

# Cloud Image #1: Sunset Silhouette

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## 1 Introduction

This image was taken for the first cloud photography assignment of the Flow Visualization course. The goal of the assignment was for students to capture a visually appealing picture of a cloud, while also learning about the atmospheric conditions and weather systems that create clouds. To meet these expectations I wanted to photograph a less common type of cloud, and create an image that has a different feel than most 'fluffy' cloud photos. Although I quickly discovered that photography at dusk was quite difficult, I was able to achieve this goal. The following information will detail the conditions and methods that resulted in this photo.

## 2 Photograph Information

The picture was taken from the top of the University of Colorado Engineering Center parking garage, located at 1050 Regent Dr, Boulder, CO on February 18, 2013 at 5:30pm. I was standing on the northern side of the structure and my camera was pointed in the northwest direction. Because the subject of this image was quite far away, the camera was only angled slightly upwards, approximately ten degrees.

## 3 Cloud Analysis

Based on the research I have done, I believe the clouds featured in this photo are Cirrus Fibratus, which form above 6,000 meters. Because the clouds were only slightly higher than the elevation of the mountains, I would estimate them to be at an elevation of 10,000 feet. At the time the photograph was taken, there were little or no other clouds in this area, and the sky was getting darker as the sun set. Much

further south, there were similar looking examples, and the only other visible clouds were very far out east. The Skew-T diagram in Figure 1 below represents the atmosphere in the Denver area the night the picture was taken. As evidenced by the CAPE value of 0.00, the atmosphere was stable at the time the photo was taken. Also, the altitude and shapes of the adiabat lines supports the fact that these clouds are of the cirrus fibratus type.

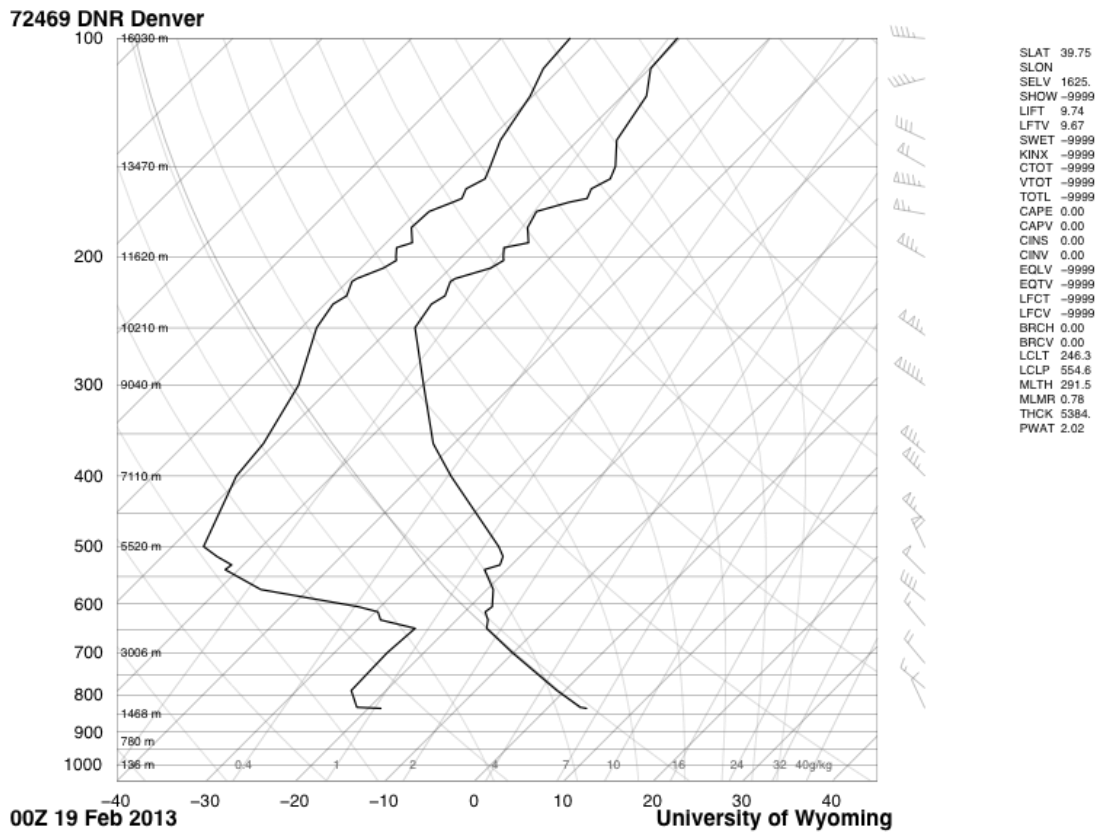


Figure 1: Skew-T Data <sup>1</sup>

The weather at the time of the photo was cold, but no weather events had recently occurred or were expected. A snowstorm did occur a couple days later, so there may have been slight evidence of a cold front coming in, but there was no rain or snow close to the time of the photo. There were however, some light winds coming off of the mountains at the time of the image.

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Overall, the stability of the atmosphere and the weather contributed to the formation of the cirrus fibratus clouds. The winds likely also caused the clouds to stretch out in a linear fashion from the mountain formation into the flatter lands of Northern Boulder. These thin, wispy types of clouds are made up of small ice crystals, and form when water vapors freeze in the thin, cold air of higher elevations.

## 4 Photographic Technique

This image was captured using a Canon digital Rebel EOS, with a 75-300mm telephoto lens that was fully zoomed out. The image was shot with an aperture of f/4.5, shutter speed of 1/100, and an ISO of 100. I estimate that the field of view in this image is 1-2 miles, and the distance from the lens to the clouds is approximately 5 miles. The original and edited images can be seen in Figures 2 and 3 below.



Figure 2: Original Image (3072x2048)



Figure 3: Edited (2418x1153)

As you can see, there was some post-processing carried out on the image. First, a crop was performed to make the cloud the focus of the shot and eliminate unnecessary information. Next, the levels were adjusted, and exposure was increased slightly. This brought out some of the colors in the sky, and improved the contrast of the image. Finally, the clone stamp tool was utilized to clean up the border along the mountains, and remove some perceived blurriness due to trees and bushes.

The resulting image has a very soft, relaxing, reflective feel. I really like how the soft colors of the sky contrasts with the dark black silhouette of the mountains. I also really like how light and wispy the clouds look. This helps to demonstrate the physics of the clouds and the air coming off the mountain. I certainly think I met my goals with this image by photographing a less-ordinary example of clouds. If I were to expand on this photographic concept, I would take several photos over the course of the sun setting. This way, I could capture the example that yields the best lighting and colors.