Cumulus & Stratocumulus Clouds

Taken: September 9th, 2018 at 6:17 pm in Boulder, CO

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MCEN 4151-001

Figure 1: Cumulus & Stratocumulus Clouds

Introduction

This image was capture for the Clouds First assignment for Flow Visualization. I captured this image on September 9th, 2018 in Boulder, CO, by the intersection of Valmont Road and Airport Road as I was leaving work at 6:17 pm. My intention was to capture clouds during sunset in order get colors in the image other than grey, which resulted in the yellows and oranges seen above.

Cloud Analysis

The temperature of the day at the time was about 82 °F, with wind speeds under 5 mph and a humidity of 20% [1]. The camera was pointed west at an angle of about 10° from the horizontal. The clouds in the image are identified to be cumulus and stratocumulus in an unstable atmosphere. Figure 2 shows the Skew-T diagram at 6:00 pm in Denver on the 9th of September. This diagram indicates that the clouds formed at an elevation about 7000 feet to 8000 feet. Additionally, the CAPE is 225.8, resulting in an unstable atmosphere [2]. Thus, the clouds are confirmed to be cumulus and stratocumulus. Although the Skew-T diagram is for Denver, it is a good approximation of the cloud patterns in Boulder. Cumulus clouds form when warm, moist air rises, and the water vapor cools and condenses in to droplets. This process continues in the upward direction, creating fluffy, white clouds [3].
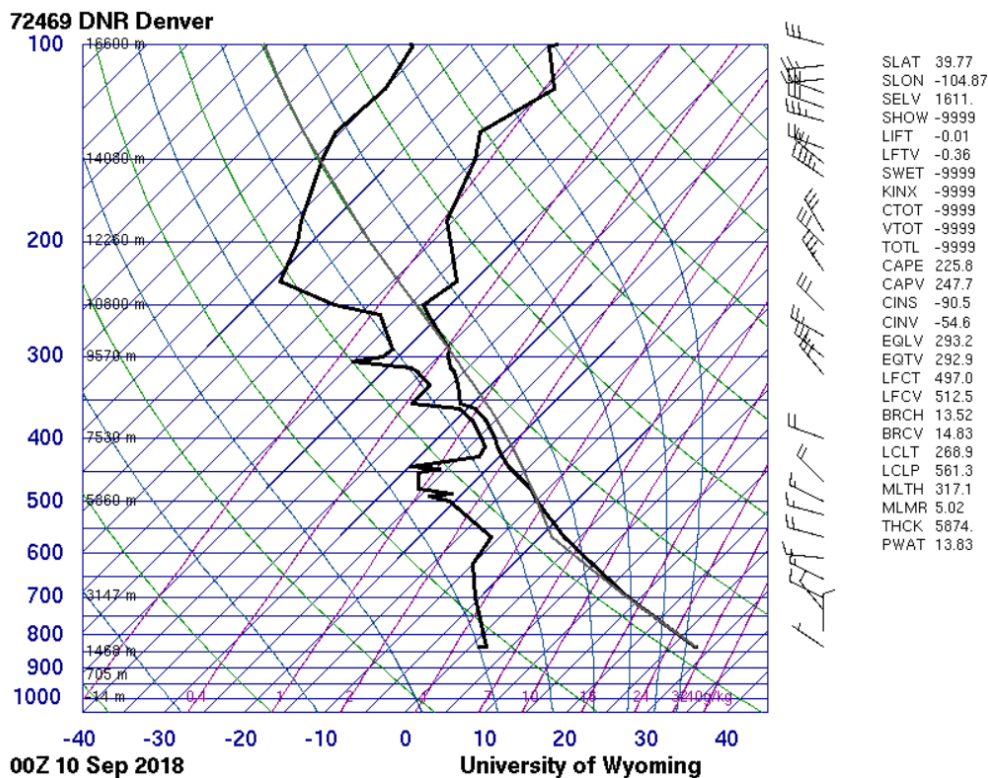

Figure 2: Skew-T Diagram for September 9th, 2018 at 6 pm [2]

Photographic Technique

This image was taken with my iPhone 7. The iPhone 7 has a 12 MP camera with a f-stop value of 1.8. The original image had dimensions of 1536 x 2048 pixels and the final image had dimensions of 849 x 900 pixels. Cropping and resizing of the image

were the only post-processing edits I made. I really liked the colors displayed in the original image so I did not change any aspect of color. I kept the tops of the trees in the photo to provide a full contrast range and to create prospective.

Figure 3: Original Image

Conclusion

I am satisfied with the image I took. I like the colors and shadowing of the clouds portrayed against the light blue sky. Additionally, the clouds have cool shapes and sizes that bring a sense of layering to this image. In conclusion, this assignment has given me knowledge about clouds that I did not know before and I aim to capture different types of clouds for the next clouds assignment.

References

[1] Boulder Muni, Boulder, CO, CO. (n.d.). Retrieved from Weather Underground: https://www.wunderground.com/history/daily/us/co/boulder-muni%2C-boulder%2C-co/KBDU/date/2018-9-9

[2] University of Wyoming College of Engineering. (n.d.). Retrieved from Department of Atmospheric Sciences: http://weather.uwyo.edu/upperair/sounding.html

[3] Warrilow, Chrissy. "Sky Watching: Cumulus Clouds." *The Weather Channel*, The Weather Channel, 21 Mar. 2013, weather.com/science/news/sky-watching-cumulus-20130320.