

Clouds Second Report

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MCEN 4151

Flow Visualization: The Physics and Art of Fluid Flow

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I. Introduction

This photograph captured altostratus and cirrus clouds that formed in the evening of April 3, 2018. I was driving with my family back from San Antonio, Texas when I took the picture. There hadn't been rain that day, but there was a storm that followed later in the week.

II. Cloud Visualization

My image was taken in Raton, New Mexico on Interstate-25 near the Colorado-New Mexico border at 7:14 pm. The picture was taken approximately at a 5-degree angle from the ground, with the clouds being toward the top of the picture. The clouds seemed to almost span the sky, with altostratus clouds visible closer to the horizon and cirrus clouds forming higher in the sky. I chose to crop my original image to get rid of a car that was driving the opposite direction. There was some significant blurring of the foreground, but the background was certainly in focus.



Figure 1: Original Image



Figure 2: Edited image

I had been traveling from San Antonio to Boulder, so I don't exactly know if there had been precipitation earlier that day in Raton. Based on the skew-T plot data for that day, the atmosphere appeared to be stable during the first part of the day. Due to the location of the clouds in the sky, I believe that the atmosphere was still stable at 7:14 pm, as these clouds seemed relatively high in the sky.

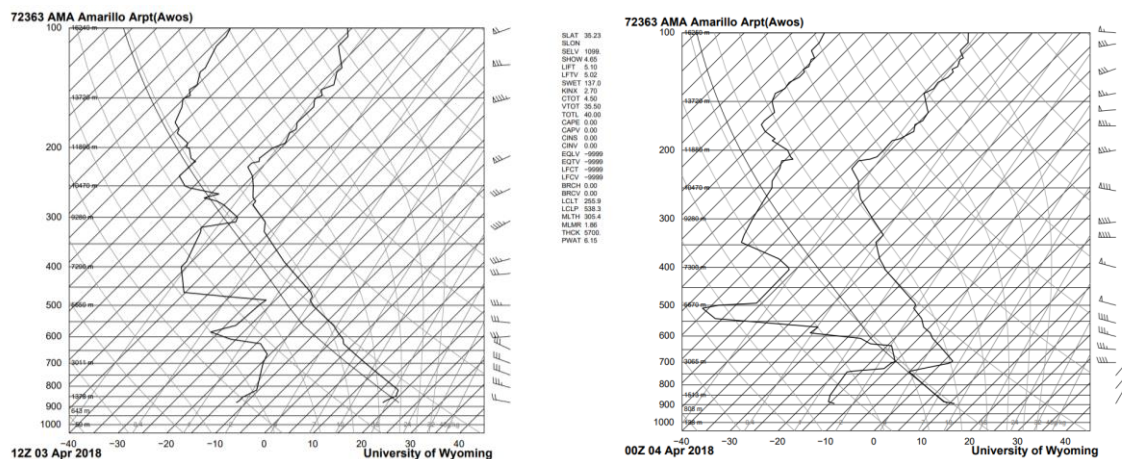


Figure 3: Skew-T diagrams [1] for the afternoon of April 3, 2018 into April 4, 2018 for Amarillo, Texas.

III. Photographic Technique

For the photo, I used my iPhone 8 Plus camera. It is a 12 MP camera model with a wide-angle and telephoto lens. This was captured using the wide-angle lens with a 28 mm focal length. This image was captured using an exposure time of 1/3247 sec and a f-stop of f/1.8 with an ISO of 20. A small focal length of 4 mm was used as well. The edited image is 2387 x 1513 pixels while the original was 4032 x 3024 pixels. The photo was edited using the Adobe Photoshop where I cropped the image and increased the contrast to bring out the colors of the sunset and highlight the cirrus clouds higher in the sky. These changes can be seen in the differences between Figure 1 and Figure 2.

IV. Conclusion

I really liked the final image that I was able to produce for this assignment. I really liked how the foreground is still visible but doesn't take away from the clouds. The clouds turned out awesome in the edited image as well. I was worried about losing some of the quality of the picture when I cropped it, but I am very pleased with how it turned out. If I were to change anything about this image, I might try totally blackening the foreground to see what the contrast would look like.

V. References

[1] Atmospheric Soundings, weather.uwyo.edu/upperair/sounding.html.