



Cloud Second Report: Sunset Over Boulder

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MCEN 5151: Flow Visualization

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05 December 2025

This is the second Cloud Assignment in our Flow Visualization course. The intent of the image is to photograph natural flow phenomena in the atmosphere. For the second picture assignment I wanted to capture a burning sunset over the mountains, so I waited specifically for this case above.

This image was taken on November 24th around 5pm, so just after sunset. This allowed for the dramatic colors in the image above and behind the Flatirons. I was standing near the REI in Boulder facing South-West. I specifically included the foreground of cars and buildings – and the midground mountains – to give scale and depth to these clouds. They are pretty on their own but there's a certain element of awe added in when the context of their position is shown.

The clouds in the image are around 3km to 4km off the ground (see Fig 1 @ 000 UTC/5pm MST). The lower clouds are spotty altocumulus clouds. Some are formed together to create larger clouds, but a lot are wispy or individual puffs. The most abundant of the clouds is the thick blanket layer of altostratus. These form the ceiling of the image, bringing closure to the ground below. Most striking, though, is the formation of a cap cloud in the center of the image. These are beginning to take shape of circular lenticular clouds, but I don't think it's quite there yet. Despite the immediate assumption of reigning over the top of the Flatirons, a closer look will reveal they are far beyond. My estimate is that these clouds are actually over 30 miles away covering the top of a large 14,000 ft. mountain – Mt. Blue Sky. Despite being so far away, this peak is so high (almost twice the elevation of the Flatirons) that its possible the clouds over the mountain are visible from Boulder.

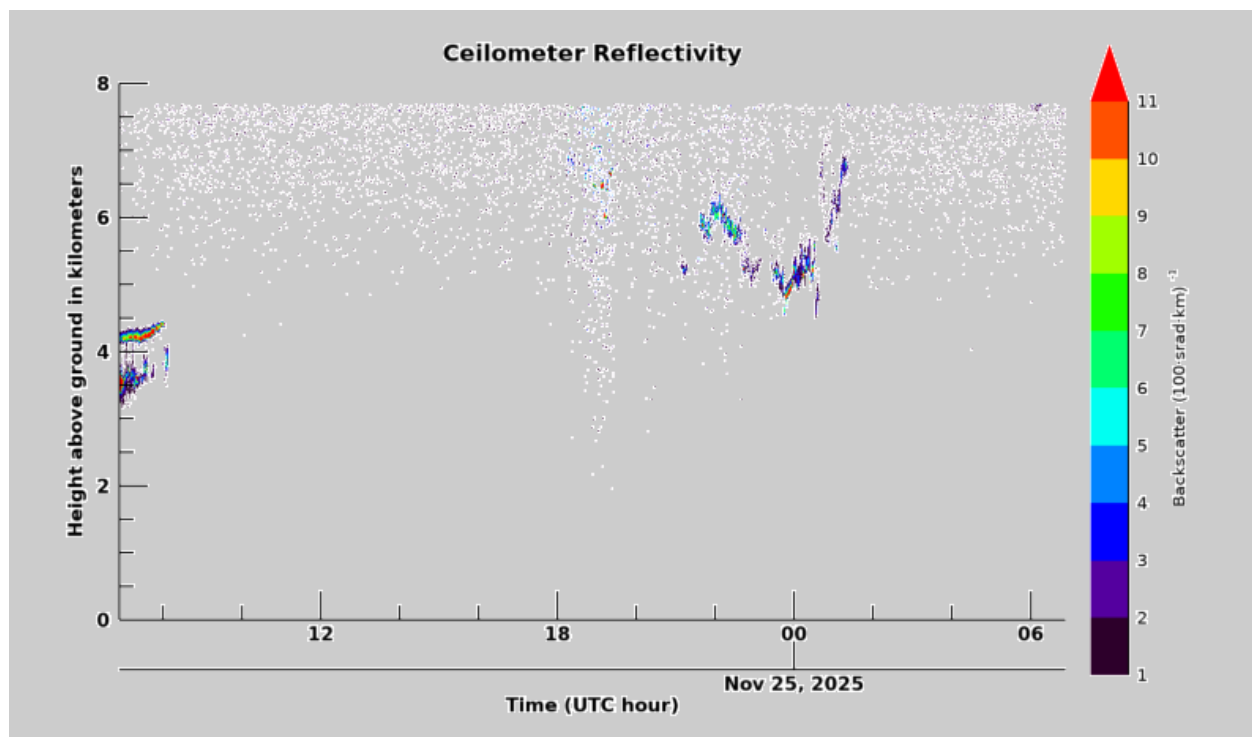


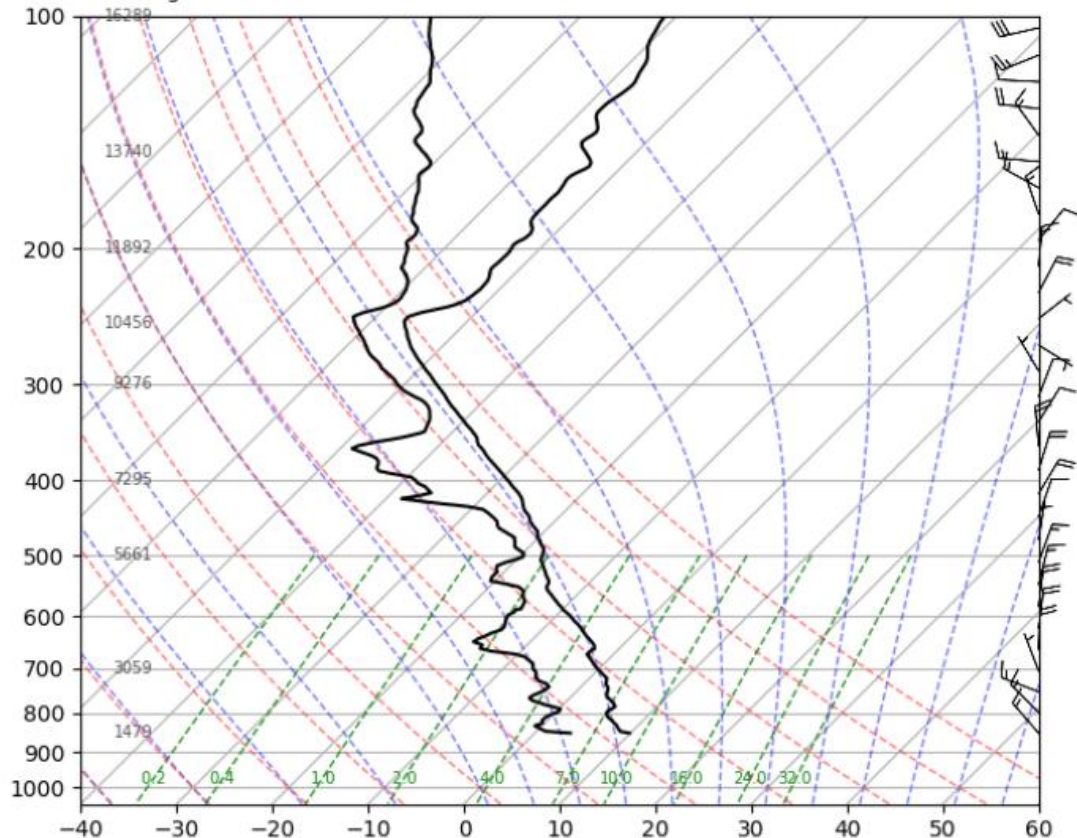
Figure 1.

Despite the thick layer of clouds, the air is quite stable. Evidence for this is shown in the cloud type. Stratus clouds are formed when widespread layers of air rise, expand, cool, and condense all together. There is little up or downdraft to disturb this blanket, so we can presume the conditions are stable. This cloud layer remained well into the following morning, so again evidence of stable conditions in the area. The Skew-T diagram (see Fig. 2) agrees with this.

Station 72476 at 00 UTC 24 Nov 2025

GRAND JUNCTION/WALKER FIELD, CO., USA

Latitude: 39.120 Longitude: -108.524



University of Wyoming Atmospheric Science

Figure 2.

The photographic technique used for this picture was quite simple. I used an iPhone 16 Pro. This image was shot @ 6.8mm f/1.8 ISO 64 and 1/538s. The original image (see below) is 4032 x 3023 pixels. There was minor editing done to the image in Darktable. The overall vibrance was increased, as well the oranges in the image strengthened to mimic what is seen by the naked eye. An overall crop was done, changing the pixels to 1300 x 900 from the original.



Before Image

This is one of my favorite images I have taken this year. The clouds are striking and different. The foreground sets the scene and gives context to size and depth of the clouds. The setting sun injects beautiful color into the scene. I have learned so much about clouds because of this course and this image alone shows that. From here, I want to start taking better pictures of weather in general but using my mirrorless camera. I can have better control over the image taken with a larger camera. A big part of clouds is their depth and I think a better lens overall would add to the texture of the image.