Final Project Abstract
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Precipitation in the Northwest of Oregon is significantly impacted by the topography of the region, leading to heavy orographic lift precipitation in the coast range, a rain shadow in the Willamette valley, and further orographic lift precipitation in the western cascades. This spatial variation in yearly precipitation totals, in the form of both rain and snow, significantly impacts land cover types in the region. In this analysis, a DEM is used in an attempt to statistically correlate elevation, slope, and aspect to precipitation and land cover type using ArcGIS pro. While the phenomena of orographic precipitation and rain shadows are well understood, a spatial analysis case study could prove to be educational. A 30 meter Oregon DEM is clipped to contain only counties in Northwest Oregon, and is converted into a 3D surface visualization, a slope dataset, and an aspect dataset. Precipitation data is retrieved from the PRISM dataset, showing annual precipitation on a relatively coarse resolution. Land cover data is retrieved from the 2011 national land cover database. Results show smaller than expected correlations between precipitation and elevation, and slightly larger correlations between precipitation and slope. A qualitative visualization is produced to show the spatial co-occurrence of high elevation, certain land cover types, and high annual precipitation.