

Clouds 2: Contrasting Textures



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Clouds 2

MCEN 5228: Flow Visualization

December 9, 2022

Image Context and Circumstances

This photo was taken on Monday, October 11th at 6:21 PM on the bike path near the Center for Community on the CU Boulder campus on an overcast day. The goal of this photo was to capture fluffier clouds in contrast with the rugged texture of leaves. I thought it would be interesting to have contrasting textures and colors caught in one photo. I was overall successful in these objectives with the photo above, and am very content with the final outcome of the edited image.

Cloud Formation

This photo was taken in Boulder, Colorado on an overcast day, where the high for the day was 74 degrees and the low was 41.7 degrees on the Fahrenheit scale. The Skew-T diagram, in Figure 1, is for the Grand Junction Station 21 minutes after this photo was taken. Despite the station being ~280 miles away, I still think it is relevant for the analysis of these clouds, since it is the closest station to Boulder. The CAPE value posted on the diagram is zero which indicates that the clouds in this image are likely stable. The dew point and temperature curves are closest to one another at ~5500 meters, which leads me to believe that the clouds present in the photo are altostratus and nimbostratus clouds. The darker colors and shapes of the clouds corroborate this assumption visually.

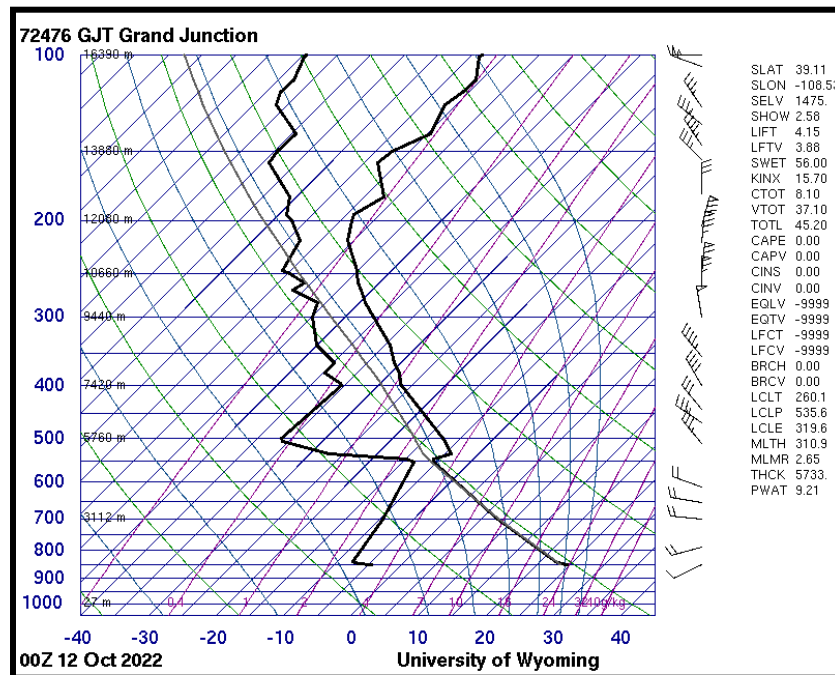


Figure 1: Skew-T diagram of Grand Junction at 6pm MST on October 11, 2022

I gathered the weather data from University of Colorado Department of Atmospheric and Oceanic Sciences as shown in Figure 2, to perform comparisons of the Skew-T diagram with local weather data. The curves below show that there was a drop in air pressure and minor

convergence of the dew point and temperature (within 15 degrees of each other) showing that there was a higher likelihood of clouds forming then, over other times. There was no rainfall that day with wind transitioning from northwest to northeast at the time of the photo.

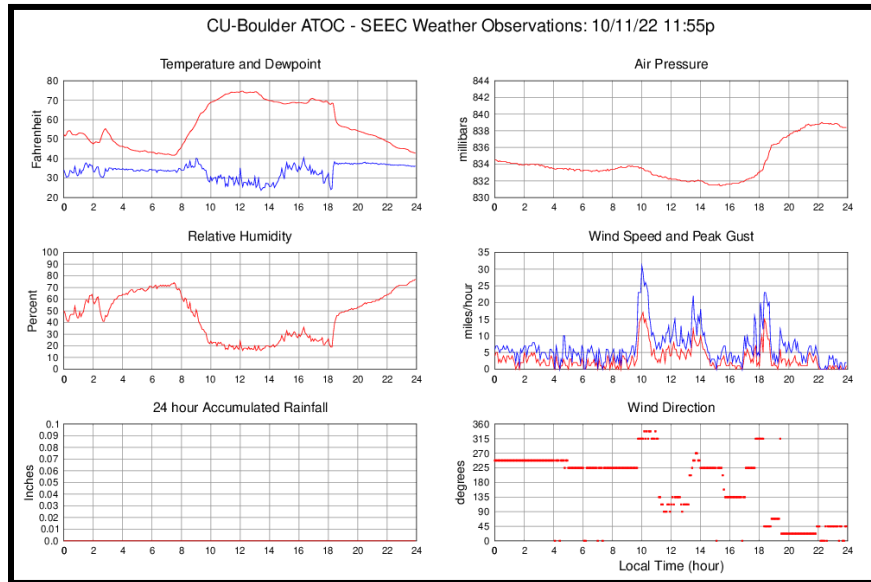


Figure 2: Weather data from CU Boulder ATOC for October 11, 2022

Photographic Technique

I took this photo with my Pixel 6's back camera, since this photo was unplanned and I did not have my camera. The original photo was 3072 x 4080 pixels with a focal length of 6 mm. The focal distance was the height of the clouds, ~5500 meters. The photo was taken with the following setting applied:

- Aperture: f/1.9
- Exposure: 1/120
- ISO: 77

All photo editing was done in DarkTable where the color contrast, cropping, and sharpness of the image was edited. The contrast was decreased to -0.2, the brightness was decreased to -0.05 and the saturation was increased to +0.1. I cropped the image to 1538 x 1581 pixels to focus on the color and texture contrast between the top of the tree and the clouds above the sky. The color contrast was also tweaked, with the green-magenta balance decreased to 0.85 and blue-yellow balance increased to 1.9, to further contrast the warm and cool colors in the images. The image was also sharpened slightly to emphasize the differences in texture. Figure 3, below, shows a side-by-side comparison of the unedited and edited images.

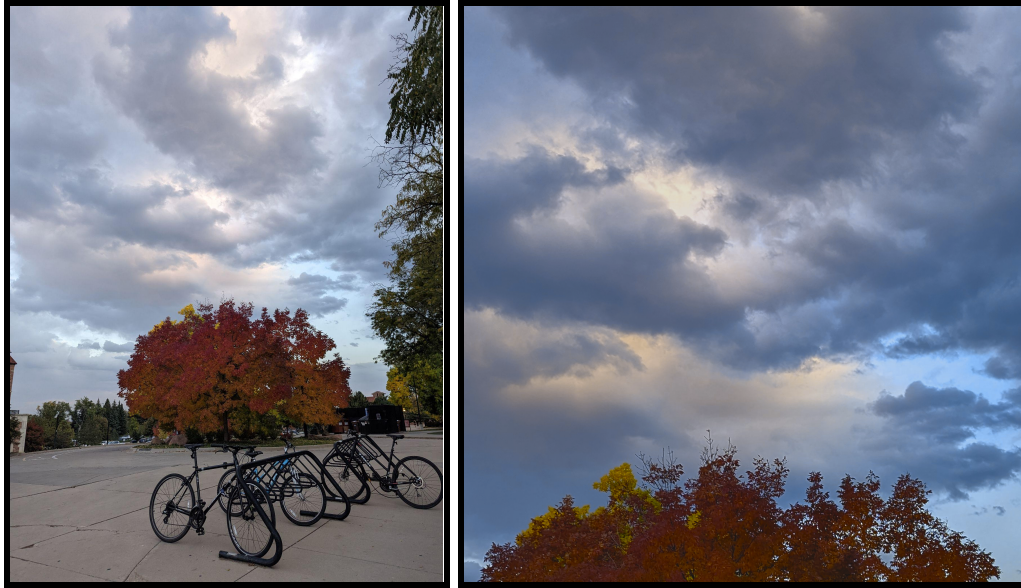


Figure 3: Side-by-side view of a) unedited photo and b) final edited photo

Image Reveals

This photo was successful in showing the color and texture differences between the altostratus and nimbostratus clouds and the ragged red tree on CU Boulder's main campus. I am very content with the outcome of the final image, but if I were to take it again, I would have taken it a bit closer so the image would have a better resolution on the edges of the branches. If I wasn't limited by the size and shape of the photo that could be posted, I would have made it taller to show more of the cloud activity. I also like the color palette of this image with a uniquely colored tree in Autumn.

References:

- I. *University of Wyoming College of Engineering. (n.d.). Department of Atmospheric Science. 72476 GJT Grand Junction sounding. Retrieved December 2, 2022, from <http://weather.uwyo.edu/cgi-bin/sounding?region=naconf&TYPE=GIF%3ASKEWT&YEAR=2022&MONTH=10&FROM=1200&TO=1200&STNM=72476>*
- II. *University of Colorado Boulder. (n.d.). Skywatch Observatory. Retrieved December 2, 2022, from <https://skywatch.colorado.edu/>*