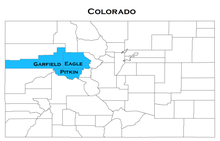
Leaf Change in Colorado's Roaring Fork Valley:

Where and When to Experience Peak Fall Foliage

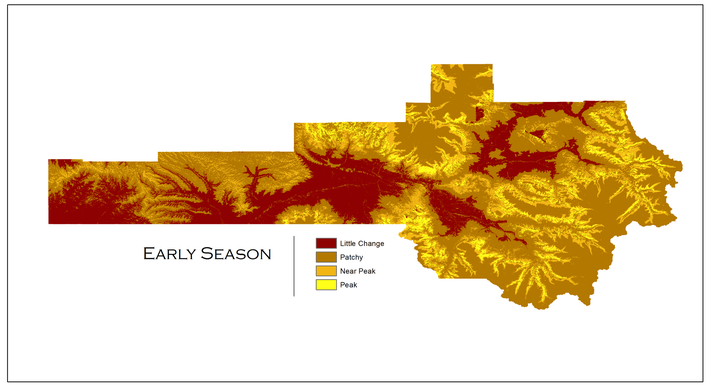
Introduction

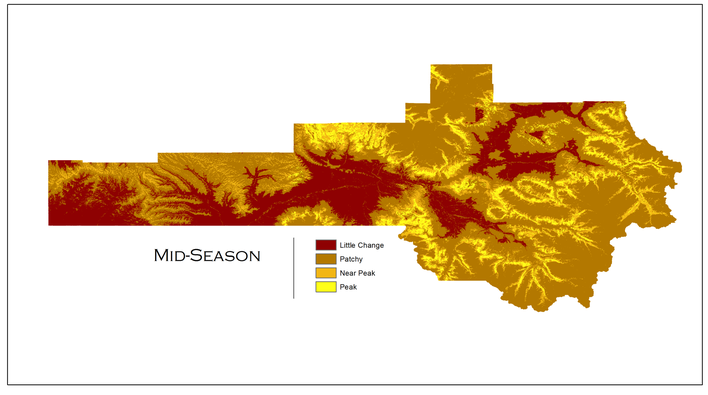


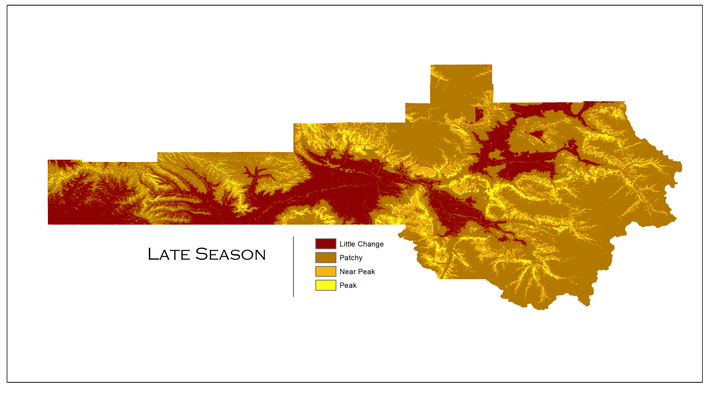
Every fall, crowds of people flock to the Colorado's parks and national forests to enjoy the brief window of time when aspens and other deciduous trees change leaf color. This project is meant to serve as a resource for people who want to know where and when to see peak fall foliage in Colorado's Roaring Fork Valley. Because leaf change is so variable from year to year, most rely on the expert advice of locals when deciding where to go. This model incorporates 3 values - land cover, access and elevation - to provide a tool that people can use to supplement that expert advice.

Methodology

I classified my 3 values into preference grids to map areas with high, low and intermediate scores relative to land cover, access and elevation. I held my first 2 values constant and used elevation as a proxy to demonstrate change over time. For land cover, I reclassified my dataset with preference in descending order: aspens, willows, cottonwoods, mixed aspen and coniferous forest, riparian zones, oaks and finally coniferous forests (Colorado spruce, Engelmann spruce, Douglas fir, lodgepole pine, other evergreens). The access map is an amalgamation of three variables– hydrology, Forest Service roads and Federal and state forested lands. I used the buffer tool to conduct proximity analyses, then combined my 3 variables using the raster calculator to compute a final access score. For elevation, I constructed a preference grid for 3 distinct stages: early, mid and late season. In the early season map, high elevations received the highest scores, with descending classes of elevation receiving correspondingly descending scores. To demonstrate change over time, I assigned the highest scores to middle elevation zones in my mid-season map. Descending scores radiated outward (both to higher elevations and lower elevations) from this middle elevation zone. I replicated the process for a late season map, assigning a lower elevation zone the highest score. Finally, I used the raster calculator to create 3 final maps, combining my elevation maps with my land cover and access maps 3 different times. The elevation map pictured in the lower left corner is an early season map—mid and late season maps are not pictured, but are included in the final maps at right.







Tufts

Coordinate System: GCS_North_American_1983

Sources: USGS, US Census Bureau, Colorado DOT, Tufts GIS Confluence

Citations: Huggins, Janis (2008) *Wild At Heart: A Field Guide to Plants, Birds and Mammals*. Town of Snowmass

Cartography and photography by Taylor Jang

Project Date: December 2013

Discussion

In terms of predicting something as complex as leaf change in the high country, this model is probably going to be wrong nearly as often as it is right. My final maps could have benefited from the addition of more variables, specifically trails through Federal and state forests, temperature, precipitation and cloud cover. Additionally, the maps do not have a way of accounting for hard to map elements, particularly scenic drives or vistas. Future work could attempt to incorporate additional variables and come up with creative ways to geospatially display difficult to map values. However, an awareness of these limitations by no means detracts from what the map can do. As a tool to be used in conjunction with other information (local advice, yearly weather variability, personal preference for leaf colors, and so on), this model will allow the user to pinpoint areas that have a high concentration of color changing trees in easily accessible areas. Visualizing those areas in a geospatial format can inspire a sense of possibility that is difficult to get otherwise. In this sense, a significant portion of the value of this project is symbolic – as a reminder of the transient natural beauty of fall in Colorado. If this project inspires a greater awareness of the abundance of possibilities when it comes to exploring that beauty, then these maps have served their purpose.