

Fall 2020 Clouds 1 Report Colton Oglesbee



Introduction

This image was taken for MCEN4151 "Flow Visualization" and is the first cloud image required for the course. The image was taken September 20th 2020 around 6pm outside of Denver CO on top of my office roof. The picture is capturing the sunset in the west over the rocky mountains. The original inspiration for this image was the beautiful rays of sun poking out through the clouds. After learning about cloud types and psychrometrics a further analysis was done on the image and clouds, those results can be found in this report.

Cloud Science & Psychometrics

On September 20th it was a nice day with scatter clouds and rain throughout the day. There was also a lot of smoke in the air from surrounding fires in Colorado. Using a SKEW T diagram from the University of Wyoming's College of Engineering's website [1] I was able to report some finds about this image and the clouds and atmosphere captured in the image. As seen in Figure 1 the CAPE only slightly above zero suggesting a slightly unstable atmosphere.

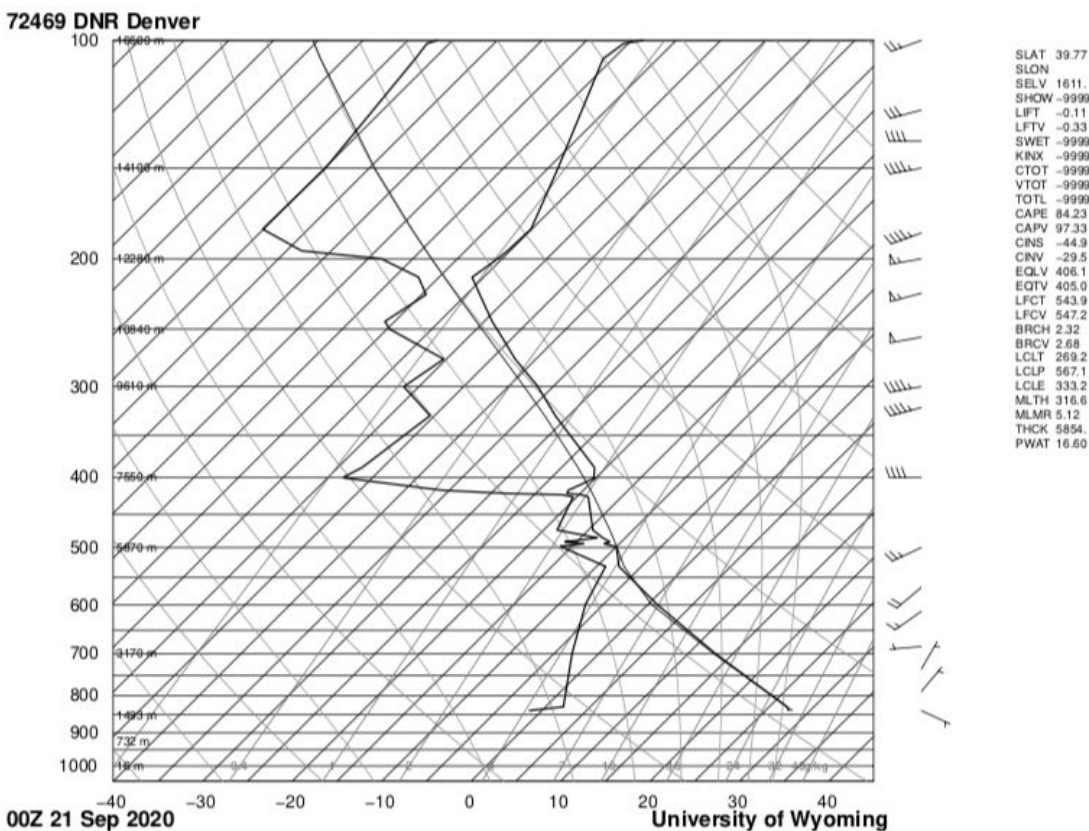


Figure 1. SKEW T diagram for 6pm September 20th MST.

We can also gather from Figure 1 the temperature and dew point lines are very close between roughly 5500 and 7300 meters. With this I identified the clouds seen in the image as stratocumulus due to the low nature of them and since the CAPE was close to zero. There was also scattered rain across the Denver Metro area at the time of this image, this leads me to believe the image could be a nimbostratus cloud as well.

Photography

As stated earlier I was able to get on top of a commercial building to take this image and reduce the trees and urban environment in the lower portion of the picture. When the image was captured it was gloomy towards the east and south so I decided to capitalize on the light coming from the sunset and capture the clouds interacting with that light. I used a Canon 6D mark II with a Canon 24-105mm lens and this image was taken as the maximum focal length of 105mm. The other metadata can be seen in Table 1

Table 1: Metadata

Camera	Canon EOS 6D Mark II
Lens	Canon EF 24-105mm f/4L IS II USM
Aperture	f/5.6
Exposure	1/640
Focal Length	105mm
ISO	100

The unedited image can be seen below with reduced quality. The original size of the image is 6384x4224. After editing the image size ended up at 6252x4168 pixels. The edited image can be seen below the unedited image.



Not much cropping was done as I liked the overall appearance of the image without cropping in. I used darktable and changed the base curve setting to get the edited image. I feel this brought more attention to the clouds instead of the sunset.

Conclusion and Reflection

The final image gives us a look at low forming clouds in front of the mountains on a fall evening. It was interesting to see how the smoke in the atmosphere affected the image and sunset. I'm not very happy with my post production image but I do feel limited by my knowledge of darktable and image editing. I plan to play around with the cropping and overall edit on the image. Of course I will continue to practice identifying cloud types and reading SKEW T diagrams.

References

[1] Department of Atmospheric Science. (2020, September 20). Retrieved October 22, 2020, from <http://weather.uwyo.edu/upperair/sounding.html>