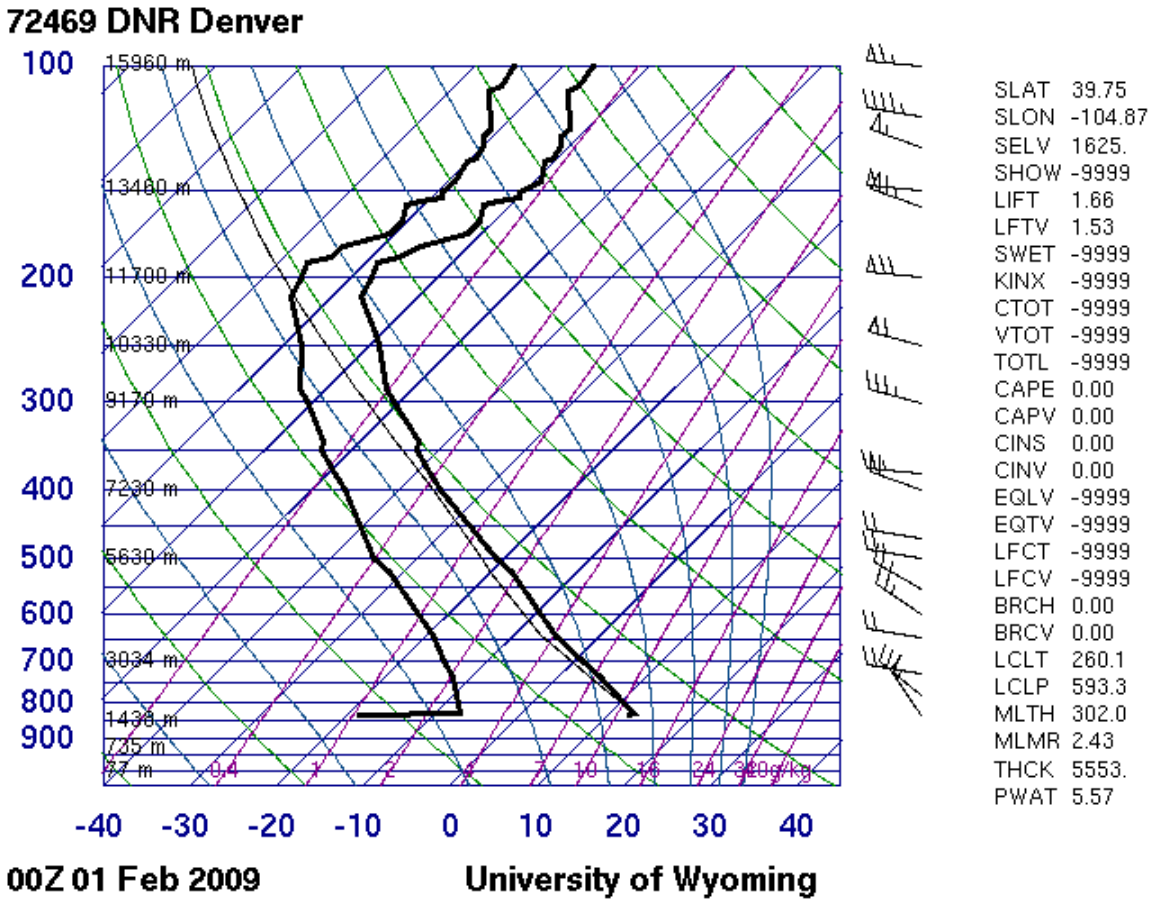
Scott Legg
Cloud 1

Stratocumulus! (opacus)

This is the first cloud picture of the course, and to be honest, I wasn't looking for any particular phenomena. Throughout the semester I have been taking pictures, and I liked this one the best, although I did get some nice cumulus pictures recently as well. I initially wanted to take pictures of clouds at night, and found the perfect night on February 10th but despite heavy low laying clouds, lit by the city lights, I was unable to get a good picture. My point-and-shoot camera just wasn't up to the task and I chose poor exposures for my 35 mm camera, and the highlights didn't come out in black and white, which is all I know how to develop.

The captured image was taken in Thornton, approximately 45 miles east of Boulder. The image was taken with its center approximately 30 degrees above the horizon in a southwest direction. The image was captured on January 31st at 6:29 pm.

Figure 1: Skew-T Plot



This cloud is a stratocumulus (I believe it to be stratocumulus opacus), which generally occur at lower elevations of around 2,400 meters (National Science Digital Library). It is characterized by its large dark round masses, often in waves (wikpedia.com) and often come in large, sky

covering sheets (BBC) as is shown in my photo. Most of the sky is cloud covered by this one cloud. Referencing the skew-t plot, provided by the University of Wyoming (Figure 1), it can be seen that the temperature line is steeper than the adiabatic line, meaning there is a vertical instability in the atmosphere from approximately 1,400 m to 3,034 m, where I would expect these clouds to exist. The chance of clouds is low below the 1,400 m mark because the dew point is relatively far away from the temperature line. Close to the ground there is a strong northwest wind, which becomes almost directly west at 3,034 m and strengthens until the stratosphere. The high wind could explain the sheeting effect of the clouds.

Field of View	~1.5 ft x 7.5 ft
Distance from Object	From 2000 m (overhead) to ~72450 m (see Appendix)
Original Size	748 x 1024 (pixels)
Final Size	748 x 1024 (pixels)
Camera	Pentax Optio S
Aperture	f/2.6
Focal Length	5.8 mm
Shutter Speed	1/50 sec
ISO setting	-

For the final picture, the colors were adjusted using Photoshop to increase contrast in the colors. The color balance function was used for this, on all 3 settings: shadows, midtones, and highlights in which red and blue were increased for all settings.

This image depicts a sunset with stratocumulus clouding getting highlights from the waning moments of sunlight. I really like the contrast in this picture; it goes from underexposed up top to overexposed on the bottom in the original. This really shows a great range of tones, which is rarely captured by a junky camera. The settings were strange, stopped down all the way to f/26, with a relatively long shutter speed. If I had control over these settings, I probably would have shrunk the aperture and increased the shutter speed (just out of curiosity) – although I really like the depth of field the camera provided. It really helps to accentuate the different textures, smooth in the foreground and background while crisp in the middle. The atmospheric physics were shown rather, and the full intent was realized, I wouldn't change this photo a whole lot. If I were going to do it again, I think I would try to find a camera that could handle the night photos better, but I'm overall very satisfied.

References:

British Broadcasting Corporation. Types of Cloud – Stratocumulus and Altocumulus. Accessed 2/24/2009. http://www.bbc.co.uk/weather/features/stratocumulus.shtml

National Science Digital Library. Glossary of Atmospheric Terms – Stratocumulus. Accessed 2/24/09. http://education.arm.gov/nsdl/Library/glossary.shtml#Stratocumulus

Wikipedia.com. Stratocumulus Cloud. Last modified 1/14/2009. http://en.wikipedia.org/wiki/Stratocumulus#Stratocumulus_undulatus Accessed. 2/24/2009

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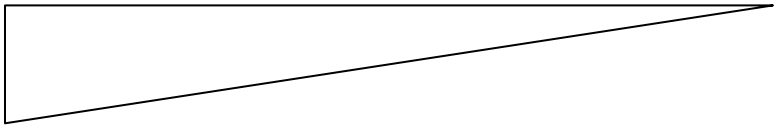
Appendix:

Distance calculation: ~45 mi (72420 m) to mountains



~2000 m overhead

$$X = \sqrt{2000^2 + 72420^2}$$

X = 72450 m