Cloud First

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Cumulus Congestus, Stratocumulus, and Lenticular clouds Taken on Sep. 7, 2019 at 7:00PM near Breckenridge, CO I captured this image on September 7, 2019 at 7:00PM while I was camping on Boreas Pass near Breckenridge, CO. I decided to use this image for my Cloud First assignment because the cloud formations are clearly visible and the sunset provided excellent lighting. The clouds were above the plains east of where I was. Since I was in the mountains at an elevation above 11,000ft, my camera angle was close to horizontal, which provided a unique angle to view the clouds.



There are three different cloud formations shown in this image: Cumulus Congestus, Stratocumulus, and Lenticular clouds. The Cumulus Congestus cloud on the left is a large fluffy cloud formed in unstable atmospheres at low elevations relative to the ground. Stratocumulus clouds are the thin fluffy clouds that stretch the majority of the image. Stratocumulus clouds are formed by weak, shallow convection currents and usually form in distinct layers as shown in the image [1]. The Lenticular clouds are the grey wispy clouds above the Stratocumulus clouds. Lenticulars form in stable atmospheres when moist air flows over a mountain creating standing waves on the downwind side [2]. Although it was a mostly clear and calm day with no precipitation, these clouds did form on the downwind side of the mountain. According to the skew-T diagram above, the atmosphere should be unstable since the CAPE number is 448.1. This is not completely supported by the clouds in the image. Since Lenticular clouds form in stable atmospheres and Cumulus clouds form in unstable atmospheres, I concluded that the atmosphere must have been marginally stable at this location. By inspection of the skew-T diagram, one could expect to see clouds form at an elevation of about 4000m (13,000ft) because that is where the temperature line and the dew point temperature line become close together. This is a fairly accurate prediction of the clouds in the image since they are only slightly above the elevation that the photo was taken.



Figure 1: Original Image 4032x3024 pixels



Figure 2: Edited Image 3694x2190 pixels

I used my Google Pixel 3 phone camera to take this image. I zoomed in a little bit to try to capture more detail in the clouds. I estimate my field of view to be about one mile with the clouds being about five miles from the lens. The focal length of the lens was 4.44mm, with an aperture of f/1.8, shutter speed of 1/1675, and ISO of 52. I edited my image using pixlr.com by reducing brightness and temperature and increasing contrast.

I really like this image. The sun setting behind the mountains provided excellent lighting that highlights details in the cloud formations and adds a lovely orange tint. I also believe the silhouette of the mountains adds value and perspective to the image. The only thing that would make this picture better would be if the Cumulus Congestus cloud was a larger more dramatic Cumulonimbus cloud.

References

- [1] Weatheronline.co.uk. "Stratocumulus." *WeatherOnline,* www.weatheronline.co.uk/reports/wxfacts/Stratocumulus.htm.
- [2] "SKYbrary Wiki." *Lenticular Cloud SKYbrary Aviation Safety*, www.skybrary.aero/index.php/Lenticular_Cloud.