Li Xi

Professor Qiusheng Wu

GEOG 503

4/8/2017

Final Project Proposal

I want to create a tool that takes multiple Landsat Geotiff raster images, clips them to my study area, and creates aspect, contour, hillshades, and slope rasters, and finally projects them to a designated projection I want. This tool can also calculate the highest, the lowest, the average and the standard deviation of the fields if the input includes elevation information (such as DEM). I want to create this tool because it will be very helpful to me if I need to deal with a large amount of Landsat Geotiff raster datasets (up to 500) for my thesis research. I am motivated to create this tool because it will significantly reduce the time amount I need to clip numerous raster images to my study area. Several important arcpy tools will be involved to build my tool, including 3D Analyst toolbox, Statistics toolset, Raster Processing toolset, and Cursors. 3D Analyst toolbox provides a set of essential tools for analyzing different properties of the raster surface. Summary statistics in the statistics toolset calculates the maximum, minimum, average and standard deviation value for table fields. The clip function in the raster processing toolset is used to cut out a part of a raster dataset based on four coordinate points of my study area feature class. Additionally, I use cursor objects to access, search, and change data. There are three types of cursors: search, insert, and update. In this tool, I will use search cursor to iterate over sets of rows in the table to group the summary statistics and return max, min, mean, and SD value from a field. Each Landsat Geotiff raster dataset will be expected to generate five raster outputs (clipped raster output, aspect raster, slope raster, contour raster, and hillshade raster), and a summary statistic table of the maximum, minimum, mean, and SD value for the elevation field.