

MCEN 4228 – Flow Visualization
Clouds Project 2

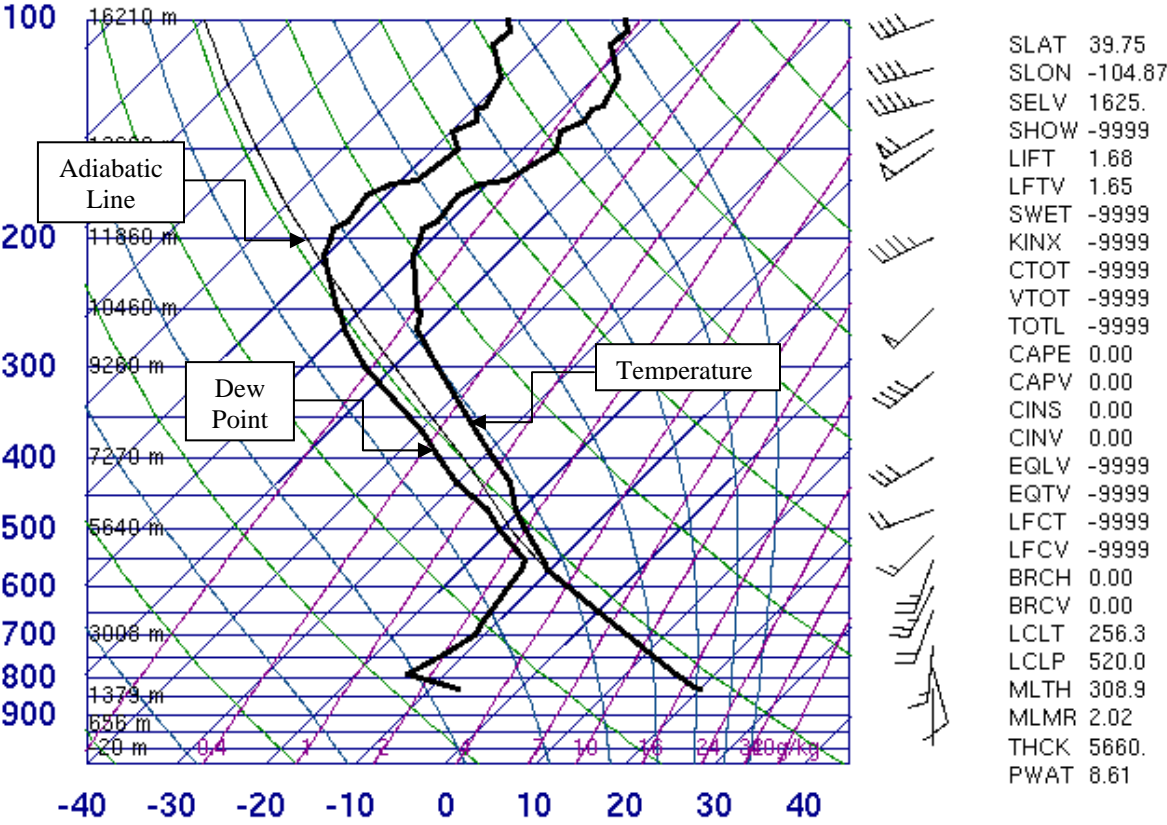
Smoky Sky

The purpose of this image was to capture a unique cloud formation not often observed. Some difficulty did arise in achieving an image of great personal interest, but the final image is somewhat distinctive. The final image is a very ominous, thick wall of grey with wisps of thin black highlights. It really appears as if large streaks of grey smoke are floating gently in the sky. It was a surprise to see and had a short window of opportunity in which to work with. The overall goal was to capture cloud cover on a large scale that was altogether interesting.

The image was taken at the east end of the University of Colorado campus just outside the ITLL. It was Tuesday, April 14, 2009 at 3:50 pm. The day began with grey skies absent of any real cloud formations. As it progressed however, an influx of different clouds moved quickly over the city giving a multitude of different choices. The sun was obscured causing the final image to appear back-lit with no great concentration of light in any one particular location. The camera was positioned facing the West at an estimated angle of 45 degrees above the horizontal.

The image is not really of any cloud formation I have seen before and therefore is a little difficult to identify. The entire eastern sky was mostly engulfed in thick cloud cover and it was difficult to see the sun which may suggest that they were altostratus (Cartwright, 1). The nearest Skew-T plot for that date and time (4/15 00Z corresponding to 6pm on 4/14) can be seen below in Figure 1. In the approximately 1400m to 4500m elevation range, the temperature sounding follows the adiabatic line almost exactly with a large gap between the dew point sounding which signifies stable, dry conditions at those elevations. From about 4500m and up, the temperature and dew point lines are very close with the temperature line slope varying slightly with respect to the adiabatic line. This indicates the presence of cloud formation at those elevations with a predominantly stable atmosphere. Those elevations are host to upper mid-level and high-level clouds. Thus altostratus, or potentially even altocumulus, clouds would not be surprising to see. The Skew-T also indicates strong winds at higher altitudes (approximately 8000m and up) which could explain why the formation was not present for very long.

72469 DNR Denver



00Z 15 Apr 2009

University of Wyoming

Figure 1: Skew-T plot

The camera specifications for the image are as follows:

- Camera Type: Olympus FE-340, 8.0 megapixel, 5x optical zoom
- Lens: AF ZOOM 6.3 – 31.5mm, 1:3.5-5.6
- Field of View: Foreground buildings ~50 meters, Background = upper atmosphere possibly 4500 meters
- Shutter Speed: 1/125 sec
- Max Aperture: 3.5mm
- F-stop = f/5.6
- Focal Length: 6.3mm
- ISO: 64
- No Zoom, No Flash
- Resolution: final image = 11881 x 882 pixels
- Camera Resolution: 266 x 266

Photoshop was utilized to better enhance the contrast and color of the image. The curves adjustment was used to sharpen the wispy dark regions and highlight them in contrast with the bright background. Also, a blue photo filter was applied to enhance the overall color of the image. A small portion of the bottom frame was cropped out to eliminate some distracting building elements and allow more of the clouds and sky to fill the frame. All the adjustments were very slight to produce a more visually appealing final image; however there is not a considerable difference between it and the original.

The final image reveals a very cool and interesting cloud phenomenon. After searching for the right image, this was a complete surprise that caught my attention as I glanced out the window in class. I scrambled for my camera and hurried outside to capture it. I really enjoy the dark and menacing color and shape. I chose to include the buildings in the foreground to give some scale to the clouds and better showcase how much of the sky was occupied by them. I do wish however that the lamppost was not in the image. A little bit better site selection and wherewithal could have easily remedied this. This is something I definitely would take into account if I had a second attempt at it. As a whole I feel the image turned out well. Also, given that the same formation was not present there 30 minutes later, I feel a little fortunate to have captured it.

References

Cartwright, Dr. Tina. "Cloud Identification Guide: A Dichotomous Key," West Virginia
Climatology, Obtained 14 April 2009
< <http://www.wvclimate.org/documents/cloud/CloudID.pdf>>