Altocumulus & Stratocumulus Clouds

Taken: November 13th, 2018 at 7:18 am in Boulder, CO

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MCEN 4151-001

Figure 1: Altocumulus & Stratocumulus Clouds

Introduction

This image was capture for the Clouds Second assignment for Flow Visualization. I captured this image on November 13th, 2018 in Boulder, CO, on the University of Colorado Boulder campus on Colorado Avenue by the Duane Physics building as I was walking to a meeting at 7:18 am. My intention was to capture clouds during sunrise in order get unique shading and colors in the image other than grey, which resulted in the yellows seen above.

Cloud Analysis

The temperature at the time of capture was about 25 °F with negligible wind [1]. The camera was pointed east at an angle of about 10° from the horizontal. The clouds in the image are identified to be stratocumulus and altocumulus in a stable atmosphere. Figure 2 shows the Skew-T diagram at 12:00 pm in Denver on the 13th of November. This diagram indicates that the clouds formed at an elevation about 11000 feet Additionally, the CAPE is 0, resulting in a stable atmosphere [2]. Thus, the clouds are confirmed to be stratocumulus and altocumulus. 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].

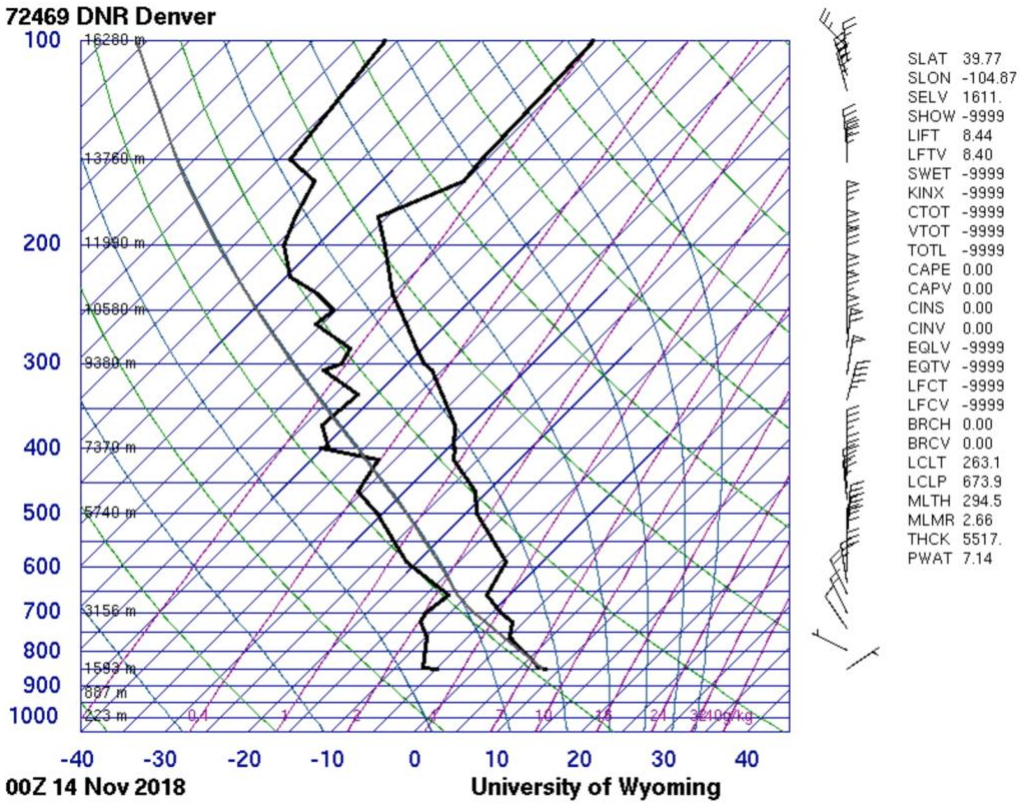

Figure 2: Skew-T Diagram for November 13th, 2018 at 12 pm [2]

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 3024 x 4032 pixels and the final image had dimensions of 879 x 900 pixels. I adjusted the contrast, highlights, shadows, and sharpness using the Apple Preview application. Additionally, I cropped and resized the image to meet the submission requirements.

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 blue sky. Additionally, the altocumulus clouds I captured have cool shapes and sizes that bring a unique pattern to this image. In conclusion, this assignment has given me knowledge about clouds that I did not know before and I am glad that I can determine and classify clouds every time I look at the sky now.

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.