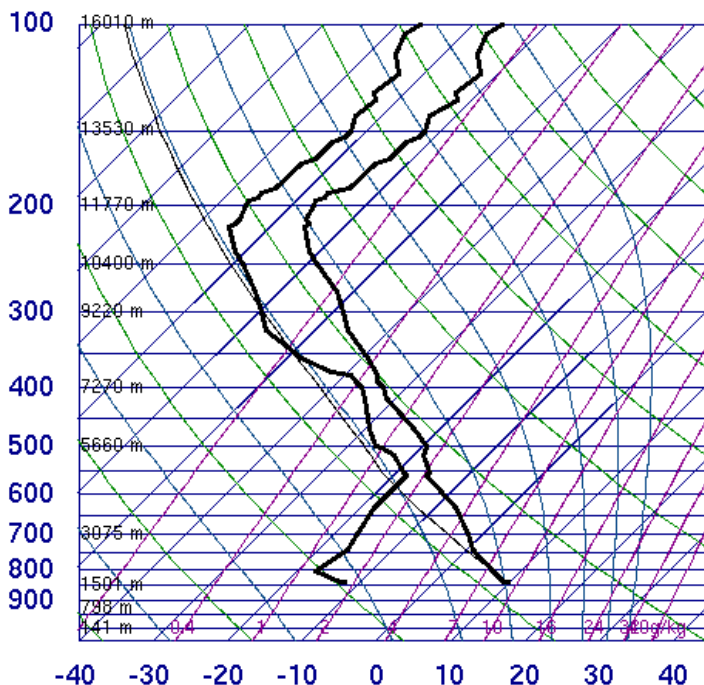


Taking pictures of cloud formations was the second assignment performed in flow visualization. There are an extremely wide variety of clouds in Colorado. A number of pictures were taken over about a three week period. The final image selected has a number of different cloud formations with a dark mountain seen at the bottom of the image.

The image was taken pointed almost due west from the balcony on the top floor of the ITLL in the Engineering Center at CU Boulder. It was just after sundown at about 7pm. Since the mountains are so close in Boulder and the picture was taken at a height of 20 feet off the ground, or so, the camera was not tilted very much to capture this image.

There are a few different types of clouds in the image that was taken. The most noticeable clouds, right above the mountains, are called cumulus clouds. These are a little different since they are long strands of lower level clouds. The darker clouds at the top of the picture are nimbo-stratus and can produce rain or snow. In the far background there are alto-stratus clouds that form into longer, somewhat wavy clouds, with individual strands. The parts of the sky not filled with clouds, was a great looking blue as the sun set. From the Skew-T Plot in figure 1, it shows that on the day the picture was taken the atmosphere was surprisingly stable but was very windy as elevation increased, causing the longer strands of cloud formations. The clouds in the image are ranging from about 10,000 to 20,000 feet.

**72469 DNR Denver**



SLAT	39.75
SLON	-104.87
SELV	1625.
SHOW	-9999
LIFT	8.46
LFTV	8.46
SWET	-9999
KINX	-9999
CTOT	-9999
VTOT	-9999
TOTL	-9999
CAPE	0.00
CAPV	0.00
CINS	0.00
CINV	0.00
EGLV	-9999
EQTV	-9999
LFCT	-9999
LFCV	-9999
BRCH	0.00
BRCV	0.00
LCLT	253.1
LCLP	569.2
MLTH	297.3
MLMR	1.39
THCK	5519.
PWAT	5.84

00Z 03 Feb 2009

Figure 1

All of the settings and specs for the camera used to take the image can be found in figure 2. It is rather hard to estimate the actual size of the field of view and the distance from the object to lens. The lowest level cloud in the picture is probably close to 10,000 feet. This would make the field of view about 1 or 2 miles across. A street lamp was edited out of the image and the colors were slightly altered using the curves function in Photoshop.

Camera Data 1	
Make:	OLYMPUS IMAGING CORP.
Model:	E-410
Date Time:	2009-02-02T16:01:17-07:00
Shutter Speed:	1/4000 sec
Exposure Program:	Manual
F-Stop:	f/5.6
Aperture Value:	f/5.6
Max Aperture Value:	f/3.5
ISO Speed Ratings:	100
Focal Length:	42.0 mm
Lens:	14.0-42.0 mm f/3.5-5.6
Flash:	Did not fire
	No strobe return detection (0)
	Compulsory flash firing (1)
	Flash function present
	No red-eye reduction
Metering Mode:	Pattern
Pixel Dimension X:	3428
	Y: 2144
Orientation:	Normal
Resolution X:	240
	Y: 240
Resolution Unit:	Inch

Figure 2

This image shows just how many clouds formations you can see on any given day. The mountains help out with the formation of clouds when compared to places without mountains. I think the image really shows how windy it is in the atmosphere with the long sections of clouds in both the lower and upper atmosphere cloud formations. I really liked the mountains at the bottom being all black and then the multiple clouds in the back. I wish more of the clouds than just the lowest ones where in focus. I need to get better at the apperture and ISO settings for focus and light.

#### Sources

“Upper Air Sounding Details” [http://weather.unisys.com/upper\\_air/skew/details.html](http://weather.unisys.com/upper_air/skew/details.html)

“Skew-T Plot” <http://weather.uwyo.edu/upperair/sounding.html>