Cloud Image 2
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Flow Visualization
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Purpose

The purpose of the "Cloud Image" was to explore clouds and their interaction with the atmosphere. Capturing a still image of clouds allows people to visualize the physics behind the cloud formation, as well as classify the formation based on certain criteria. A cloud is defined as a mass of liquid droplets composed of water and other chemicals that hang suspended in the surrounding atmosphere. For my first cloud image, I focused primarily on the cloud formation rather than the surrounding atmosphere. For this image, I wanted to capture a unique cloud formation but also capture the scene it belonged to because I think it gives more information about the cloud when one can visualize its environment.

Image Description

The cloud pictured in my image was taken over the Flatiron Mountains in Boulder, CO on road CO-93, as I was returning from a ski trip in the Rocky Mountains. I directed my camera northwest, approximately 15 degrees above the horizon. The clouds were hovered over the mountains and the sun was just setting so glimpses of the sunrays were peering through the cloud formation, which added a unique dynamic to the photograph. The image was taken at approximately 3PM (MST), just an hour before sunset, on February 23rd 2014. It had snowed the night before the image was taken, which is why the flatirons and the grass in the foreground were frosted. The day the image was taken was sunny and warm. It was a high of 41 degrees Fahrenheit and a low of 24 degrees Fahrenheit. There was no observed precipitation, however it snowed the previous day and the following day, which could explain the shear instability seen at the bottom of the clouds. As seen in the Skew-T plot in Figure 1 below, the atmosphere was stable on that day. This is indicated by a cape of zero, provided in the data on the right side of the Skew-T plot.

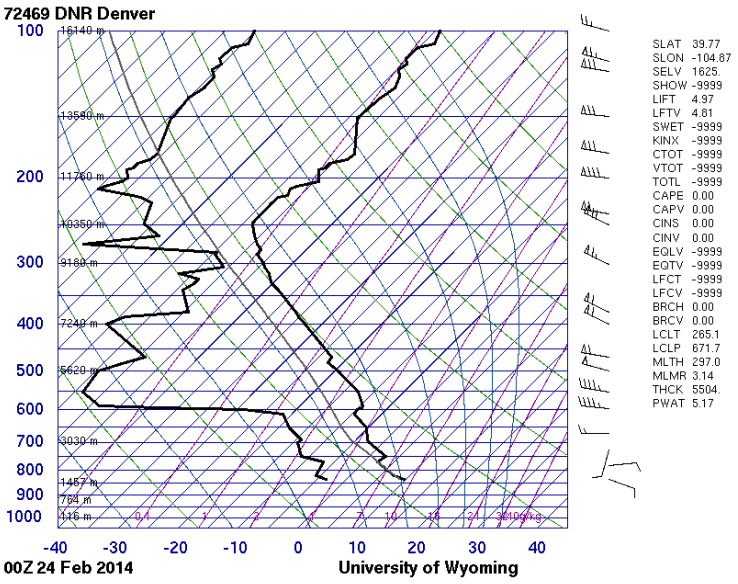

Figure 1: Skew T Diagram 23 Feb 2014

Cloud Classification

There are many classifications of clouds, defined by their density, shape and where they are located in relation to the planetary body they suspend over. The clouds pictured in my image were fairly easy to classify because they are one of the more common types of cloud formations. Based on their height above ground, approximately 1,000 feet, and their horizontal alignment, they fall into the stratocumulus category. A stratocumulus cloud formation is a combination of both a stratus cloud and a cumulous cloud. A stratus cloud is a lower-level cloud that is uniform and flat and is directed along the horizontal axis. A cumulus cloud is aligned vertically. Both stratus clouds and cumulus clouds are low-level. They occur below 6,500 feet, and typically contain liquid water droplets, except during a cold winter day when ice crystals and snow comprise the majority of the cloud. The day I photographed these clouds was a winter day, but it was not cold enough to actually freeze the water droplets.

Photographic Technique

The camera used to take this image was an Apple iPhone 5s. Although this camera does not have manual focus, I believe a beautiful image was still captured. Sometimes photography cannot be planned, but rather rare and unique moments are captured when you aren't prepared for it. The dimensions of both the original and the edited image are 2048 x 1536 pixels and 2048 x 1169 pixels, respectively. The focal length was 4.12 with an f-number of 2.2. I estimate that the clouds were approximately 1,000 feet above my camera. The editing technique used was iPhoto. I did not do a great deal of editing. I increased the shadows setting to lighten the image and also changed the color tone to get the yellow color in the clouds. I felt that the yellow tone went well with the foreground and the street sign in the front of the image. I could not decide whether or not to keep the sign in the image, but after class critiques I felt that the sign added to the overall ambience and vibe of the photo. Figure 2 below shows the unedited image.

Figure 2: Original Cloud Image

Conclusion

I find that my image displays the physics of the shear instability of clouds, while offering a visually appealing piece of work. The clouds coming in over top the flatirons is really unique, and the light frosted look of the mountains with the grass and sign in the foreground really paint a good scene for the viewer. I am glad I was able to capture the surrounding atmosphere while still providing a unique cloud image. I think the edited version shows the shadows and instability better than the original image. I also find that the colors in the edited image are more appealing and fit better with the image. I would improve the focus of the image if I could repeat it, but I only had the iPhone 5s camera on hand at the time the image was taken. Overall, I find that this image offers the viewer a peaceful, yet intriguing experience, while still revealing cloud dynamics.

Works Cited

[1] http://www.weather.com/weather/monthly/
[2] http://weather.uwyo.edu/upperair/sounding.html