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## First Cloud Image Report

Original Image: COULD\_01



Image Information	
Date	Sep 4, 2015
Time	4:00 PM
Location	Boulder, CO, CU Main Campus – plaza in front of VAC, looking SW
Camera settings	<b>Point and shoot camera</b>
Cloud identification	<b>ALTOSTRATUS</b>

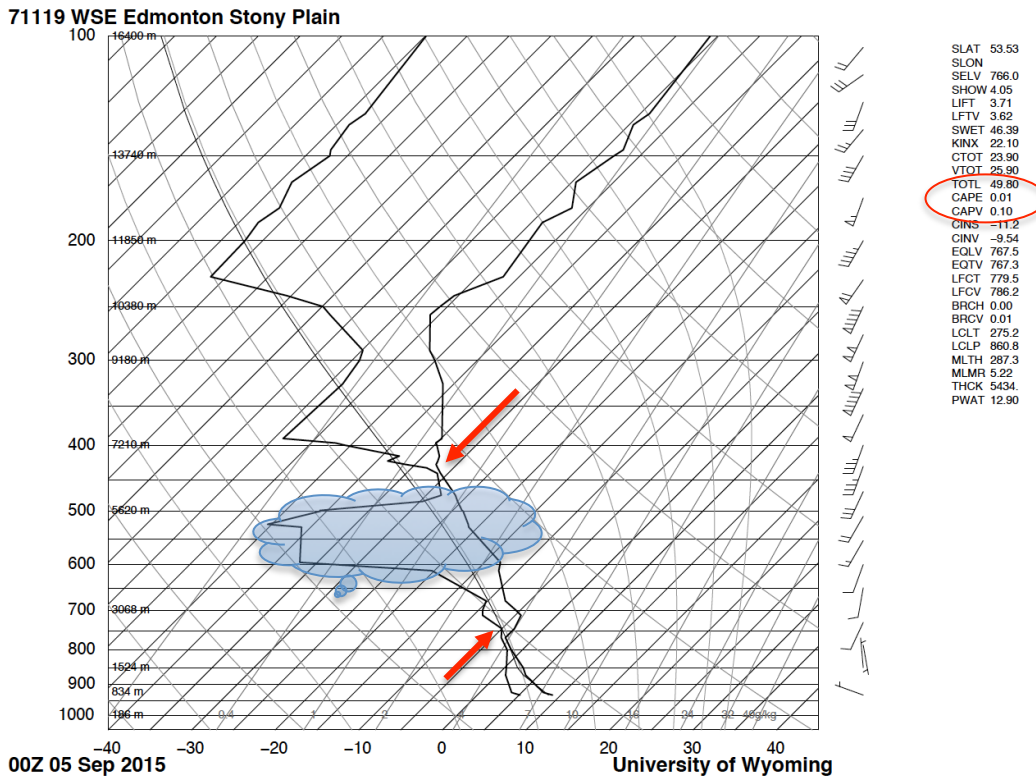
On Sep. 4, 2015 according to number of sources presented below, based on the weather condition the clouds depicted in my image are most likely ALTOSTRATUS clouds. Some of the factors I have verified that lead me to this conclusion are:

1. Stable condition of the sky with no cape
2. Likely altitude of the clouds at the time, approx. 3500m (16,500 ft.)
3. Visual detail

### 1. STABLE SKY

This diagram was taken only two hours after the photo was taken. With virtually no CAPE (0.01) the atmosphere was very stable.

Image 1. Skew-T Diagram (Sep. 5, 2015; 05/00Z)

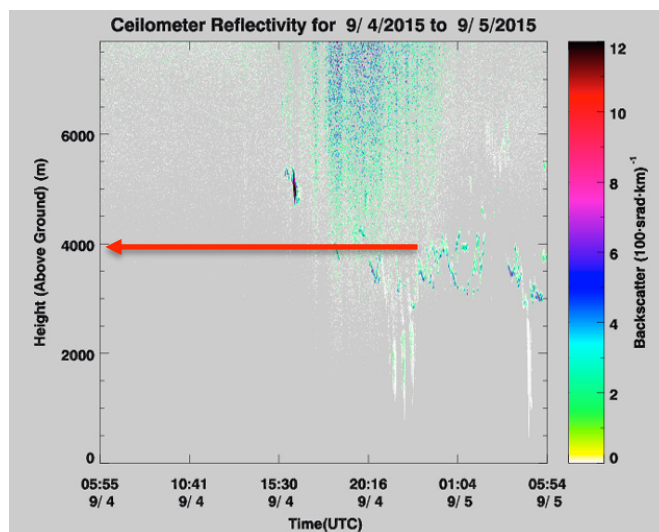


## 2. CLOUD HIEGHT

Further reading the skew-T the variation in temperature and de-point suggest conditions for formation of cloud's base to be between 4500m and 5600m (14,500ft to 18,500ft).

This information is further supported by the available readings from the CU Boulder Skywatch ([www.skywatch.colorado.edu](http://www.skywatch.colorado.edu)).

Image 2. Ceilometer reading



Fri 09/04/2015\_16:00:09.26

Readings and frame from time-laps video of the clouds from Sep. 4, 2015 from [www.skywatch.colorado.edu](http://www.skywatch.colorado.edu)

### 3. VISUAL DETAIL

One of the most interesting features of the Cloud\_01 image is the apparent turbulent nature look of the clouds. At first because I pulled incorrect skew-T, one for next day, where the cape was over 150 I thought that the clouds were cumulous or even cumulonimbus. However, since the sky is stable there had to be another factor to what made the clouds look like this.

After looking up various sources like Weather Spark and National Center for Atmospheric Research (NCAR) in addition to the readings from skew-T (Image 1) I believe that WIND is responsible for the conditions of the clouds, which normally would be less featureless.

The change in winds direction is recorded approximately at the same time the image was taken. The apparent vortex, or just part in the lower clouds that reveals the sun through another layer of clouds (likely more altostratus) was formed by air currents.

Image 3. Ceilometer reading (source: Weather Spark, [www.weatherspark.com](http://www.weatherspark.com))

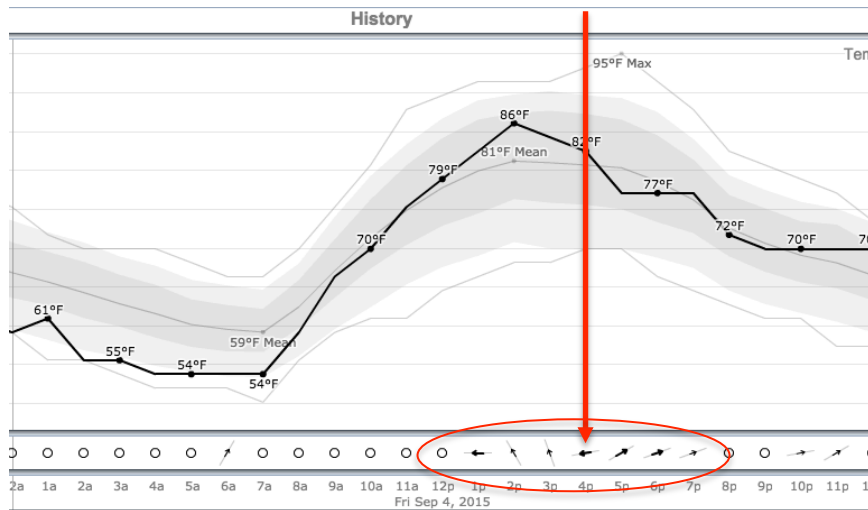
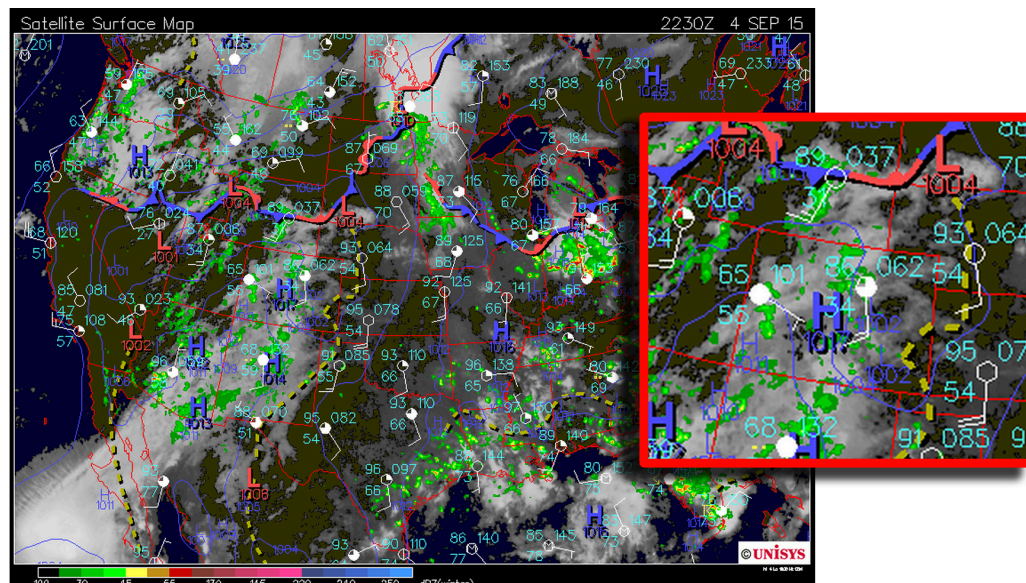


Image 4. Composite weather map (source:NCAR, <http://www2.mmm.ucar.edu/imagearchive/>)





Directions of the wind alternating between northwest in the northwest part of the state, more directly north in the east and northeast in the northern part and Wyoming. The varied directions of the wind over the relatively small area can account for turbulent state of the clouds in the image.

### **CAMERA SETTINGS**

To take the image I used Canon PowerShot SX280 point and shoot camera in fully auto mode. According to Apple Preview the picture was taken with:

- F-stop: 4
- Shutter: 1/160
- ISO: 160

### **POST PRODUCTION**

Only postproduction processes applied to the image included cropping the image and then adjusting the levels of highlights and shadows using Levels feature in Adobe Photoshop. This brought out the details in the clouds and increased the contrast and saturation in the image. Also allows for revealing that forming tunnel in the lower stratocumulus clouds to the sun's diffused light shining through what might possibly be cirrostratus.

The dark forms and more vibrant colors of the clouds make them look more dynamic or turbulent and interesting.

*Image 6. Final edited image*

