Cloud Report #1

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Film 4200
Professor Hertzberg
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Introduction:

The purpose of this assignment was to photograph clouds in order to both: display the artistic properties of clouds, and to demonstrate the diverse physics behind different types of cloud formations. For this project, I drove up to Flagstaff right before sunset in an attempt to photograph clouds from a variety of settings throughout the trip. Initially, I planned to stick with capturing clouds along with their reflections in the Gross Reservoir in hopes of creating a uniquely artistic image (Figure 1). However, after experimenting with taking time-lapses of the sky after nightfall, I decided that a long-exposure shot was the best way to both create a beautifully original work, and also offer new perspective on something familiar. Thus, the image I submitted was a photo taken in the darkness of night of the unseen, yet still stunningly picturesque clouds over the peaks of the Flatirons.

Figure 1: Initial Cloud Image, at Gross Reservoir

Image Context and Cloud Analysis:

My photograph was taken from Flagstaff, looking Southwest towards the Boulder City skyline and the edge of the Flatirons. The elevation was between 6,000 and 6,800 feet, with the camera tilted about 30° from the plane of the ground to frame the peaks of the mountains. It was approximately 7:00pm on February 18, 2014. The clouds pictured were altocumulus standing lenticularis clouds[1], which often form over mountain ranges. In stable conditions, large-scale standing waves may form on the backside of a slope as moist air flows above the ridge. As the flows intersect at the proper temperature and condense into clouds, the resulting formations are smoothened into the saucer-like, round shapes of

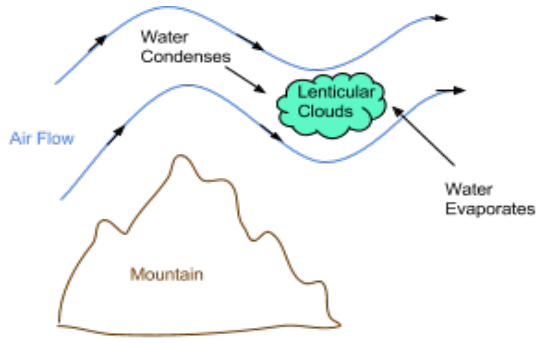

Figure 2: The Formation of Lenticular Clouds

lenticular clouds (Figure 2). These cloud types most commonly occur in the winter or spring, as this is when the winds are most often the strongest[1].

I referred to the Skew-T diagram for Denver at 12:00am, February 19, 2014, as this was closest to the time in which I took my image (Figure 3). The diagram shows the temperature to have been around 44° Fahrenheit, with a pressure system of 852 MB and a CAPE value of 0. Due to the lack of thermal updrafts and the high dew point, the conditions were relatively stable at the time. The clouds were forming around 7250 M. Though this is slightly higher than the level at which altocumulus lenticularis clouds usually form, the inconsistency could potentially be due to the time difference between when the photograph was captured, and when the Skew-T information was gathered.

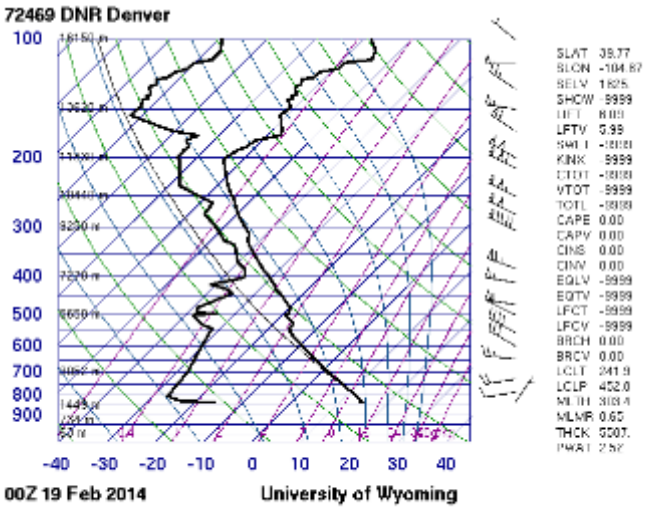

Figure 3: Skew-T Diagram for 12:00am, Feb. 19, 2014[2]

On the afternoon of February 18, 2014, the clouds were just beginning to form densely around the mountains after a relatively cloudless day. Large altocumulus and altostratus clouds lined the ridges and stretched across the sky into tall formations by sunset (Figure 1). As the sun began to set, the clouds had flattened out across the sky to form a low-lying stratocumulus layer across the entire city skyline, with select puffs of altocumulus lenticularis clouds around the mountain peaks. The lenticular clouds were made possible by the high winds throughout that day, which continued into the night. Because of the stable atmosphere, there were no storms or precipitation during that day.

Photographic Technique:

The camera that I used was a Canon Rebel XS 10.1 MP DSLR camera with an image--stabilizing, EF--S 18--55mm standard/wide angle zoom lens. This lens has an aperture range of f/3.5--5.6 and was set at f3.5 at the time, due to the extremely low lighting of night. I set the white balance to “shade”, because I felt that it was the setting most similar to night time from my options available. In order to let in enough light to capture a visible image, I set the shutter speed to 30 seconds. This allowed for the lens to take in enough light to show the details of the clouds, while still retaining the dark and ominous essence of the night. Though the lighting was extremely dim, I set my ISO to 200 to avoid excess film grain. Both the original image and the edited image measure 3888 × 2592 pixels.

The orange tint of the clouds occurred naturally from the glow of the city, though I adjusted the hue and saturation just slightly in Photoshop to bring out more red and intensify the glow. I altered the contrast a very small amount to make the silhouette of the mountains and night sky

even blacker, but avoided altering it too much to where the image looked completely unnatural or lost a significant amount of detail. Since it was too dark for the human eye to see the outline of the mountains, it was extremely difficult to focus the camera. As a compromise, I focused the lens on the edge of the city lights, and then held that focus as I shifted the camera towards the mountains. The camera was on a tripod and a timer to prevent any accidental or slight shakiness which might further blur the image. Despite my efforts to capture a perfectly crisp image, I had to sharpen the edges of the mountain in Photoshop. I did this by both altering the black and white levels slightly, raising the edge sensitivity, and tracing the outline of the mountain with the clone stamp tool to clean up particularly blurry spots. I also blacked out the speck of skyline in the bottom left corner, as I felt this was a distracting element.

Figure 4: Original and Edited Jupiter Photos

Reflection:

Overall, I am very satisfied with my image. My favorite part of the photo was how brightly I captured the planet, Jupiter; I feel that this helped to frame the photo nicely, and adds a fitting sci-fi aura. I also love the natural orange glow from the city against the ram-head shaped cloud, which altogether helps to define dramatic shadows, add a lovely fade from light to dark across the width of the photo, and add an even more unearthly feel to the entire image. I feel that this length of time-lapse worked well to show the details of the clouds without obscuring it with the visualized movement of the clouds and planet. Because of the one-sided lighting, the depth and dimension of the cloud are nicely defined, though a daytime photo might have helped show a little more detail and context for the clouds. The framing help captures enough of the cloud so that it can be easily identified without providing too many distractions, which are common with wide angle shots.

Had I more time on that night, I would have liked to have spent longer attempting to capture a more sharply focused shot. With a more accurate focus, I could avoid a great amount of the post processing and create and even more strikingly surreal image of nature. In the future, I would love to expand on this idea by photographing a variety of clouds from a variety of locations during the night, and then compare them with photos taken from those same locations during the day. From this, I would hope to offer further perspective on how lighting and setting affect the appearance and aesthetic appeal of clouds.

Works Cited:

[1]ABQ Webmaster. "National Weather Service Weather Forecast Office."*Altocumulus Standing Lenticular Clouds*. NDAA, 5 Jan. 2011. Web. 27 Feb. 2014. <http://www.srh.noaa.gov/abq/?n=features_acsl>.

[2]"Atmospheric Soundings." *Wyoming Weather Web*. Web. 19 February 2014. <http://weather.uwyo.edu/upperair/sounding.html>.