

**Cloud Second Image  
Flow Visualization  
Michael Karns  
Fall 2018**



**Image taken: November 14, 2018 at 5:00 pm  
Cloud Type: Altostratus  
Taken at: Top of Flagstaff Mountain in Boulder CO looking north**

The purpose of this image was to capture a picture of clouds for the second cloud assignment. My intent was to take an image of clouds at sunset in order to capture the vivid colors that result. I also wanted to a nice gradient of colors from dark red shifting to the darkness of night. This image was taken at the top of Flagstaff in Boulder Colorado. The camera was pointed horizontal looking north. The image was captured on November 14th, 2018 at 5:00 pm.

The clouds in the center of the frame are altostratus. Figure 1 shows the Skew-T plot for November 14<sup>th</sup>, 2018 at 6:00 pm using a weather balloon launched from Denver International Airport, which is 42 miles east of Boulder.

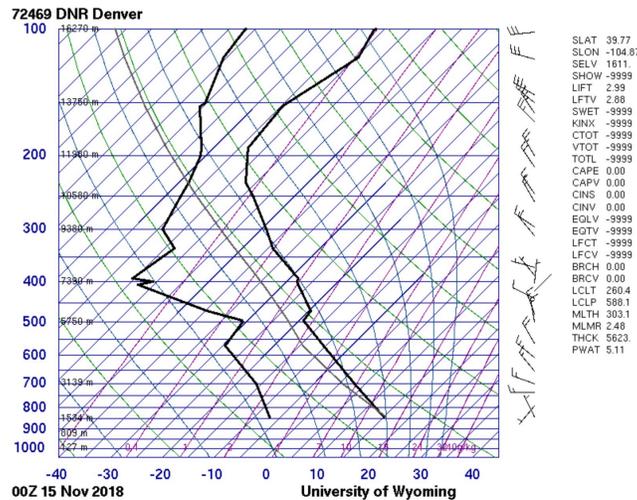


Figure 1: The Skew-T plot for November 14<sup>th</sup>, 2018 at 6:00 pm. The dark black far right line is the air temperature and the left dark black line is the dew temperature recorded by the weather balloon. [1]

Reading the Skew-T plot, the CAPE value is 0 implying that there was a stable atmosphere that evening. The sky has some scattered clouds across the horizon. The previous few days there was a winter storm followed by a day of no clouds. [2] Reading the Skew-T plot, these clouds were at an elevation of about 6000 m or 20,000 feet, which was expected. These clouds were formed by having hotter air rising in the atmosphere until the surrounding air was cool enough to have the water particles condensate into clouds. This hot air could have also been pushed up by the mountains.

Using the mountains as a backdrop, I would estimate the field of view is 5 miles across the frame. Assuming I am 3 miles away from the mountain in the center, I would estimate my lens is about 3 miles away from the clouds. The lens I used ranged from 18-55 mm but had a focal length of 55 mm for the image. I used a digital Canon T6i rebel canon and the final image had dimensions of 5704 x 2498 pixels. For the camera settings I had an aperture of 5.6, shutter speed of 1/80, and an ISO of 100. Figure 2 shows the original unedited image.



Figure 2: Original image.

For postprocessing, I made the mountains my black point, increased the color saturation, and cropped the image to have a better balance.

The image reveals a thin band of altostratus clouds at sunset just before the mountains. I like the vibrant red and the black moving in on the right side of the image. Also, by having the mountains in the background totally black adds a nice touch. I fulfilled my original intent on capturing clouds while at sunset in order to get vivid colors. In the future I would sharpen the image more, so the clouds stick out more. Overall, I am very pleased with my resulting image.

## References

1. Weather UWYO. (n.d.). Retrieved November 27, 2018, from 1.  
<http://weather.uwyo.edu/cgi-bin/sounding?region=naconf&TYPE=GIF:SKEWT&YEAR=2018&MONTH=09&FROM=2400&TO=2400&STNM=72469>
2. Denver, CO. (n.d.). Retrieved November 27, 2018, from  
<https://www.accuweather.com/en/us/denver-co/80203/november-weather/347810?monyr=11/1/2018>