZIP file under "Data" on this Moodle.

**Data Checklist**

**Vector**

All of these files are found under the “GIS\_Base\_Layer,” folder.

* *GISPORTAL\_GISOWNERS01\_ECUADORLEV3POPULATIONCENSUS10.shp*
  + Population census broken up into parroquia (parishes) across Ecuador. Provides geographic boundaries (polygon geometry) for each parish, with relevant demographic data summarized in columns with a common code. XML file provides key for these codes.
  + Downloaded directly from [GeoData@Tufts](https://geodata.tufts.edu/)
  + Use Case: Steps 3, 7-10
* *ecu\_popcensus.gpkg*
  + Re-projected, geoPackage version of the raw population dataset described above. This is the actual layer use in my calculations
  + Exported as a separate layer after editing GISPORTAL\_GISOWNERS01\_ECUADORLEV3POPULATIONCENSUS10.shp
  + Use Case: Steps 3, 7-10
* *ecuador\_country.gpkg*
  + Used in the Overview panel. Derived from GeoData @ Tufts country boundary file. Used in Step 10.
* *quito.gpkg*
  + Population census block covering boundary of Quito municipality. Also happens to be the population center we are most interested in + concerned about: “High Risk Zone,” due to a combination of lahars + 90 mm ash isopach. Derived from eco\_popcensus layer. Calculated in Step 8, Used in Steps 9 and 10.
* *affected\_area\_guagua\_pichincha.gpkg*
  + Population census blocks affected by both lahars and 90 mm ash isopach. Medium Risk Zone. Calculated in Step 8, Used in Step 9 and 10.
* *regional\_affected\_area.gpkg*
  + Population census blocks affected by only the 30 mm ash isopach. Low Risk Zone. Calculated in Step 8, Used in Step 9 and 10.

All the GISPORTAL shapefiles in the “GIS\_Base\_Layers,” file under “qgis,” in the GitHub download file can and should be viewed. We will use some of these layers in future exercises, but we will not use them today.

* *GISPORTAL\_GISOWNER01\_ECUADORLEVEL3ADMIN12.shp*
  + Parish boundaries
* *GISPORTAL\_GISOWNER01\_ECUADORLEVEL2ADMIN12.shp*
  + Country(?) boundaries
* *GISPORTAL\_GISOWNER01\_ECUADORLEVEL1ADMIN12.shp*
  + Province boundaries
* *GISPORTAL\_GISOWNER01\_ECUADOR250KSUMMITS12.shp*
  + Point vector layer representing named summits (e.g. mountaintops)
* *GISPORTAL\_GISOWNER01\_ECUADOR250KRIVERS12.shp*
  + This polygon dataset represents rivers in Ecuador digitized from 1:250,000 scale topographic maps.
* *GISPORTAL\_GISOWNER01\_ECUADOR250KMINES12.shp*
  + This point dataset represents mines in Ecuador digitized from 1:250,000 scale topographic maps.
* *GISPORTAL\_GISOWNER01\_ECUADOR50KINDIGCOMM11.shp*
  + This polygon dataset represents indigenous communities in Ecuador, usually with traditional construction methods created from 1:50,000 scale topographic maps..
* *GISPORTAL\_GISOWNER01\_ECUADOR1MTOWNS08.shp*
  + This point dataset represents towns and villages in Ecuador digitized from 1:1 million scale topographic maps.
* *GISPORTAL\_GISOWNER01\_ECUADOR1MTORRENTRIVERS08.shp*
  + This line dataset represents torrential rivers in Ecuador digitized from 1:1 million scale topographic maps.
* *GISPORTAL\_GISOWNER01\_ECUADOR1MROADS11.shp*
  + This line dataset represents roadways in Ecuador digitized from 1:1 million scale topographic maps.
* *GISPORTAL\_GISOWNER01\_ECUADOR1MRAILROAD08.shp*
  + This line dataset represents railways in Ecuador digitized from 1:1 million scale topographic maps.
* *GISPORTAL\_GISOWNER01\_ECUADOR1MCOAST08.shp*
  + This line dataset represents coastal borders in Ecuador digitized from 1:1 million scale topographic maps.
* *GISPORTAL\_GISOWNER01\_ECUADOR1MAIRPORTS08.shp*
  + This point dataset represents airports in Ecuador digitized from 1:1 million scale topographic maps.

Raster

* *GP\_Hazard\_Map.jpg*
  + Un-georeferenced geological map that we use to extract relevant hazard information to inform our risk assessment. Extracted from Telenchana (2019) - Poster\_MGGP\_ISAG.pdf. Used in Steps 5, 6, 8-10.
* *Hazard\_map\_georef\_tps.tif*
  + Georeferenced version of GP\_Hazard\_Map.jpg. Errors given in similarly named error report PDF. Used in Steps 6, 8-10
* *dem\_hillshade.tif*
  + Hillshade symbolized a version of the 1-arc second SRTM elevation datasets I downloaded from USGS EarthExplorer. I pre-processed these (see Friday’s lecture) layers after downloading to make them more visually appealing and accurate. Used in Steps 4, 9, 10
* *dem\_merged.tif*
  + Pseudocolor symbolized version of the 1-arc second SRTM elevation datasets I downloaded from USGS EarthExplorer. I pre-processed these (see Friday’s lecture) layers after downloading to make them more visually appealing and accurate. Used in Steps 4, 9, 10