

Clouds Second Report

Fall 2019

MCEN 4151-001: Flow Visualization

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I. Introduction

For this assignment, we wanted to capture various beautiful cloud images and discuss their types with the rest of the class to learn more about the physics behind each type of them. So, for my second professional cloud image, I decided to capture a shining red sunset cloud, and I found this interesting colorful cloud with an aircraft passing through it which created a beautiful contrail.

II. Experiment Set up

This image was taken on the 22th of October of 2019 around 6:20 p.m. in Boulder, Colorado. The exact location of the photo is 1010 Adams Circle. The photo was taken from an approximate height of 1.5 meter above ground level with an angle of 75° above the horizon. Also, I believe I was facing the west when I was taking the photo.

III. Cloud Physics

The cloud that I captured for this task can be defined as cirrostratus cloud judging from its appearance. Also, Cirrostratus clouds usually form between an altitude of 20,000 – 35,000 ft in stable atmosphere. From the diagram below, we can see that the cloud formed around 25,000-30,000 ft, and the atmosphere that day was stable since the CAPE value equals to zero. Moreover, the weather that day was about 50-55 degrees Fahrenheit, and the wind was about 5 miles per hour from west.

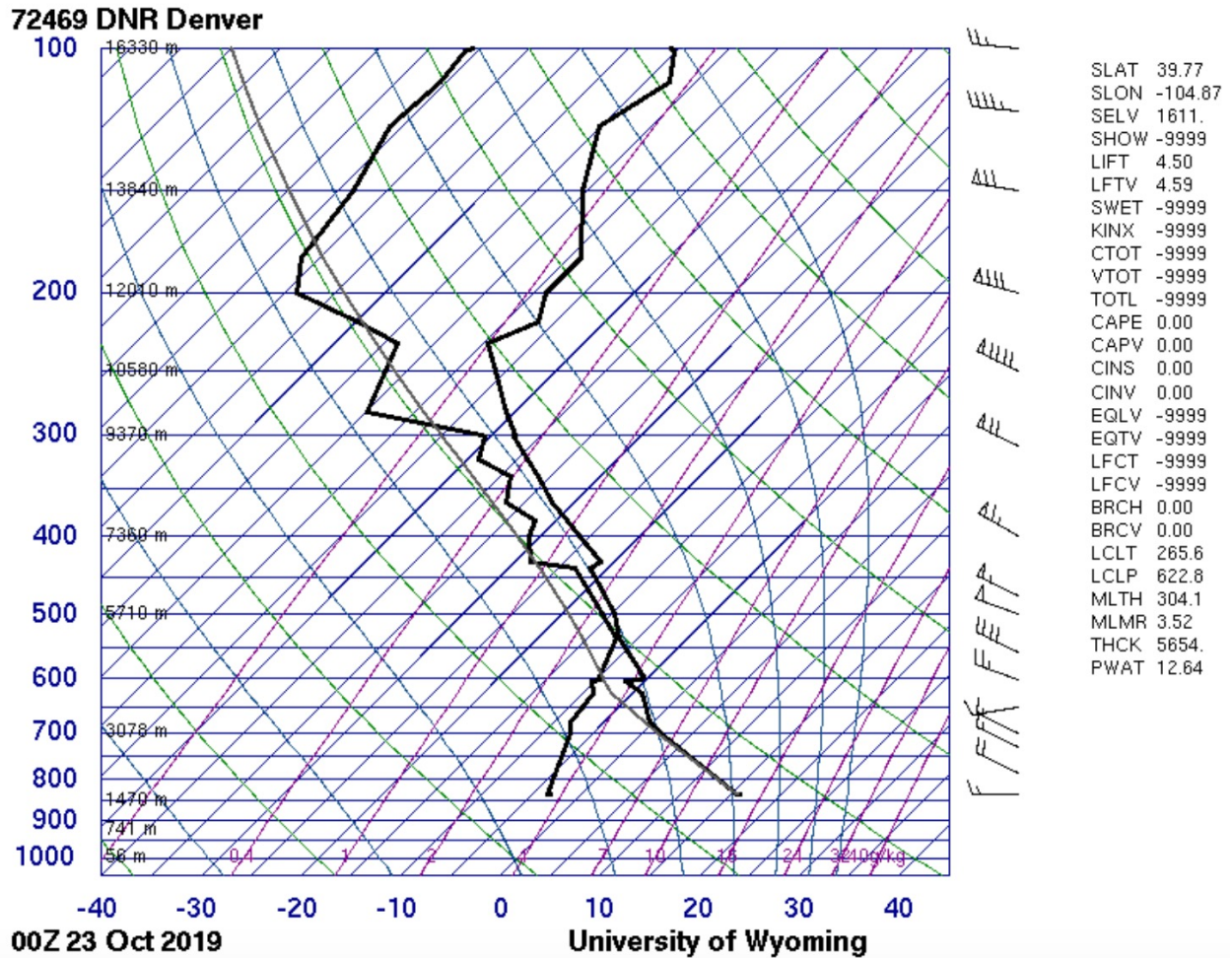


Figure 1. Skew-T plot.

IV. Camera Settings & Photo Editing

The photo was captured with my iPhone X camera. I used auto focus and ISO with 1/40 exposure time, f/1.8 for aperture, and a focal length of 4mm. Also, the dimensions of my photo are 4032×3024 pixels. As for the image editing, I used the iPhone built-in editing program. Minimal editing was required, I believe natural is beautiful just the way it is. However, to edit different features simultaneously, I played with the “Auto” feature till I was satisfied with the outcome as indicated in Fig.3.



Figure 2. Original photo

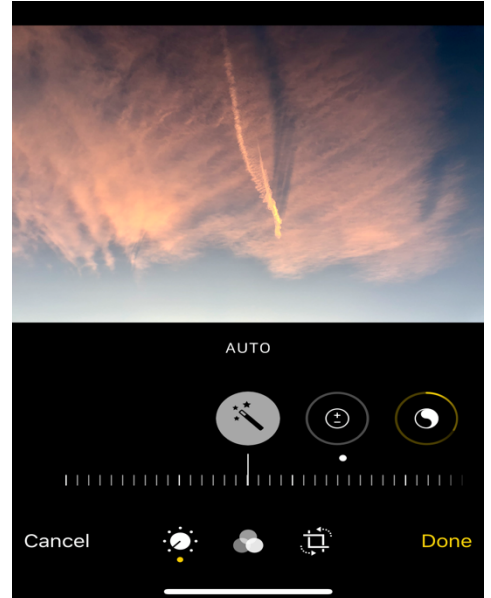


Figure 3. Editing settings

V. Conclusion

My intent behind this photo was to capture beautiful colored clouds by the sunset red rays. At first, I could not decide which cloud to choose where there were a lot of pretty clouds that day as indicated in Fig. 4. below. I ended up with choosing the cloud with contrail which I think it was really unique. I received great feedback from my classmates which made me happier about my choice.



Figure 4. A photo that shows the surrounding clouds

VI. References

- <http://weather.uwyo.edu/upperair/sounding.html>
- <http://www.flowvis.org/wp-content/uploads/2019/10/13.Clouds2.pdf>