Clouds 1

Kendall Shepherd MCEN 4151 - Flow Visualization Altocumulous & Stratocumulous on September 1st, 2022 at Sunset

I. Purpose of Image

The purpose of this project was to photograph clouds for the past month then find the SKEW-T chart for the day of the chosen cloud photo and determine what types of clouds were photographed. By looking at the areas on the chart where the dew point line and temperature line are the closest, we are able to get a hint at what elevation our clouds are at and what type of clouds they might be.

My inspiration for this image was that it was a very beautiful sunset and I wanted to capture an image of the color of a sunset. There were also some cool cloud formations that night that I wanted to get a photo of.

II. Circumstances of Image

This photo was taken at sunset on September 1st, 2022 at about 6pm. It was taken in Boulder, Colorado which has an elevation of 5,318 feet. The camera was pointing north west and at about 30° above horizontal. The weather from what I recall that day was warm and mild with barely a breeze.

III. Cloud Diagnostic

In the background, I noticed altocumulous clouds. This is because of the scattered pattern that the cloud has that is signature to alto- and cirrocumulous clouds. It is an altocumulous because the SKEW-T chart shows that clouds were likely at about 6km, which is the typical range (4km-7km) for that type of cloud.

In the foreground, I think the long dark gray cloud is a stratocumulus cloud. This is because of the elongated cotton ball clump shape of the cloud. Since it is in the foreground of the picture, and in front of the altocumulus, that means it must be lower than the 4km-7km range, and therefore stratocumulus.

The SKEW-T chart also shows a CAPE number of 0, which means that the atmosphere is stable. This is accurate because there was no extreme weather that day, the temperature was mellow and there was little to no wind¹.



SKEW-T Chart from September 1st, 2022 (Sunset)²

IV. Photographic and Visualization Techniques

When taking the photo, the settings I chose were; ISO:400, F-Stop:f/4.5, Shutter speed:1/500 sec, Focal Length:28mm. When editing this photo I mainly focused on playing with and adjusting the colors. I upped the brightness to remove some of the darkness in the photo, especially with the dark cloud at the bottom. I also adjusted the color to be a little more pink and orange instead of orange and white. I also used the denoise function to remove some of the grains in the image, however this resulted in some detail in the clouds also getting lost. The original photo size was 5184x3456 pixels. I cropped the photo to 1300x866 pixels.



Original Photo



Edited photo

V. Image Remarks

I am not super happy with how this photo turned out. I was having some trouble with editing the photo since I didn't like the original colors that much (just personal preference) but wasn't able to adjust it how I liked and instead lost some of that parts I did like, such as the lighter cloud colors in the center. Looking at a side by side comparison now, I think I like the original photo more. I do think that I did a good job on brightening up the dark cloud which set a better tone for the rest of the image. I also wish that I had cropped out the tree branch on the bottom right. For some reason I hadn't noticed it while editing, but now I think it is very noticeable. However, I think this photo does a very good job at having a variety of clouds in frame, as well as clearly showing what types of clouds they are.

When taking the photo I had a hard time keeping things like telephone wires, chimneys, random branches, and the edges of houses out of the photos. I wish that I had an opportunity to get to a slightly higher location to have a more unobstructed view.

One question I have is, I wonder if the altocumulous clouds are turning into altostratus in the center right of the photo. Is it possible for one cloud to be multiple different types?

References

- [1] "Time and Date: September 2022 Weather in Boulder." Accessed October 24, 2022. https://www.timeanddate.com/weather/usa/boulder/historic?month=9&year=2022
- [2] "University of Wyoming: Upper Air Sounding." Accessed October 24, 2022. https://weather.uwyo.edu/upperair/sounding.html