Jeremy Toepp | GR 6303 | Dr. Nagel | 30 November 2018

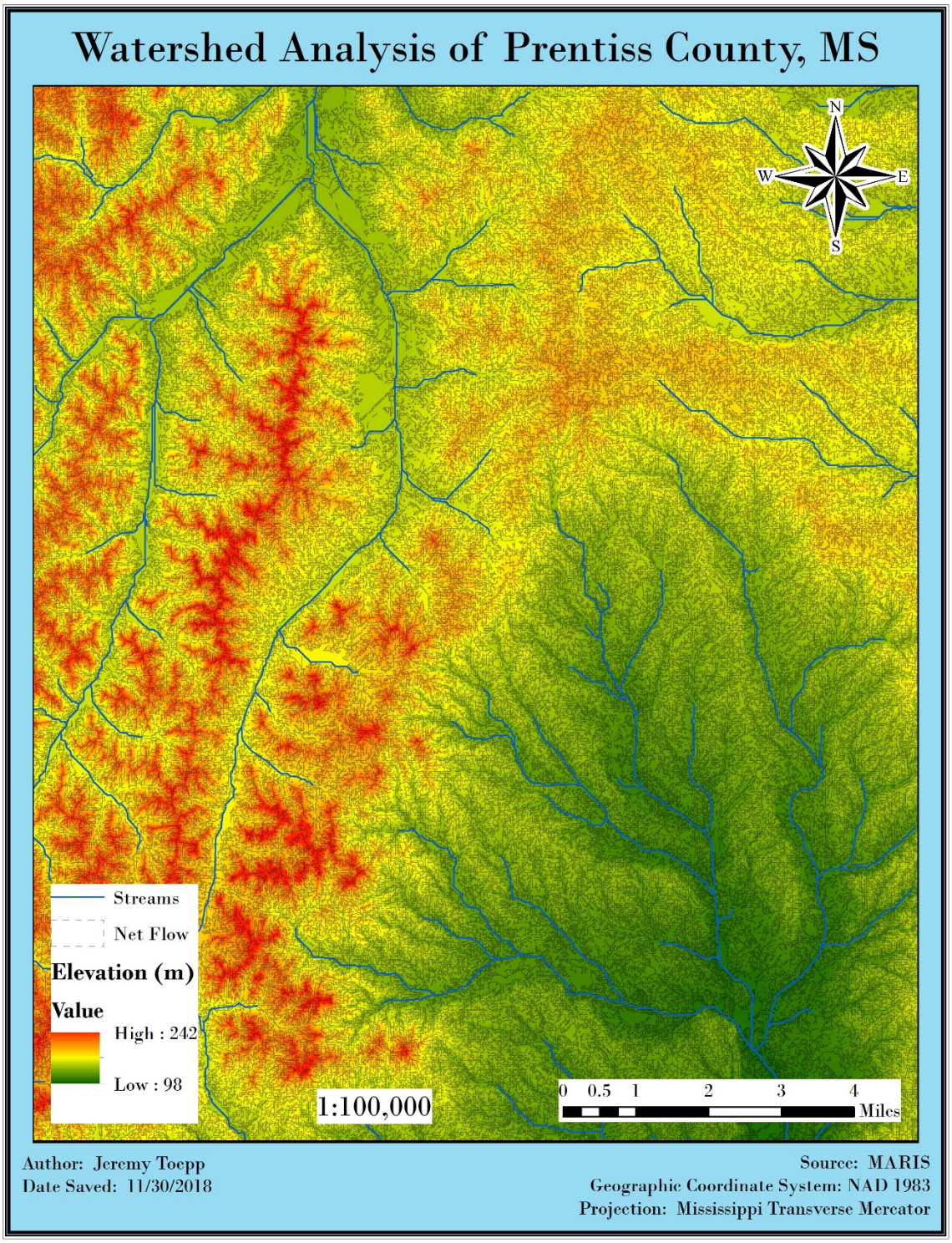

Figure 1. A map depicting Prentiss County, MS, US with slope classified by color with red being highest and green being lowest. Additionally, there is a hillshade with a sun angle of 315° to make the elevation stand out more. Streams are depicted with blue lines, with sub-watersheds in black close to the streams. Lastly, the remaining polygons represent the potential watershed flow based on terrain.

On my honor, as a Mississippi State Student, I have neither given nor received unauthorized assistance on this academic work.

Step 16b: The lab started with a Digital Elevation Map (DEM) of Prentiss County, Mississippi. A hillshade was added for additional clarity, and “sinks” were found and filled. A sink is a region of typically erroneous data where all cells surrounding are much higher values. These cause the data to be skewed, so they must be filled to match what is around them. Then, the flow direction of water was calculated based off of the terrain. After this, the flow accumulation was calculated based on the flow direction to see where water should pool. For this step, a value of 0 would be considered a ridgeline whereas high values would indicate perennial tributaries. This attribute was used to extract only the regions where the flow was calculated with a value over 1000. This was used to calculate a “stream link”. Any point where a stream diverges or converges is a junction. A stream link is the sections between any adjacent junctions. This raster was converted into a shapefile to be overlaid on the final map. Finally, a watershed was calculated by taking the net flow accumulation in combination with the flow direction to depict areas that are a watershed for the main perennial streams. The polygons from this clutter most of the map in Figure 1, but the clutter near the streams was cleaned up by using the dissolve tool to combine adjacent polygons with the identical values. These watershed regions can be seen along the main streams. The final map layers include the elevation with the hillshade applied, the main streams extracted from the calculated accumulation, and the watershed regions depicted by the direction of the runoff.