Clouds 2

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Cloud Assignment 2

April 19, 2010

This is my second cloud assignment and the purpose of the image is to get more in depth with cloud types and cloud physics. I was trying to capture a dramatic picture and get a unique situation with interesting physics and lighting.

This image was taken in Colorado Springs on March 23, 2010 at 4:19 P.M. The picture was taken from a moving car, facing directly at the horizon, in the western direction.

The cloud showcased in my image is very close and low. It is a cumulus fractus cloud hovering just above the ground[3]. I determined that it is a cumulus because it is a low, puffy cloud that is detached, not joined into a layer like stratocumulus clouds[3]. The species is fractus because of the irregular shape and ragged edges[3]. The rest of the sky had other clouds in it; it was overcast with nimbostratus clouds, and was just about to start raining[3]. I was just passing through the region and am not sure what the sky was like leading up to this, but there was a storm expected in the area. Shortly after the image was taken, precipitation began, and there was heavy snow[2]. Winds were 10 mph south east[2].

The atmosphere was stable as the skew-T plot shows. The temperature of the parcel follows the adiabatic temperature line shape very well. The skew-T plot indicates clouds possibly from ground up to 8000m altitude, due to the proximity of the dew point and temperature lines. It is interesting to note that the dew point and the temperature are the same from ground up to about 4000m. The plot corresponds well with the clouds seen in the image[1].

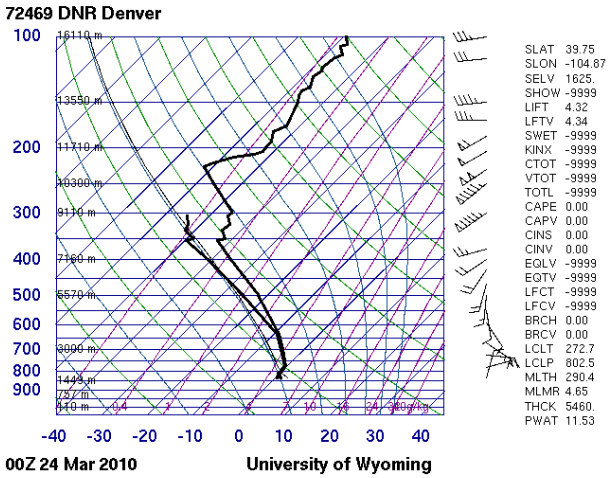

Figure 0.1: Morning Skew-T

The cloud in my image is like all other clouds, composed of very small droplets of water, condensed and gathered together. The cloud in my image likely formed because of the relatively high dew point at this altitude. The air was very moist and was likely slightly cooler in the area that the cloud formed than the surrounding air. The cloud is hovering low above the ground, approximately 100m high. The well defined base of the cloud could be due to a sharp change in temperature, dew point, or moisture content of the air at that altitude. The edges and top of the cloud are not well defined, thus this cloud is classified as a fractus[3]. This can be due to shear from winds, and from the moist air at the top of the cloud re-evaporating and rising again further into the air.

The photographic technique that I used was quite simple; I let the camera choose the settings, and just pushed the button. I estimate the size of the field of view to be about one quarter mile across, based on the features seen on the ground. The distance from the lens to the clouds is likely also one quarter mile. The cloud was not moving very fast, and the shutter speed was pretty quick, so the image is well resolved temporally. The focal length of the lens was 14 mm. I used a digital camera, a Panasonic DMC-FX500. The original image is 3648x2736 pixels, and the final image is 3636x1480 pixels. I used Photoshop and manipulated the contrast in the image via the "curves setting." I then increased overall brightness and contrast using the simple dialog box. The aperture for this picture was f/5.2, the shutter speed was 1/320 seconds and the ISO was set to 100.

This image captures some beautiful cloud behavior. I like that the image shows an interesting cloud so close to the ground. I am not thrilled about the clarity of the picture. Because I was moving when I took the picture, I think there is a bit of motion blur. I think this image shows great cloud physics. I believe that I fulfilled my intent with this image to capture a unique scenario. If I could improve something, it would my equipment so that hopefully the image looks clearer. Overall, I am pleased with the image and the cloud that I captured.

Bibliography

[1] "Atmospheric Soundings." Department of Atmospheric Science. University of Wyoming. Web. 4 Apr. 2010. <http://weather.uwyo.edu/upperair/sounding.html>.

[2] "History : Weather Underground." Welcome to Weather Underground : Weather Underground. Web. 4 Apr. 2010. <http://www.wunderground.com/history/airport/KCOS/2010/3/23/DailyHistory.html>.

[3] Pretor-Pinney, Gavin. The Cloudspotter's Guide. New York: Perigee Trade, 2006. Print.