Lab 2: Vector Data Analysis

In this lab, you will work with two shapefiles and complete a number of tasks:

Data:

- A point shapefile "SJER_plot_centroids.shp" representing the locations of field sites

- A polygon shapefile "SJER_crop.shp" representing the general study area

Please use GeoPandas to answer the following questions:

1. What is the coordinate reference system (crs) of "*SJER_plot_centroids.shp*"? In your answer, please include the name of the crs, its unit, datum, and prime meridian (20 pts) (Tips: you might only get the epsg code of the coordinate reference system. You can search such epsg code in https://epsg.io/ to get the information you need to answer this question. Please put your answers in comments in your Jupyter Notebook)

2. How many data records (rows) are there in "*SJER_crop.shp*"? (20 pts)

3. Create a map showing both "*SJER_plot_centroids.shp*" and "*SJER_crop.shp*". (20 pts)

4. Create a buffer on "*SJER_plot_centroids.shp*" with the buffer distance as 150 meters and show the map. (20 pts)

5. Use overlay difference operation between "*SJER_crop.shp*" and the buffered "*SJER_plot_centroids.shp*" layer to get the area NOT within 150 meters of the sites. (20 pts)

Please submit your completed code in a Jupyter Notebook, named as:

- Lab2_FirstName_LastName.ipynb