Photography of Clouds #2

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My desire for this second cloud assignment was to capture an image which was possessed a much different subject and feel than my previous cloud image. Once again, I found a great photographic opportunity for capturing cloud formations in the wonderful city of Boulder, CO. Cresting the hill on US Hwy. 36, I was astounded by the color and texture of the clouds in the sky over and to the west and north of the town. I decided to head toward my favorite location to photograph clouds in Boulder – the top level of the Regent parking structure at the east end of the CU-Boulder campus. I ended up taking 15 images of the clouds present that evening, capturing cloud formations directly over town as well as to the north and east of the city. One of the images of the clouds to the north nearly became my selected photo for this assignment, but at the last minute I chose the image that appears on the cover page of this report. The rejected image is shown below in Figure 1, in its post-editing form. The only reason I decided not to use this image was the lack of the very foreboding, dark emotion presented in the clouds which I had observed as I drove into town on the highway. My submitted image (seen on the cover page) was taken at 6:12pm MST on 25 March 2011 looking southwest above the famous flatirons formation, with the camera elevated approximately 45 degrees above horizontal.

Figure 1: Rejected image, showing clouds due North of the University of Colorado Campus in Boulder, CO. Taken 25 March 2011 at 6:07pm MST.

I believe the chief cloud type present in my selected image to be a *stratocumulus stratiformis opacus*, at an approximate elevation of 5000 ft. This cloud type typically is a low-lying formation with clumps or rolls (Pretor-Pinney, 92) which are both of the characteristics that I observed on the day I captured my image. I believe the variety to be *opacus* due to the fact that the cloud was able to mask the bright sunlight coming from behind the mountains and effectively cast a shadow over the central section of the city. However, the brightly lit trailing section of this cloud formation (at right center in the image) was thin enough to allow a greater amount of sunlight through. This is a bit strange to me, since the sun had dropped below the mountains, and was only hitting the higher level clouds to the north and east of town (this can be seen in my rejected image in Figure 1). I suspect that the 'hot-spot' of sunlight in my submitted image is most likely sunlight which was reflected downward through the bottom of the cloud by a greater density upper section of the stratocumulus cloud. After closer inspection of my image while writing this report, I observed that there is a second cloud type present in the foreground of my image. It is sandwiched between the bottom of the stratocumulus cloud and the stark outline of the flatirons. This cloud appears to be lower and closer to the camera than the stratocumulus cloud. I believe the cloud in the foreground to be a *stratus fractus translucidus*, due to its fragmented, ragged wisps and low elevation, which closely match the description for this type of formation in The Cloudspotter's Guide (Pretor-Pinney, 72).

At the time this photograph was taken, there was a great deal of cloud formations present in the sky to the north, south, and east of Boulder. The skew-T plot that I obtained for 6pm on March 25 shows weather conditions over Denver International Airport with a stable atmosphere indicated by steep heavy black line representing recorded weather balloon readings, and a CAPE value of 0.00 (see Figure 3 on page 4 for skew-T plot 00Z for March 26). According to *weatherspark*.com, there was no precipitation in Boulder for 24 hours prior or following this image. The recorded temperature is listed at 54°F (12°C) with 90% cloud cover over Boulder.

This image was captured from the top level of the Regent Parking Structure, giving me an approximate field of view of 3 miles (15,840 ft) across by 5,000 ft tall, with the distance from the lens to the stratocumulus cloud at around 2 miles (10,560 ft). The digital camera used is a Canon PowerShot SD 500, with an F-stop of f/2.8, image focal length of 7.7 mm, and shutter speed of 1/320 sec. Lighting used was natural ambient sunlight. The original image's dimensions are 3072 x 2304 pixels, vs. the edited image's size of 2720 x 2304 pixels. Editing was completed using Adobe Photoshop CS5, and included both brightness and contrast alteration. Very little cropping was needed in this case, although I did crop out a small section on the right edge, in order to bring the descending line of the flatirons to the bottom corner of the image. This was done to improve the continuous flow of the lines of the mountains, and to eliminate the empty space. Using the brightness and contrast tools in Photoshop, I was able to boost the color and intensity of the light penetrating through the stratocumulus cloud and enhance the details of cloud texture

on the bottom of the formation, especially the rolls. The original, unedited image is shown below in Figure 2.

This image reveals some very interesting cloud phenomenon, including the rolling characteristic shapes on the bottom of the stratocumulus, and the ability of sunlight to penetrate different sections of the same formation. I am very pleased with the result of the final edited version of the image, as well as the warm reaction in comments I received during the in-class critique session. I am interested in investigating the effects of cloud type and density on the amount of light that will penetrate a cloud, and what images could be captured of both opaque and translucent clouds. In order to execute this investigation I will have to consider purchasing a newer and more user-controlled camera such that I can use a UV lens and manual focus.

Figure 2: Original image taken on 25 March 2011

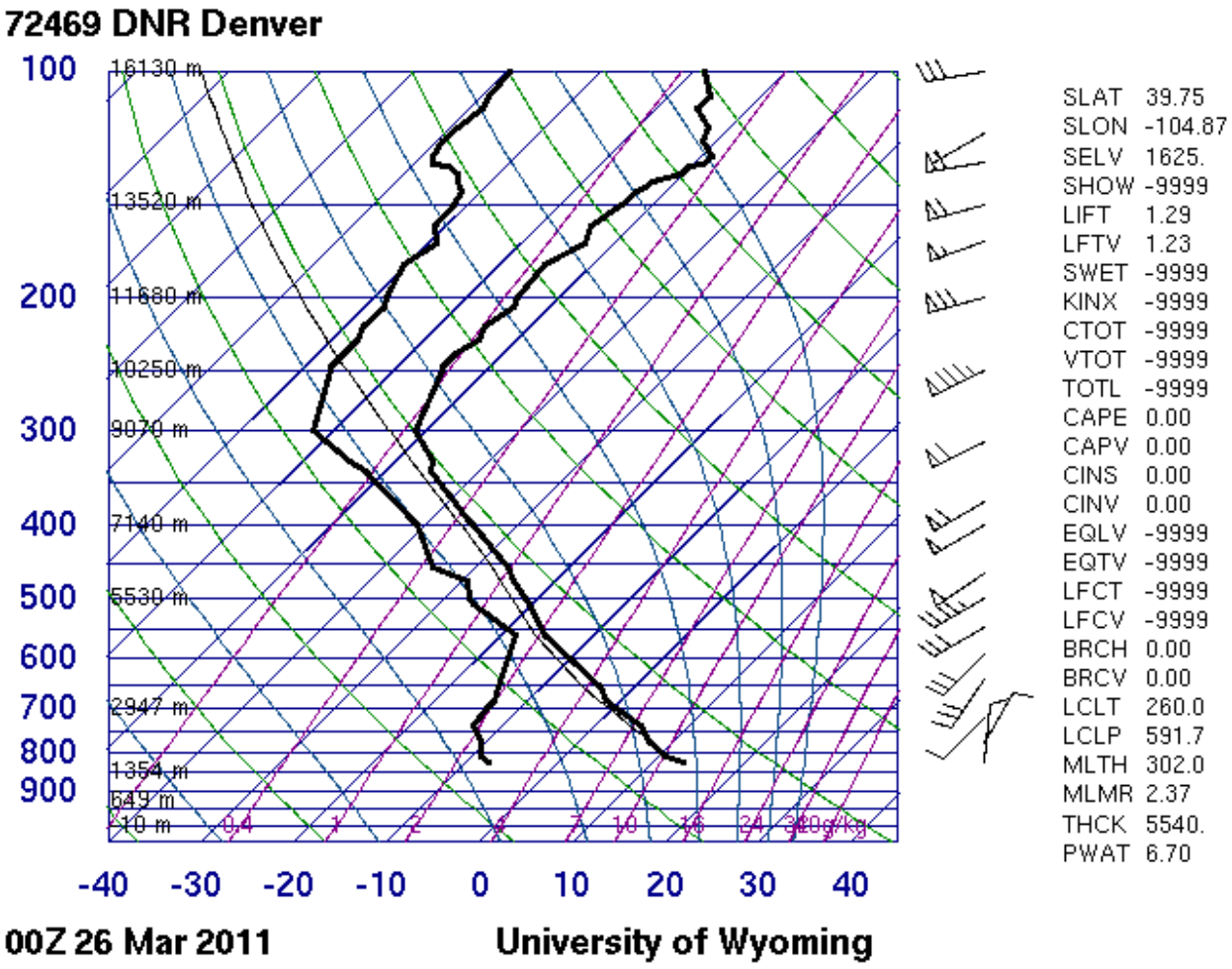

Figure 3: Skew-T plot for 25 March 2011 at 6pm in Denver CO. Obtained from University of Wyoming Atmospheric Soundings website.

References

Day, John A., and Vincent J. Schaefer. *Peterson First Guide to Clouds and Weather*. Boston: Houghton Mifflin, 1991. Print.

Pretor-Pinney, Gavin, and Bill Sanderson. *The Cloudspotter's Guide: the Science, History, and Culture of Clouds*. New York: Berkley Pub. Group, 2006. Print.

"Atmospheric Soundings." *Wyoming Weather Web*. Web. 29 Mar. 2011. <http://weather.uwyo.edu/upperair/sounding.html>.

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