

Cloud Report 1



Flow Visualization
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10/19/2016

Introduction

The purpose of this assignment was understand different weather patterns on the environment. To do this, students photograph clouds over the course of a month. Photographs were accepted any time from August 22, 2016 to October 5, 2016. The goal was to take as many photographs of clouds as possible. As well as taking photos of clouds, students were required to know the location, time, and date of the image. This was to build a greater understanding of how the weather affected the fluid flow of the photograph.

Location and Environment

The cloud formation was photographed on October 3rd, 2016. The location was Martin Park in Boulder, Colorado. The physical address is located in the appendix. The photo was taken approximately 5:37pm. The temperature at the time was 80.6 degrees Fahrenheit, and there was a 15% relative humidity. The dew-point temperature was 28.4 degrees Fahrenheit. The wind was moving southeast, giving the clouds its specific geometry ("Weather History for KBDU - October, 2016."). All of the aspects of the weather at the time allowed the creation of stratocumulus and cumulus fractus clouds.

Cloud Discussion

There were two distinct cloud types in the image above. The first type was stratocumulus clouds. These clouds display a few unique qualities. Stratocumulus clouds can typically be described as "low, lumpy layer of clouds that is sometime accompanied by weak intensity precipitation" ("Stratocumulus Clouds"). Colors of these types of clouds can range from white to dark grey, and they have round mass roll geometry. It is common to be able to see breaks in stratocumulus clouds where you can see clear sky. This cloud has a typical height base of 1,200 - 6,500 feet. Stratocumulus clouds commonly form when a layer of larger stratus clouds break up. This is caused by a change in weather from a warm, cold or occluded front ("Stratocumulus Clouds UK"). The warm front occurring in the front range at the time could account for this physical phenomenon. There are four categorizations of stratocumulus clouds including stratocumulus stratiformis, stratocumulus cumulogenitus, stratocumulus castellanus, and stratocumulus lenticularis. The cloud observed is most likely a stratocumulus stratiformis due to its geometry of flat based layers with very few cracks in between ("Stratocumulus Clouds UK"). This common cloud formation caused slight precipitation later in the day.

The other cloud formation observed in the photograph is cumulus fractus. This is a bit more of a unique cloud formation that forms between 8,000 to 20,000 feet. Cumulus fractus clouds are typically formed when “warmer air from the ground rises to meet the cooler air from the sky... and tend to be smaller [with] greater particle dispersion from within the cloud” (“Cumulus Fractus”). These clouds are most commonly formed in the summer because ground air is warmer and significantly more humid, but cumulus fractus clouds also can occur in the spring and fall. The high humidity and temperature for an autumn day significantly helped this cloud structure to appear.

Photographic Technique

This photo itself was taken using a Canon Rebel XTI. It was taken with an 1600 ISO and an aperture of F7.1. This aperture was chosen because the larger f-stop allowed less light to come into the camera at dusk. The shutter speed of the camera as at 1/3200. The combination of a smaller f-stop and quick shutter speed allowed enough light for a bright photograph during this time of the day.

Conclusion

The image above beautifully captures stratocumulus and fractus cumulus clouds. What I really enjoy about the image is the changing of the leaves in the lower part of the image. It gives the image a fall aesthetic that makes the viewer feel the chill of autumn with the increased humidity which created these clouds. What could make the photo better would be adding a little more contrast to the sky. Overall balancing the contrast of the yellow, orange, and red leaves with the brightness of the sky is challenging, but I am very happy with how the image turn out.

Appendix

Resources:

"Cumulus Fractus." Cumulus Clouds. N.p., n.d. Web. 16 Oct. 2016.

<<http://namesofclouds.com/cumulus-clouds/cumulus-fractus.html>>.

"Stratocumulus Clouds." Stratocumulus Clouds: Low, Lumpy Layer of Clouds. University of Illinois, Aug. 2010. Web.

<[http://ww2010.atmos.uiuc.edu/\(Gh\)/guides/mtr/cld/cldtyp/lw/strcu.rxml](http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/cld/cldtyp/lw/strcu.rxml)>.

"Stratocumulus Clouds UK." Met Office. N.p., 1 Aug. 2016. Web.

<<http://www.metoffice.gov.uk/learning/clouds/low-level-clouds/stratocumulus>>.

"Weather History for KBDU - October, 2016." Weather History for Boulder Muni, Boulder, CO, N.p., 3 Oct. 2016. Web. 16 Oct. 2016.

Address of Photograph Taken:

Eastman Avenue
Boulder, CO 80305

Unedited Image

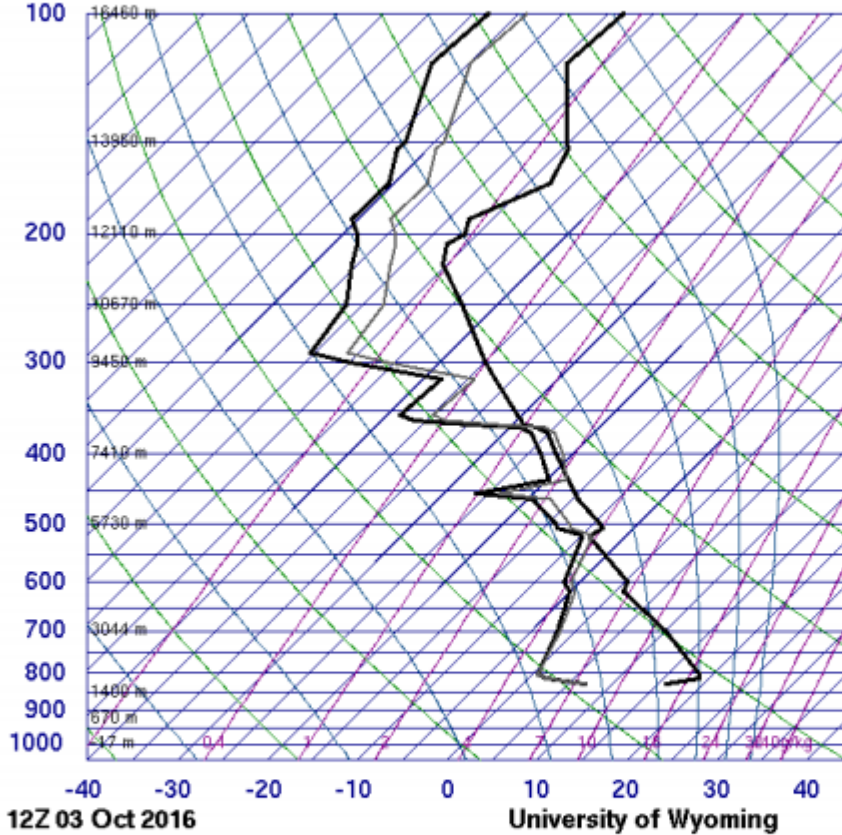


Skew-T Diagram:

10/4/2016

72469 DNR Denver Sounding

72469 DNR Denver



SLAT	39.77
SLOE	-104.87
SELV	1625.
SHOW	-9999
LIFT	3.66
LFTV	3.62
SWET	-9999
KINX	-9999
CTOT	-9999
VTOT	-9999
TOTL	-9999
CAPE	0.00
CAPV	0.00
CINS	0.00
CINV	0.00
EGLV	-9999
EGTV	-9999
LFCT	-9999
LFCV	-9999
BRCH	0.00
BRCV	0.00
LCLT	271.8
LCLP	634.2
MLTH	309.6
MLMR	5.60
THCK	5747.
PWAT	17.36

12Z 03 Oct 2016

University of Wyoming

Description of the [sounding indices](#).

Interested in graduate studies in atmospheric science? Check out our program at the [University of Wyoming](#)

Questions about the weather data provided by this site can be addressed to [Larry Oolman \(lcoolman@uwyo.edu\)](mailto:Larry.Oolman@uwyo.edu)