

Clouds 1 Report

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MCEN 4151-001: Flow Visualization

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This report will detail the process I followed to capture this image for Clouds Assignment 1. I decided that I wanted to capture a cumulus cloud as they are my favorite clouds. I wanted to highlight the characteristics which make them so unique such as their fluffy, cotton-like texture as well as their nature to develop vertically out of rising mounds. I wanted my image to be simple, yet still captivating like the cumulus cloud itself.

This image was taken from the Arapahoe Pass trail stemming from the 4th of July trailhead in Indian Peaks. As we hiked along the trail, I turned to the south and spotted a large cumulus cloud peering out from behind some stratocumulus clouds. I pointed my camera up at it, making about a 60-degree angle off the horizon, and snapped the photo. At this moment I was at an elevation between 10,500 feet and 11,500 feet.

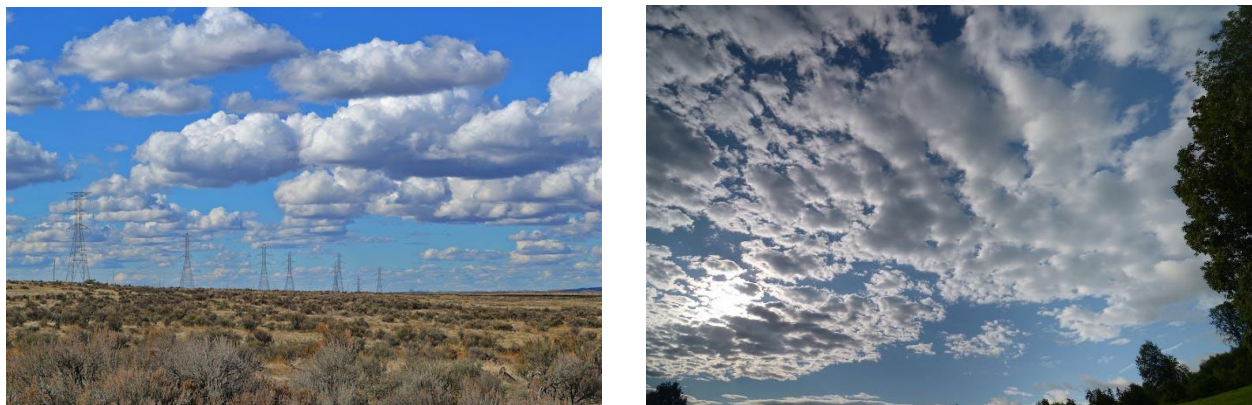


Figure 1: A series of cumulus clouds (left) and patches of a stratocumulus cloud (right).

On the day of the hike, there was beautiful weather. It was sunny and 70 degrees. The bright blue sky was speckled with low hanging clouds of multiple varieties. There had been no rain in the hours preceding the photo and there was no more than a slight breeze during the hike. The larger and central cloud in my photo is a cumulus cloud, most likely a cumulus mediocris, the medium size of the cumulus species. The cumulus cloud tends to form between 2,000 and 3,000 feet and are characterized by their puffy, cotton-like appearance which often resembles something like a cauliflower. A cumulus becomes a cumulus mediocris as it develops. Mediocris is the intermediate stage where the cloud appears as tall as it is wide. As large as this cumulus may seem, it could develop much larger given the right circumstances. Additionally, it does not have the ability to cause precipitation yet. The cloud on the left side of the image is a stratocumulus cloud. Stratocumulus clouds are like the cumulus but with a more stretched shape. Stratocumulus clouds form in layers or patches and have well defined bases. Their color varies from dark grey to bright white based on the thickness of the cloud in that region. Stratocumulus clouds form between 2,000 and 6,500 feet making them a part of the low cloud group like the cumulus. Based on the range of elevations for these two clouds, my identification holds up as it is possible for the stratocumulus to have formed beneath the cumulus cloud. Looking at the skew-t

diagram it appears that the atmosphere was stable. It also tells us that any cloud formation would likely be beneath 5,970 meters.

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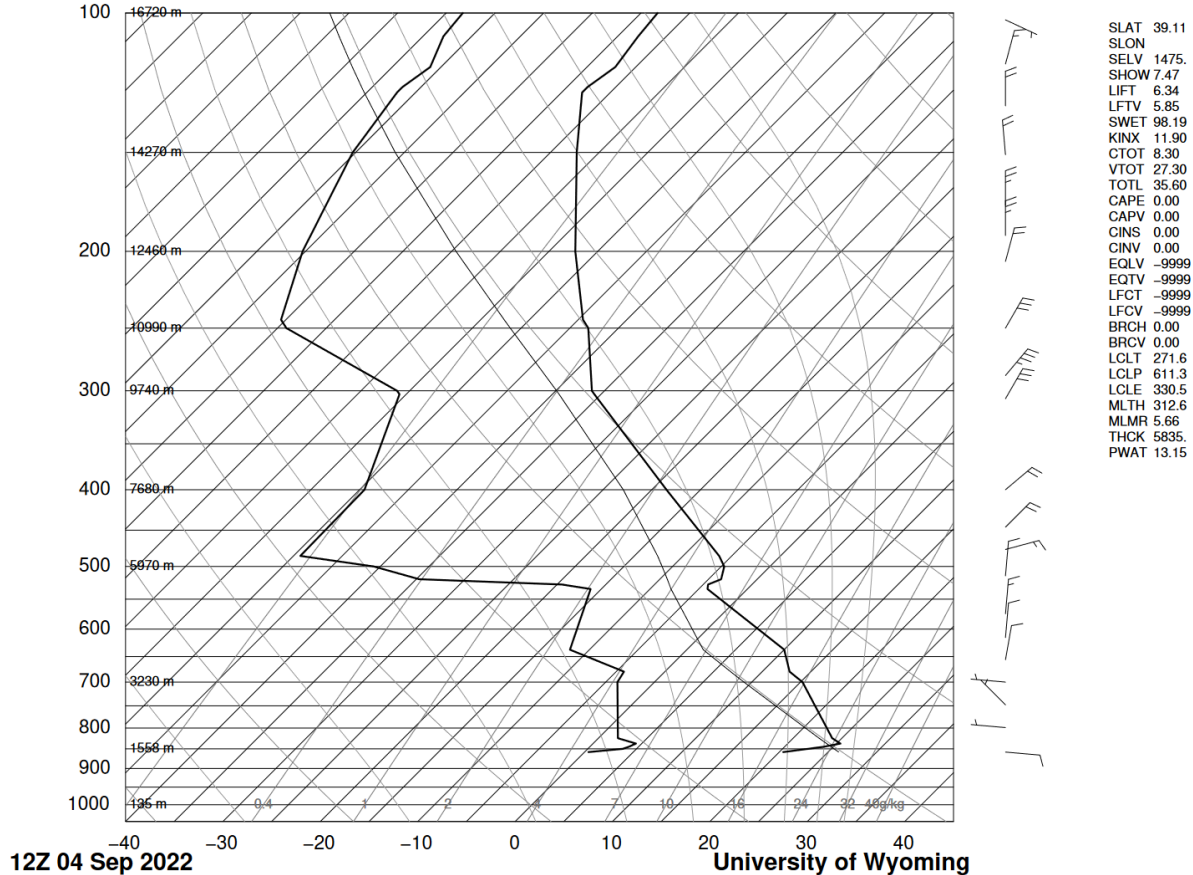


Figure 2: The skew-t diagram taken from Grand Junction/Walker, Colorado, the day of the photo.

I used a Canon EOS Rebel T5 with a Canon 18-55mm 1:3.5-5.6 lens. The camera I used was a digital camera and the original image size was 5184 x 3456 pixels while the cropped image was 3281 x 2187 pixels. I can't be sure of the cloud's distance away from the lens, but I would estimate between 2500 feet and 4,000 feet considering their height as well as the angle of the shot. My shutter speed was 1/400s, my aperture was f13 and my ISO was 100. Regarding post processing, I cropped the image quite drastically to cut out some of the surrounding clouds and really highlight the edge of the cumulus against the blue sky. I also turned up the contrast to make the edge pop and seem sharper. Lastly, I adjusted the highlights and shadows to make it easier to see the tone of colors in the cloud.



Figure 3: The original (left) and edited version of the photo (right).

Overall, I really like this image. The range of color in the cloud helps to display the differences in thickness. I think the framing of the image, with the cumulus peering out from behind the stratocumulus, shows how the two clouds can form at multiple elevations. Most of all, I like how crisp the edge of the cloud came out. I feel it helped to showcase the clouds unique texture.

References

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