

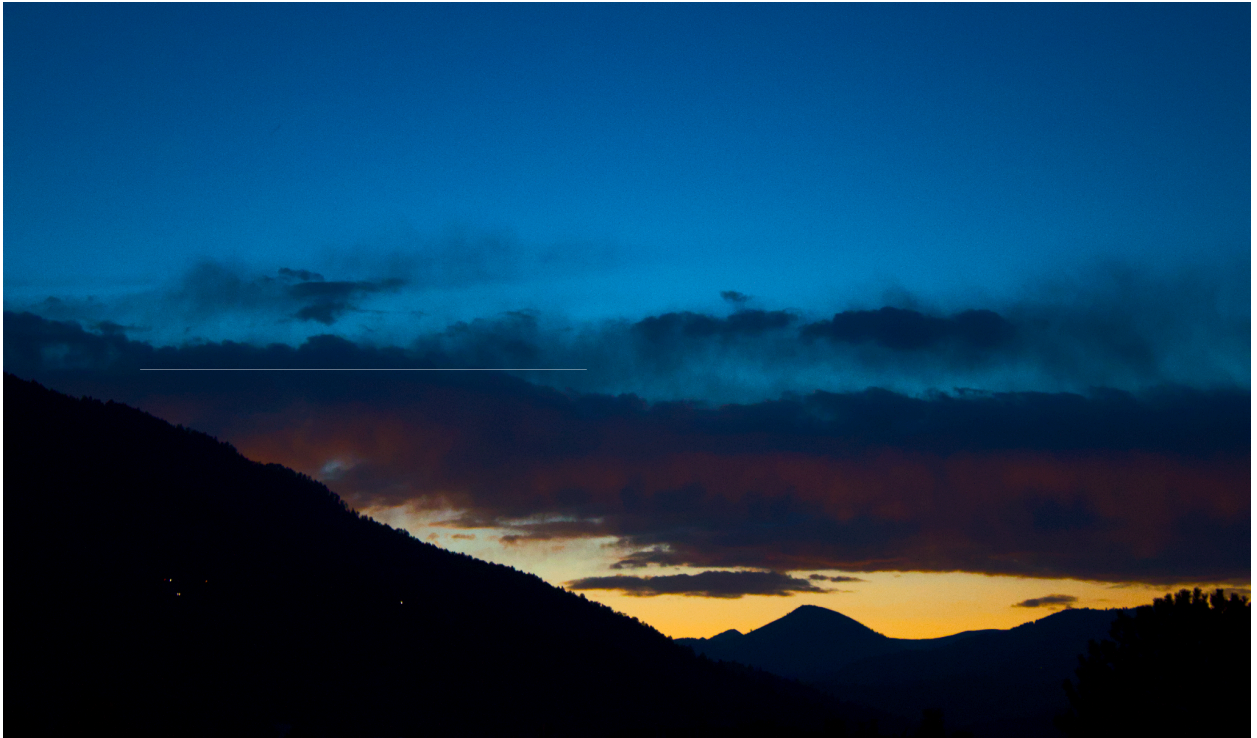
# Clouds First Report

Stratocumulus - October 11, 2024 at 6:55pm - Boulder, CO

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MCEN 4151-003

Oct 23, 2024



*Figure 1. Final Edited Cloud Image*

# Introduction

This image was taken for the first cloud assignment and shows the clouds around Flagstaff Mountain in Boulder, a little after sunset. I wanted to see what clouds formed near the mountain and how they would be illuminated at sunset due to the changing light. I had a bit of a difficult time getting the camera to manually focus on the clouds and getting the exposure/shutter speed correct due to the quickly disappearing light.

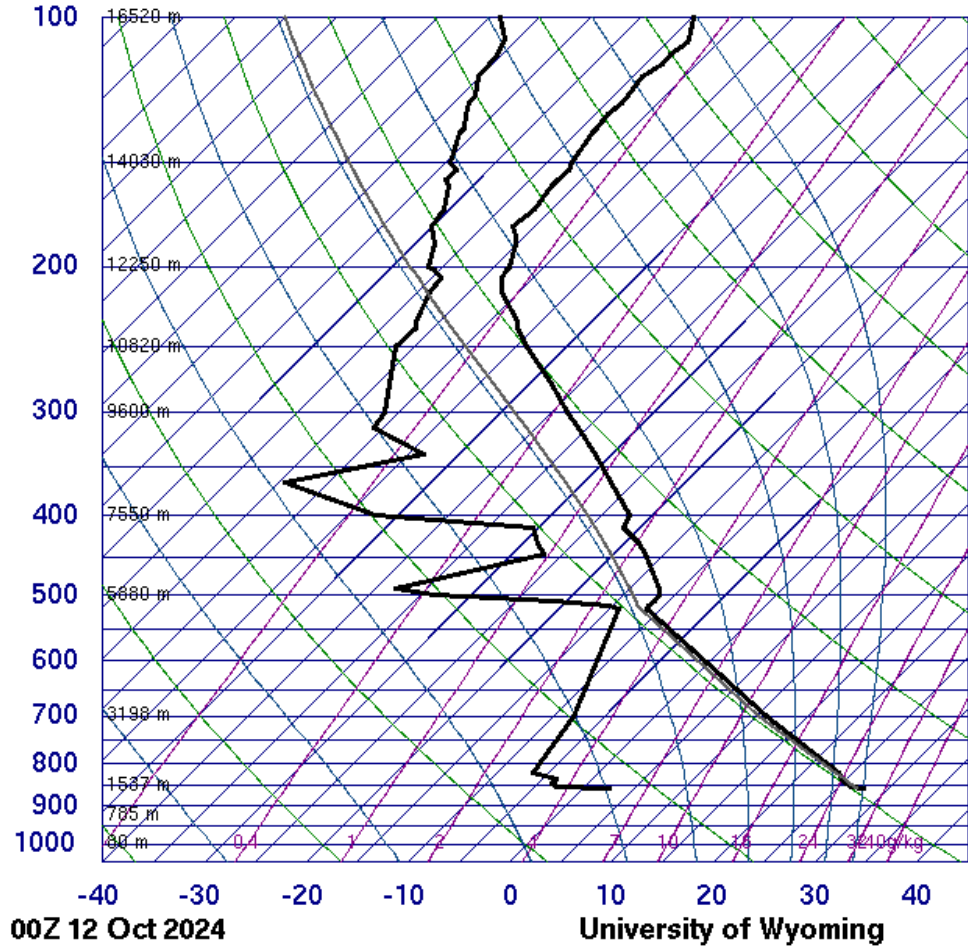
## Location Information

The image was taken in Boulder, CO from the west-facing roof of the UMC building on the CU Boulder campus. It was taken at 6:55 pm on October 11th, a little after sunset. The photos were taken from a height of approximately 5470 feet above sea level (approx 40ft above the ground), facing Northwest, with a camera elevation of approximately 15°.

## Cloud Description

The image focuses on the large stratocumulus cloud that spans across the width of the image. From the skew-T chart (*Figure 2*), the wind seems to have ranged between 20 and 30 knots at the approximate cloud height found. The Ceilometer Reflectivity (*Figure 3*) and Lowest Cloud Base (*Figure 4*) show that the clouds had a height of roughly 4000 – 6000 meters above the ground. From the Skew-T chart, you can see that the temperature and dew point are fairly close together between **600 mb** and **400 mb** which indicates a **saturated layer** where clouds are likely to form. The indicated presence of clouds on the chart aligns well with the stratocumulus clouds visible in my image, which seem to be at mid-altitude. The atmosphere was stable at the time of the image, which is consistent with the cloud being stratocumulus. It is also possible the cloud could be classified more specifically as a stratocumulus lenticularis cloud (Met Office, n.d.) due to its location in proximity to the mountains.

**72476 GJT Grand Junction**



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SLAT	39.11
SLON	-108.53
SELV	1475.
SHOW	2.20
LIFT	2.47
LFTV	2.14
SWET	33.99
KINX	15.50
CTOT	8.50
VTOT	37.50
TOTL	46.00
CAPE	0.00
CAPV	0.00
CINS	0.00
CINV	0.00
EQLV	-9999
EQTV	-9999
LFCT	-9999
LFCV	-9999
BRCH	0.00
BRCV	0.00
LCLT	263.1
LCLP	541.0
LCLE	324.6
MLTH	313.7
MLMR	3.38
THCK	5800.
PWAT	11.08

Figure 2. Skew-T Chart Showing Atmospheric Sounding Data Taken about an Hour Before the Image was Captured

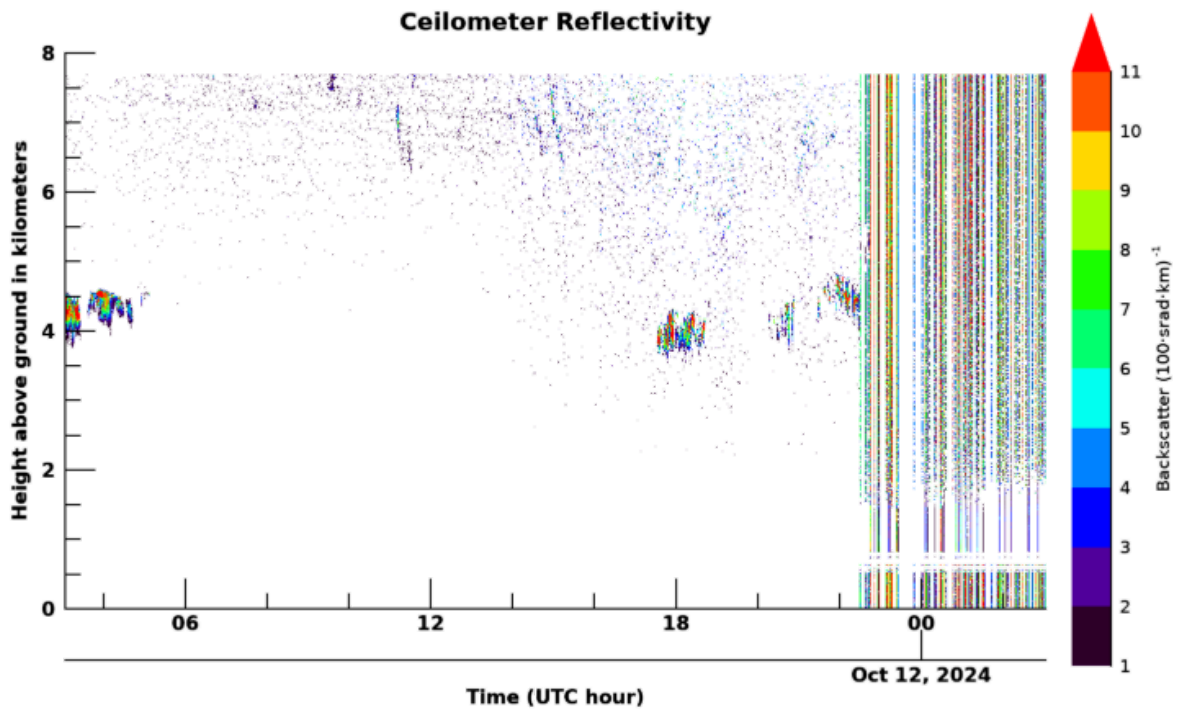


Figure 3. Ceilometer Reflectivity on the Day the Image was Taken

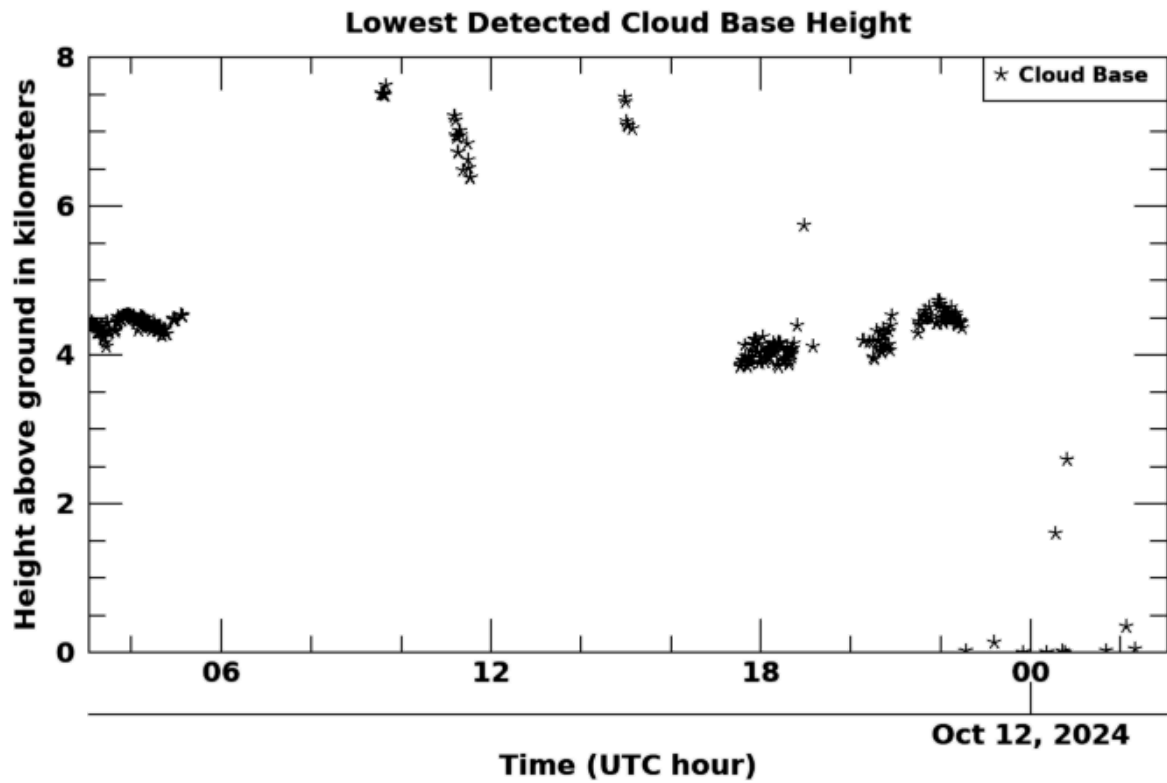


Figure 4. Lowest Detected Cloud Base Height on the Day the Image was Taken

# Photographic Technique

The camera information for the image is listed in *Table 1* below.

*Table 1. Camera Information*

Camera Model	Canon EOS 2000D
Lens	EF-S18-55mm <i>f</i> 3.5-5.6 III
Focal Length	53mm
Aperture	<i>f</i> 5.6
Exposure	1/20
ISO	ISO 2500
Original Image Size	6000 x 4000
Cropped Image Size	5832 × 3434

The final image (*Figure 1*) was edited from the original (*Figure 5*) by increasing the contrast and saturation to better show the different sky colors and the different colors and shadows in the cloud. The image was also cropped to feature less of the foreground objects such as the mountains, and better center the clouds vertically in the image.



*Figure 5. Original Unedited Image*

## Conclusion

The image beautifully captures the dimension of a stratocumulus cloud at sunset, and has a strong visual interest with the cloud separating the colors of the sky, and the depth between the mountains and the cloud. I wish the image featured the details of the cloud better, but I think some of the flatness in the image is due to the cloud itself. In the future, I would like to create a timelapse of clouds at sunset to better show the gradual change of the sky colors, the way those colors are reflected in the clouds and the cloud movement over time. Overall I believe I fulfilled the intent of my image.

# References

Met Office. (n.d.). *Stratocumulus clouds*. Met Office.

<https://www.metoffice.gov.uk/weather/learn-about/weather/types-of-weather/clouds/low-level-clouds/stratocumulus>

ZME Science. (n.d.). *Stratocumulus clouds: Overview and weather prediction*. ZME Science.

<https://www.zmescience.com/feature-post/natural-sciences/climate-and-weather/weather-and-atmosphere/stratocumulus-clouds/>

University of Wyoming. (n.d.). *Atmospheric Soundings*. Retrieved December 14, 2024, from

<http://weather.uwyo.edu/upperair/sounding.html>