Flow Visualization
Clouds 1

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This image was taken early in the morning on Wednesday February 11th. On Tuesday I had gone up to Gross Reservoir to get some pictures up in the mountains. However, the day was pretty overcast and my pictures weren't really turning out. On my way back down after dark, there was some pretty cool cloud movement. This got me thinking about taking night pictures. Around 1AM I decided to go take some pictures. A low laying cloud was hanging over central Boulder, and picked that as my subject. The best vantage point was up Flagstaff at the first overlook.

From my location, the camera was facing east-northeast and my camera was on my horizon. Boulder has an elevation of 1650 m and where I was taking pictures I had an elevation of 1817 m. This image was taken at 1:07AM on the morning of Wednesday February 11th. It had snowed earlier that evening and the clouds had mostly cleared out except for this low laying cloud.

The cloud featured in the image is a stratus cloud hanging over Boulder. The rest of the sky was clear, with some other stratus clouds hanging on the foothills to the north and south. Stratus clouds are characterized by a stable atmosphere.

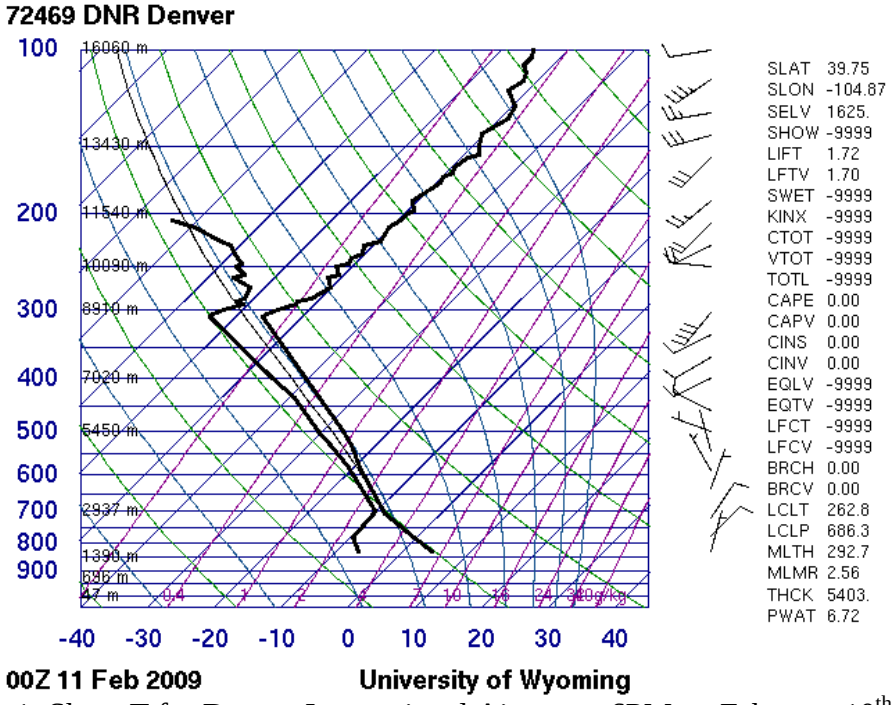

Figure 1: Skew-T for Denver International Airport at 6PM on February 10th, 2009

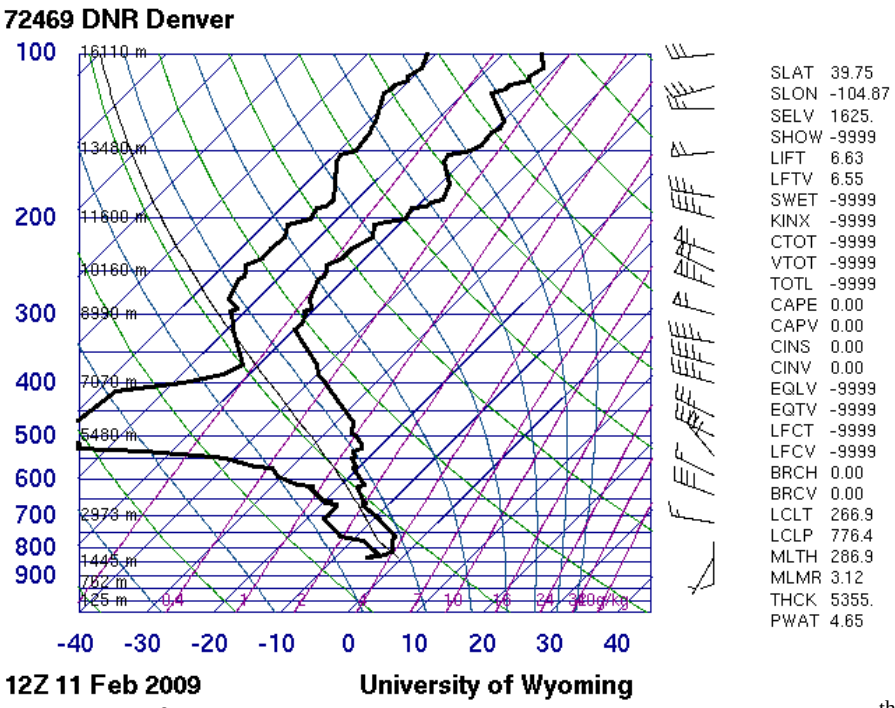

Figure 2: Skew-T for Denver International Airport at 6AM on February 11th, 2009

The Skew-T for 6PM (Figure 1) indicates a stable atmosphere, with the neighbor line fairly close to the dew point line. With the neighbor line in close proximity to dew line, we expect a high chance of precipitation due to high relative humidity. In Boulder, we did get a light dusting of snow early that evening. Figure 2 shows some instability from ~2464 m to a little above 2973 m. However, overall it is a stable atmosphere[1]. Close to ground level the wind is minimal, but as the altitude increases wind speeds got up to 45 mph to the east. The high surface temperature that day was 41 deg F, these clouds could have been formed after the precipitation hit warm surface causing some evaporation.

This image was taken with a Canon Rebel XSi using a 18-55mm f/3.5-5.6 lens. Shutter priority was used to control exposure length, which was 3.2 seconds. The F Stop was set to 5.6, the focal length was 55 mm, and ISO set at 800. The cloud appears to be hanging over east Boulder approximately 7 km from where I was standing. The camera is digital with an APS sized sensor. The original and final image width/height are the same at 4772 pixels by 2848 pixels. No post processing manipulation was done to the photo.

This image shows the low laying nature of the stratus cloud. Also it shows the one of the characteristics of stratus clouds, nasty down below but clear above. A bonus is the power plant exhaust in the center left portion of the image; the stack contributing to the cloud. Fireworks found in the lower left are an added bonus. I feel I did fulfil my intent. I would like to improve my exposure settings for a cleaner image. Also in retrospect I would use a lower ISO for a less grainy picture.

[1] http://inclouds.com/Wx/