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Clouds 1
Flow Visualization
Prof. Hertzberg
10/28/20

**Mountain Wave Cloud
Sedalia, CO
09/26/2020**



Figure 1: Final Edit of the Mountain Wave Cloud Photo Captured for the Clouds 1 assignment in Flow Visualization in Pike National Forest in Sedalia Co.

For the first Clouds Assignment in for Flow Visualization Course at CU Boulder instructed by Prof. Hertzberg, I was watching out for clouds which either had a distinct repeated pattern or for isolated clouds which could act as a more central subject in an image. I had customarily taken many pictures of clouds on different days with the intent of picking the best one for the Clouds Assignment. The beautiful sky and distinct mountain wave cloud in sunset lighting stood out above other cloud photography I did around that time (Figure 1).

I took this picture at 7pm as a passenger on N Highway 67 about 10 miles west of Sedalia Colorado in the foothills of Pike National forest. The image was taken while pointing about 300 degrees Northwest and about 20-25 degrees up from horizontal. The altitude at the photo location was 7242ft above sea level.

Central in the image is a mountain wave cloud estimated to be 2-3 miles long at an elevation likely 5,000-7,000ft above mountain top level or around 13,500ft. These clouds are relatively stationary during their life and are the result of topographic effects on air flow over the mountains rather than atmospheric instability although the CAPE value of 56 for that evening suggested some very minor instability. Additional pieces of the central wave cloud can be seen which appear to be at a similar altitude, while some stratocumulus clouds are present at higher altitudes in the background, likely around 25,000ft based on the Skew T diagram (Figure 2).

As previously stated the image in Figure 1 was taken using the built in camera on an

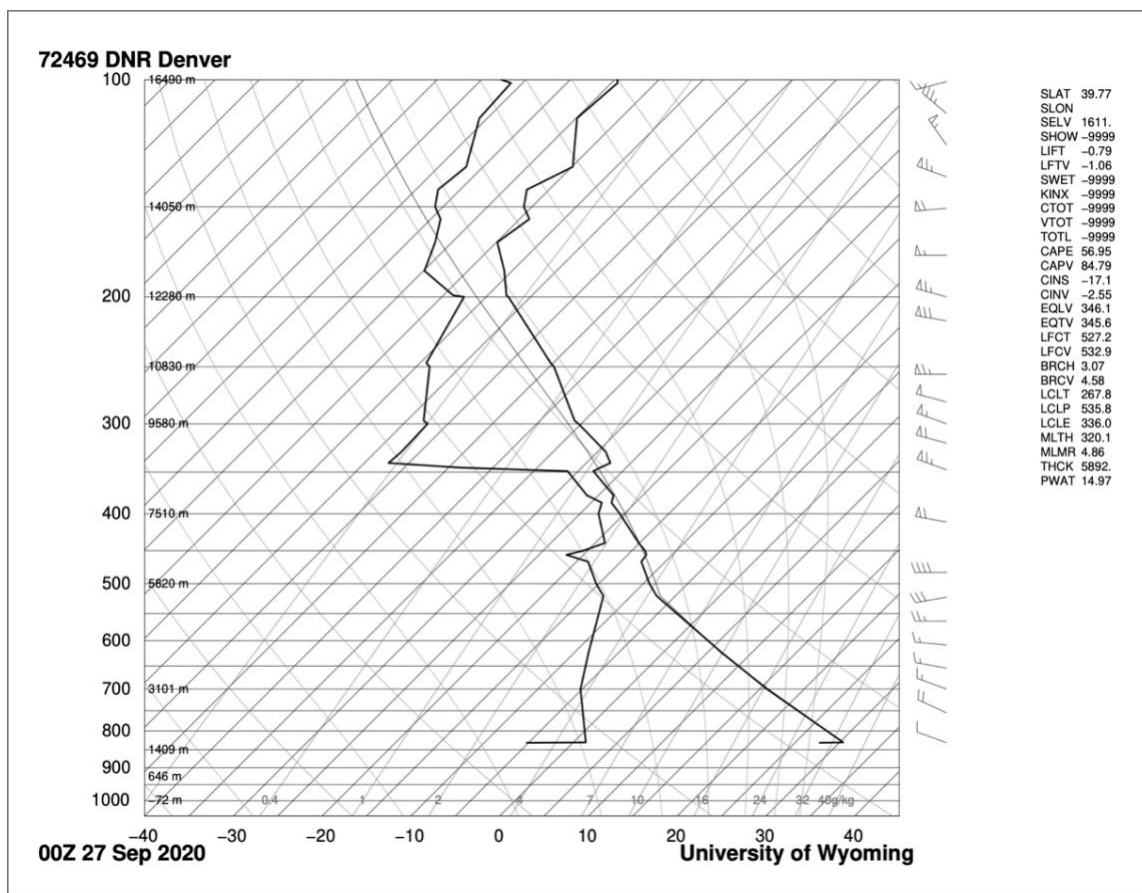


Figure 2: Skew T Diagram for the evening of September 26 2020 in Denver Colorado.

iPhone Xr, which has a 18MP sensor, fixed f/1.8 aperture, and 4.55mm lens with a 4mm focal length. The auto-selected ISO setting was 100 with a shutter speed of 1/61s. This combination

was effective at capturing the true lighting while not causing noticeable motion blur due to the picture being taken from a moving vehicle. It is estimated that the primary subject was about 5-7 miles away. The FOV in the original image is thought to be about 2 miles at the distance of the horizon and about 10 miles at the subject distance. To create the final image the original was cropped so as to center the mountain wave cloud, and the RGB curve shifted slightly to deemphasize detail below the horizon line. A telephone pole was also edited out of the image using the spot removal tool in the Darktable photo editing software. The exposure and color of the original shown in Figure 3 were left unchanged in the final edit.



Figure 3: Original Unedited image used to create the final image for the Clouds 1 Assignment.

This image is primarily an example of the incredible beauty and diversity of Colorado skies and was taken more for the purpose of documenting beautiful natural phenomena than for capturing an example of a specific cloud type. However, the clouds in the image were fairly straightforward to identify with the help of the Skew T Diagram from that evening. This deepened the sense of connection I have with the image in that I can estimate my position relative to the topographic effects that produce these clouds. The scene in the original image as a whole may have more potential than was realized in the final edit. I became aware that in an effort to emphasize the clouds as the main interest by darkening the horizon and cropping out other natural additions to the scene I may have removed elements that contribute to the viewers ability to determine scale and context for the clouds.