MCEN 4151: Flow Visualization

Section 001

Cloud First Report

10/28/2019

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The Cloud First Assignment gave me the opportunity to capture a photo of nature and all its beauty. It also gave me the opportunity to learn and research more about cloud types and why certain clouds form given different environmental conditions. I learned how to analyze a Skew-T plot and how to understand the stability of different types of clouds. I ended up taking my picture on October 9th, 2019 at around 5pm in my backyard. I wanted my cloud image to stand out, so I also decided to incorporate framing via tree branches. The type of clouds I was able to capture in my image were a mixture of Cumulus and Stratocumulus.

To better understand what type of clouds can be seen in my photo, I used a mixture of Skew-T diagram analysis and visual analysis.
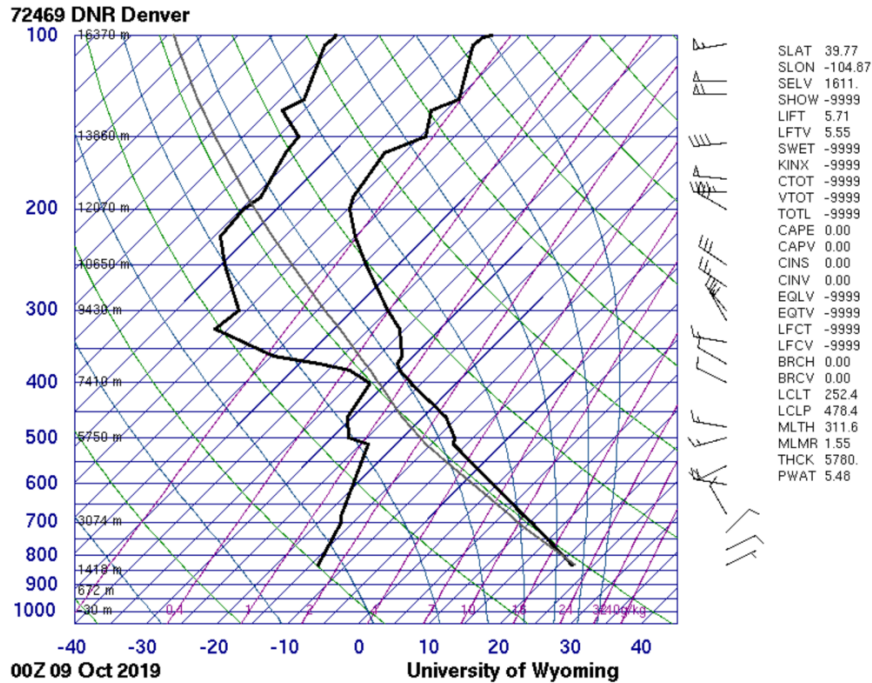

Figure 1. Skew-T Diagram @ 00Z 09 October 2019

According to **Figure 1**, the value of CAPE = 0.00, signifying that the clouds at this particular time were stable. To gain an understanding of the altitude of the clouds, we can look at the point on the Skew-T Diagram where the Dewpoint Curve and the Temperature Curve are close. This point occurs at an altitude of about 5000m. Given all of this information and how the clouds visually look, we can assume that the clouds are a mixture of Cumulus and/or Stratocumulus.

The photograph was taken about 5000m away from the subject at a focal length of 82mm, an exposure time of 1/500s, a maximum aperture of 4.5, and an f-stop f/7.1. A Nikon d3500 DSLR camera was used to capture this 4,000 x 6,000-pixel image. I decided to take my picture with some framing through the tree leaves in my backyard. I thought this added an aesthetically pleasing touch to the image while also not being too distracting. During the post-production phase, I used Nikon ViewNX-i photo editing software to lower the brightness and add a color booster, so the image was more vivid and interesting. The difference after post-production can be visualized in **Figure 2**.

Figure 2. Side by side comparison between non-edited image (left) and edited image (right)

In conclusion, I am pleased with the outcome of my photo. I believe the photo I captured was a nice demonstration of Cumulus/Stratocumulus clouds. I also enjoy the post-production version of my image; I think it adds more interesting color while not making the image look too unrealistic. The intent of my photo was fulfilled, but I wish the image could have been a bit clearer and I would have liked to capture a less magnified image—allowing for more clouds to be shown in the photo.

References

Atmospheric Soundings, weather.uwyo.edu/upperair/sounding.html.