

**MCEN 4151  
Flow Visualization**

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Assignment #2: Clouds**

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## Introduction

The image shown above depicts what I believe to be cirrostratus fibratus cloud formations. The photo was not done in a team setting. The intent of the photo was to observe how clouds form and move, while capturing the beauty that nature offers in the sky.

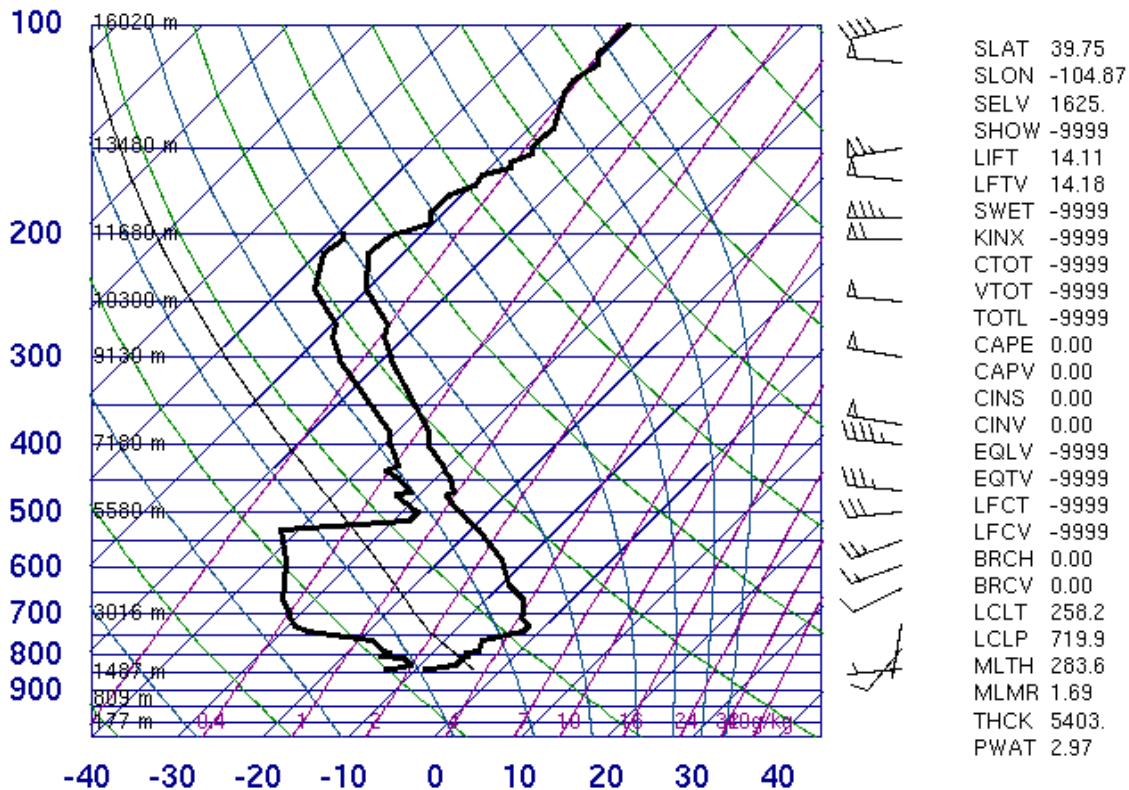
## Location and Setup

The image was taken at coordinates 40.00215,-105.264505, on Kittredge Loop Drive, just east of Broadway Blvd in Boulder, CO. I was facing almost directly northwest, at a 60 degree angle from the horizontal. The shot was taken on 19<sup>th</sup> February, 2013 at approximately 1:50PM (13:50hr).

## Cloud Classification

Cirrostratus fibratus clouds form due to ice crystals in the high atmosphere (>18,000 feet). They often signify a front coming in. In this case, a large snowstorm came in two days afterward, justifying the classification. An honorable mention goes to altocumulus lenticularis clouds, or mountain wave clouds, due to their close proximity to the Rocky Mountains. However, on this day, there wasn't a large cloud formation above the mountain, which suggests an absence of the common mountain wave cloud formation. Furthermore, much of the atmosphere was peppered with similar clouds. The skew-t plot shown below shows a stable atmosphere (CAPE = 0). Furthermore, the area just above 5580m (18,000 ft.) shows a brief instability in the atmosphere, giving way to cloud formation. The more wispy formations likely arise due to high altitude winds. This phenomenon also indicates a future front in the area, which proved to be true.

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## **Camera Technique**

FOV size: I can't find the size of my sensor, which means I can't estimate the FOV.

Distance from object to lens: ~18,000 ft.

Lens Focal Length: 35mm

Digital camera: Sony CyberShot DSC-W610, 4320 width by 3240 height

Exposure: 1/50s

F-stop: f/8

Aperture: 2.97265625

ISO: ISO-80

Post-shot processing: adjusted curves in photoshop to bring out contrast

## **Intent and Assessment**

I fulfilled my intent in showing this effect. This image gave me a much greater understanding of how to adjust my camera settings. Contrary to my previous publication, the resolution of this image is fantastic. The chosen camera is significantly more powerful with images than it is with video. If I were to repeat this experiment, I don't believe I would change anything. I'm overall very happy with how the image looks, and am finding myself looking at the sky much more often to examine the clouds.