Lab #2: Temperature, Vegetation, and Elevation in Rocky Mountain National Park

The goal of this lab was to examine the relationship between temperature, elevation, NDVI among 4 different landscape types within Rocky Mountain National Park. Areas that are highly vegetated appear as dark green in Figure 1's true color composite. These dark green areas also appear reddish-orange in Figure 2 and exhibit an NDVI close to a value of 1 which is to be expected. Figure 3 shows us that most of the land cover of RMNP is vegetated (both low and high vegetation) with a much smaller portion of the landscape class classified as water or barren (soil/urban). Using the profile tool to sample an area from low to high elevation, Figure 5-1 reveals an inverse correlation between elevation and temperature which is to be expected as higher elevations tend to be cooler. Figure 5-2 shows a lower NDVI value very close to 0 at 0.02 miles which is the same location with high elevation. This is most likely due to the absence of vegetation above the tree line at high elevations, which is also reflected in Figure 4 as barren landcover has the highest average elevation of the 4 landcover types. In Figure 4 water is the only landcover with a negative NDVI value and also has the lowest average elevation and temperature.

Figure 1. Landscape appearances of RMNP: true color composite (bands 2, 3, and 4).

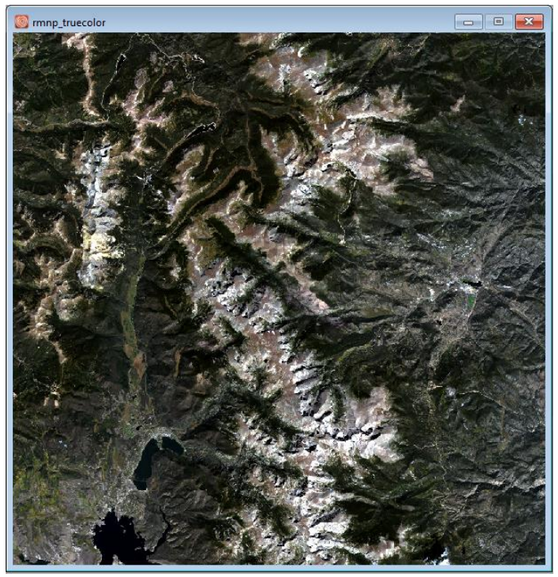


Figure 2. Range of vegetation characteristics via NDVI.

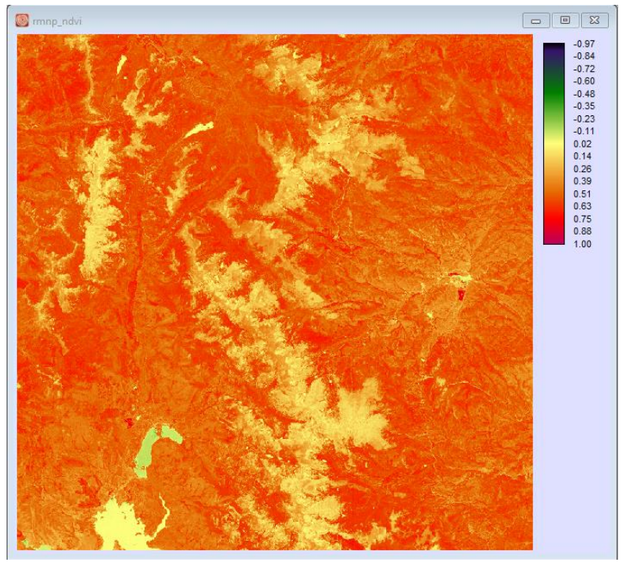


Figure 3. NDVI landcover reclassification: types and abundance of landcovers present (1=water, 2=barren, 3=low veg, 4=high veg)

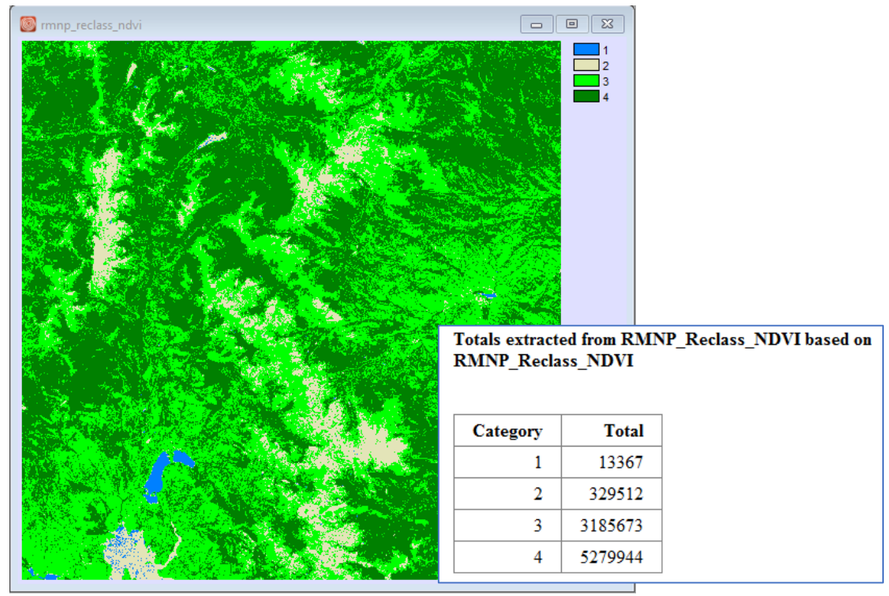


Figure 4. Average values of each land cover type.

Landcover Type	Elevation (US feet)	Temp (F)	NDVI
1 (water)	8510.99	59.872803	-0.07
2 (barren)	11357.92	62.78059	0.13
3 (low-veg)	9940.76	71.508253	0.40
4 (high-veg)	9767.02	65.194513	0.57

Figure 5-1. Graphing variation in temperature (F) and elevation (US) across a profile from low to high elevation

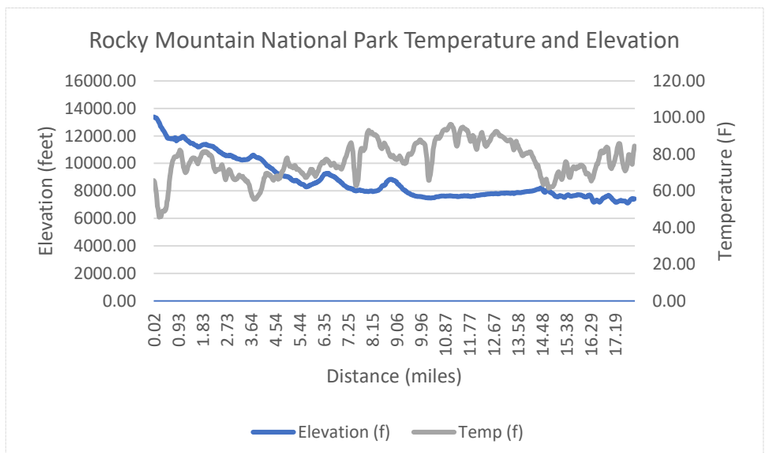
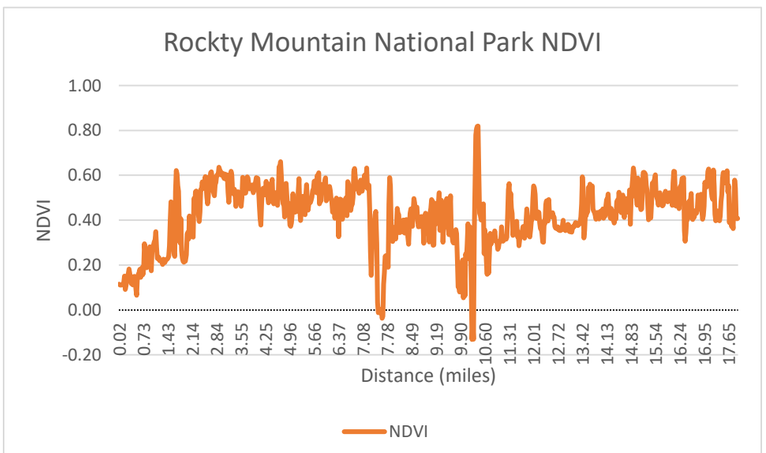


Figure 5-2. Graphing variation in NDVI across a profile from low to high elevation.



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