Cloud First Image
Flow Visualization
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Image taken: September 23, 2018 at 7:00 pm
Cloud Type: Altocumulus
Taken at: Business Field University of Colorado at Boulder

The purpose of this image was to capture a picture of clouds for the first 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 have something in the frame to give context for how large the clouds were, and in this image the mountains and business building rooftop give context to the size. This image was taken at the Business Field on the University of Colorado at Boulder campus looking west towards the mountains. The camera was pointed about 30 degrees above horizontal towards the sky. The image was captured on September 28th, 2018 at 7:00 pm.

There are two types of clouds in the image. The clouds in the center of the frame are altocumulus and the whiter clouds closer to the edges of the frame are cirrus clouds. Figure 1 shows the Skew-T plot for September 28th, 2018 at 6:00 pm using a weather balloon launched from Denver International Airport, which is 42 miles east of Boulder.

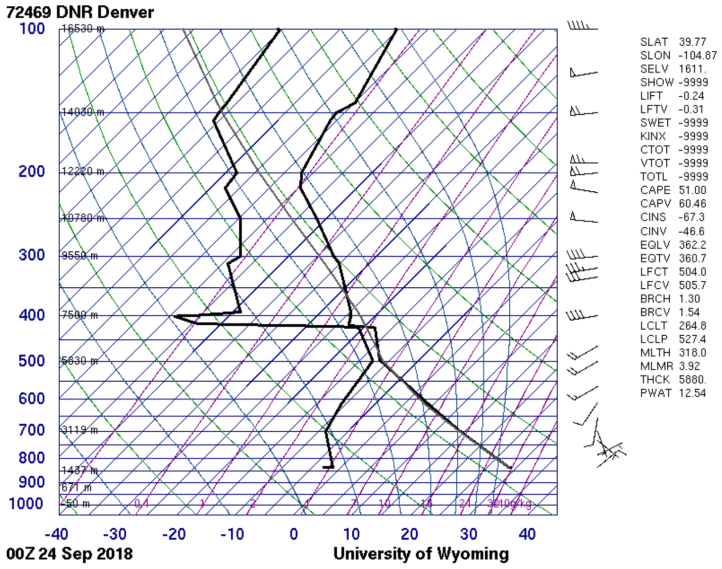

Figure 1: The Skew-T plot for September 28th, 2018 at 6:00 pm. The dark black far right line is the air temperature and the left dark black line is the dew temperature recorded by the weather balloon. [1]

Reading the Skew-T plot, the CAPE value is 51 implying that there was an unstable atmosphere that evening, which is understandable because there were high-altitude cirrus clouds. These high-altitude cirrus clouds suggest that the weather was changing, and a front is coming in. According to Accuweather, the temperature on the 28th was a high of 56 degrees and the following day the high was 83 degrees, so there was a change in weather. [2] The main focus of the image was the altocumulus clouds in the center of the frame. Reading the Skew-T plot, these clouds were at an elevation of about 7000 m or 23,000 feet, which is 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. Also, assuming the clouds are on the near side of the mountains and taking the

altitude into consideration, I would estimate my lens is 7 miles away from the clouds. The lens I used ranged from 18-55 mm but had a focal length of 28 mm for the image. I used a digital Canon T6i rebel canon and the final image had dimensions of 5256 x 3601 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 and I increased the color saturation.

The image reveals a small cluster of altocumulus clouds at sunset just before the mountains. I like the vibrant blue and gold colors I was able to achieve with postprocessing. Also, by having the mountains in the background totally black adds a nice touch. I am curious if this cloud formation stayed as altocumulus as it moved across the front range or if it changed into something else. I fulfilled my original intent on capturing some clouds while at sunset in order to get vivid colors. In the future I would do more postprocessing and actually photoshop out the cirrus clouds. My main focus was the altocumulus clouds and the other clouds can be distracting. To develop this idea further I could try different angles in order to get the tops of the buildings out of the image, so the background is just the mountains. Overall, I am very pleased with my resulting image.

References

1. Weather UWYO. (n.d.). Retrieved October 17, 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 October 17, 2018, from https://www.accuweather.com/en/us/denver-co/80203/september-weather/347810