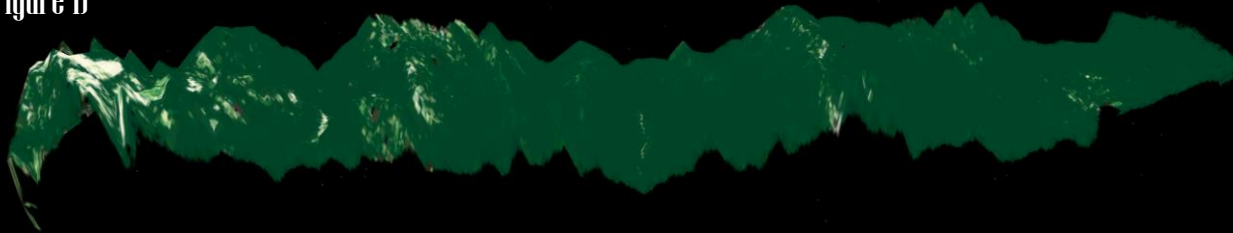


# Forest Canopy Density and Height Analysis of Olympia National Park

Figure 1)



High



Low



Figure 2)

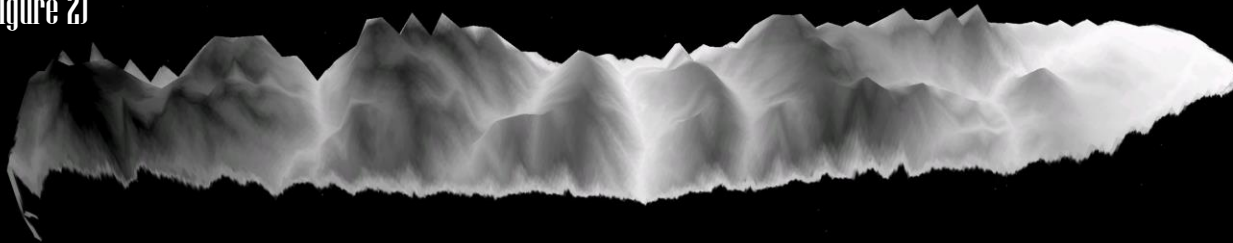


Figure 3)

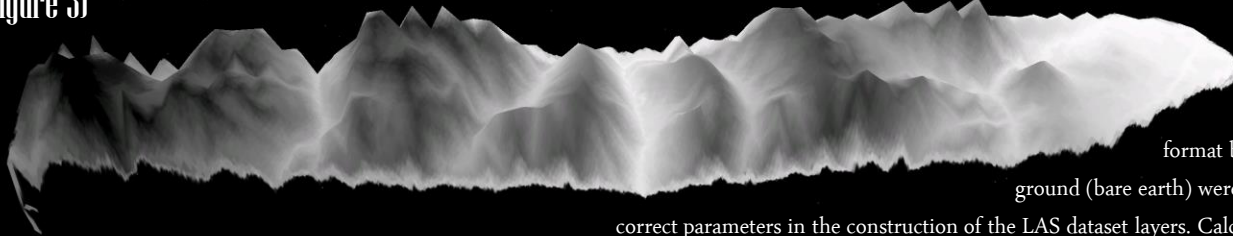
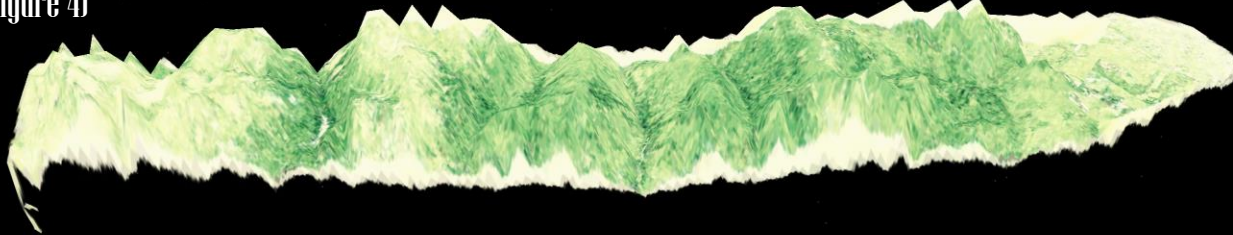


Figure 4)



LiDAR refers to technology that involves emitting lasers in each area and measuring distances from those lasers via sensors. This is provenly more efficient and accurate in ascertaining results as opposed to field measurements. LiDAR data from the Washington State Department of Natural Resources was acquired to perform a forest canopy density and height analysis of Olympia National Park. It is worth analyzing these two factors for a national park comprised of many forests.

Because LAZ data was the only data format available for the region's point cloud, it needed to be converted into LAS format before use in ArcGIS software. Next, a LAS dataset and dataset layers for both areal vegetation (above ground) and the ground (bare earth) were created. The American Society for Photogrammetry and Remote Sensing (ASPRS) provided a guide to determine the correct parameters in the construction of the LAS dataset layers. Calculating canopy density involves dividing above ground raster from the total area raster. Canopy density was visualized with a green to white color ramp (Figure 1.). Estimating forest canopy can be useful for estimating biomass and carbon capture.

Using LAS data, forest height was calculated after processing data and acquiring both the digital elevation model (Figure 2.) and digital surface model (Figure 3.). Then the elevation model was subtracted from the surface model. Same with forest canopy density, forest height (Figure 4.) was visualized with a green to white color ramp.