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Cloud First Assignment – 2019 Fall

The purpose of the Cloud First assignment is to familiarize ourselves with clouds and cloud formations. Using Skew-T plots and cloud spotter guides we are able to see how temperature, elevation, pressure, and atmospheric stability affect cloud formations at any given day or time. For this Cloud First Assignment, I captured a stratocumulus cloud formation on September 20th at 5:56 PM in Thornton, Colorado.

In order to analyze the cloud formation and obtain weather specifics, I downloaded a Skew-T diagram shown in figure 1. This Skew-T diagram shows weather data for September 20th at 6:00 PM, in Denver, Colorado. Denver was the closest city to Thornton, roughly 13 miles apart, that was available on the provided Skew-T website. The elevation of this cloud formation is roughly 6000m because the left dew point line and right temperature line are closest at this point. Due to this elevation, and the visual aspects of the cloud, I was able to determine that this is a stratocumulus cloud formation. The CAPE value is 195.2 stating that the atmosphere was unstable at this time. The cloud formation occurred at a temperature of -15°C .

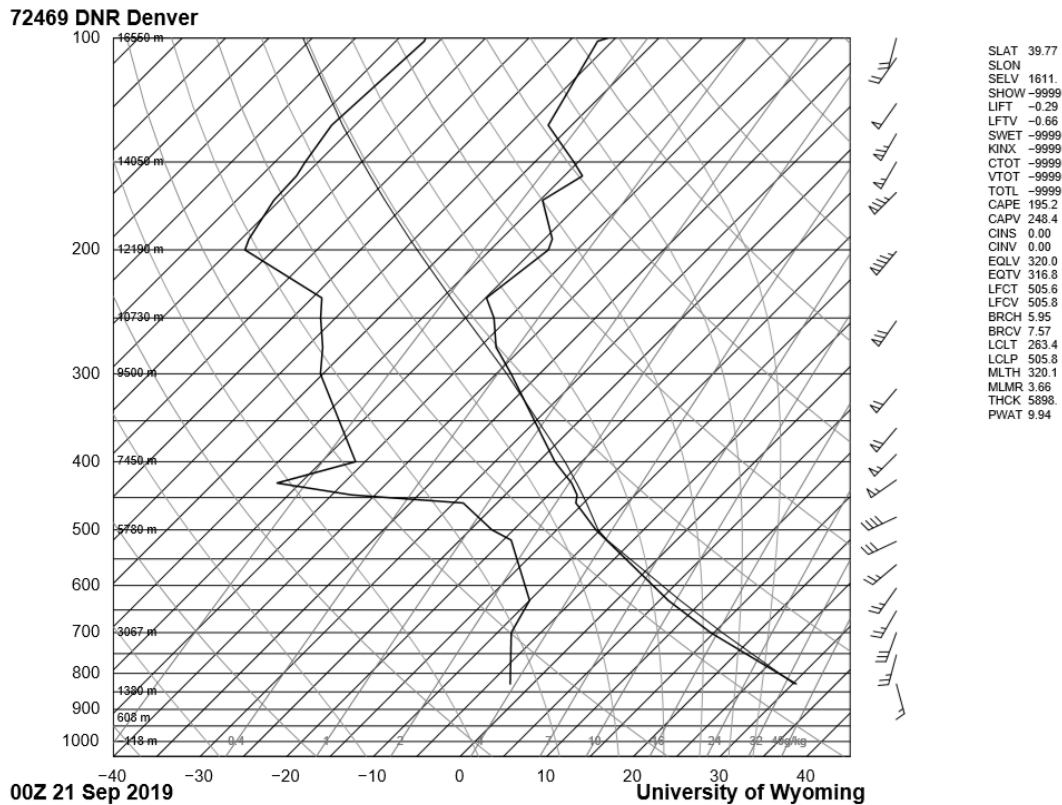


Figure 1: Skew-T Diagram [1]

The image was captured using an Apple iPhone XS camera. The focal length of the lens was 4 mm. The picture was taken at roughly a 30-degree angle. Both the original image had a width of 4032 pixels and a height of 3024 pixels while the edited image had a width of 3948 pixels and a height of 1864 pixels. The exposure specs are as follows: F-stop – f/1.8, exposure – 1/3788 sec., ISO – 25, metering mode – pattern, and flash mode – no flash. I then manipulated the color curve and cropped the image using GIMP 2.10 software. The adjusted curve is shown in figure 2 below. The original image is compared to the edited image in figure 3. The editing enhances the sunlight coming through the clouds and the contrast highlights the cloud formation. Also, the editing makes the colors more vibrant and increases the beauty of the image. The

unnatural sky and cloud color may slightly affect the scientific details of the image, but that was a trade-off that I made.

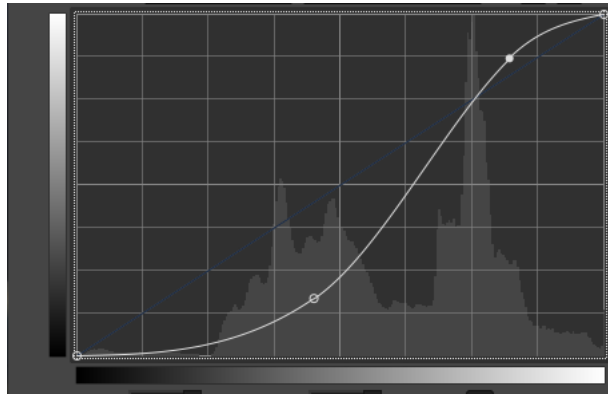


Figure 2: Adjusted color curve in GIMP 2.10

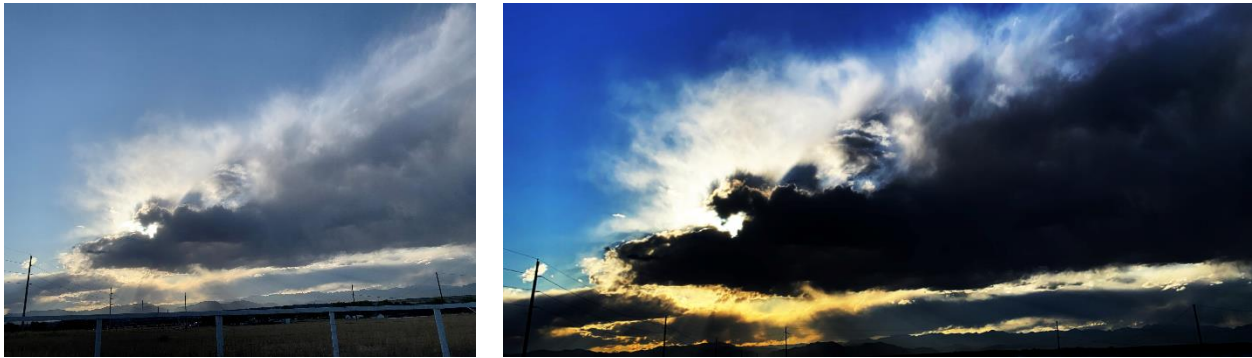


Figure 3: Original (left) vs Edited (Right)

Capturing this image of a stratocumulus cloud formation allowed me to gain experience identifying and analyzing cloud formations. I am glad I was able to capture sunlight coming through the clouds and I liked the vibrant colors I achieved through editing. The final edited image has a scenic movie ending feel, which captures the more artistic look I was going for. The fluid physics are shown well as the cloud formation is prominent with the enhanced contrast. I effectively fulfilled my image intent for this image and look forward to capturing more interesting cloud formations in the future!

Works Cited

- [1] Oolman, Larry. "Atmospheric Soundings." *Atmospheric Soundings*,
<http://weather.uwyo.edu/upperair/sounding.html>.