Cloud Second Report
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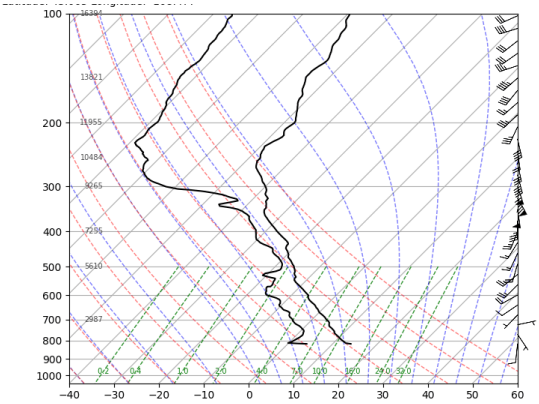
ATLS 4151-5151/CVEN 4833-5833/MCEN 4151-5151

The edited photo

The picture was taken at around 2:50 PM on October 5th, 2025, from State Highway 93, between Golden and Boulder. The frame faces northwest, towards the flatirons, which are visible in the image. According to world-weather.info the temperature was around 50 degrees, with 59% humidity. This kind of storm is common in the late summer and early fall, when the clouds rolling over from behind the hills bring rain on cold and humid days.



The Skew-T diagram

The clouds in the image are producing rain, at a distance from where the photo was taken, localized over the foothills in the background and the nearby plains out of view. The clouds in the image are most likely nimbostratus, as they are low to the ground and are producing rain, and form a kind of sheet over the earth.

I took the image with my phone, a Samsung Galaxy S25, with a 10MP, f/2.4 telephoto camera. The automatic noise reduction effect applied to images on the phone produces undesirable noisy blurs which disrupt the color of the image, which I tried to improve in editing and which you can see if you zoom in on the unedited photo.

The unedited photo.

In an attempt to improve the fidelity of the image, I wanted to remove the aforementioned noise reduction artifacts. To do this, I wanted to treat the sky and everything below separately, so I applied a mask along the ridgeline and completely desaturated the sky, to remove the color artifacts. Then, I applied a subtle gaussian blur to remove unwanted noise from the clouds, with success, however losing some detail in the process. I then colorized the sky with a turquoise color to make it match the rest of the image and adjusted the brightness and saturation again. For the mountains and plains, I applied sharpening and adjusted the levels appropriately. I then used the blur tool to make the transition between the masks more believable, and adjusted the contrast and brightness of the whole image.

References:
https://pubs.usgs.gov/pp/1019/report.pdf
https://www.weather.uwyo.edu/upperair/sounding_legacy.html
https://world-weather.info/forecast/usa/boulder/05-october/