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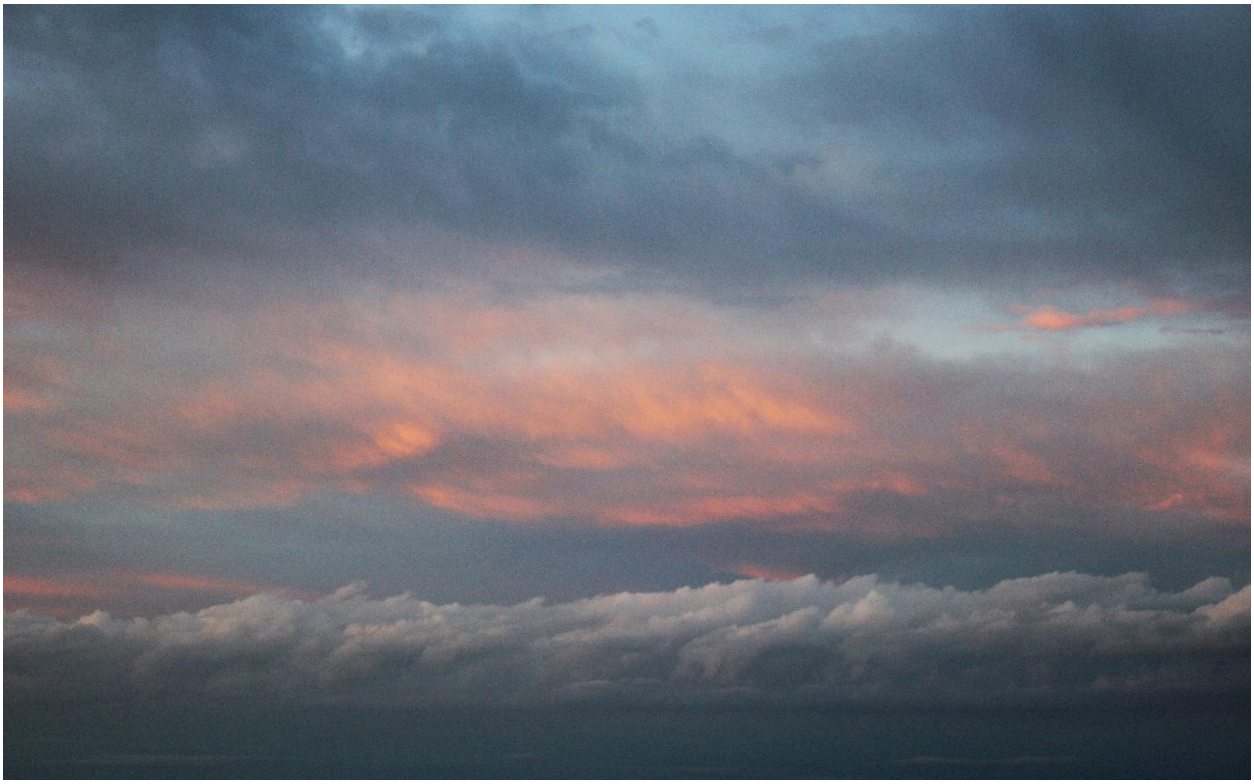
MCEN 4151-001

10/21/2025

# Clouds Second – Layers

Stratocumulus & Altostratus



Taken for the Clouds Second assignment, this image aims to display a variety of clouds and the layering effect they take on through development at various altitudes. Each layer of clouds in this image has different forms and even different apparent motions with the upper layer appearing red due to the end-of-day light illuminating them from below.

This image was captured on September 17th, 2025, at 19:07 MST from the rooftop deck of my apartment complex in Broomfield Colorado. It was taken facing North-Westward with only a slight upward angle of roughly 20 degrees due to the elevation variation in the given direction.

Given the shapes of the clouds and the estimation of a stable atmosphere based on the skew-T diagram provided in Figure 1, the upper layer is taken to be altostratus and the lower taken to be stratocumulus. The clouds were relatively stationary throughout the fifteen-minute

period that I was outside. There was no precipitation before or after capturing the image though it was windy as is common around Broomfield. Also shown in the image and skew-T diagram is the direction of motion for the layers of clouds with the lower clouds being affected by the eastbound winds and the upper clouds affected by westbound winds.

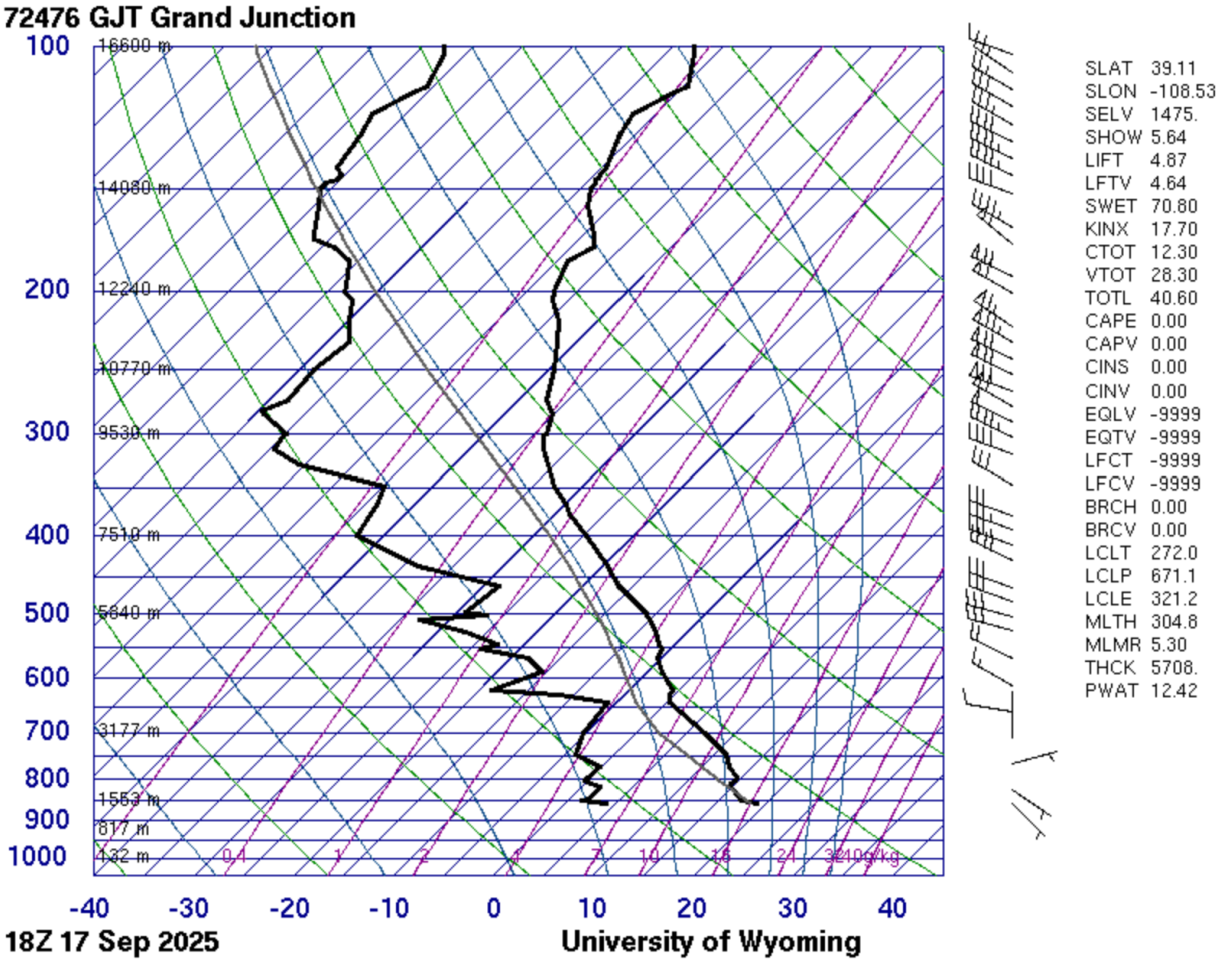



*Figure 1: Skew-T Diagram for Evening of 09/17/2025*

This image was taken with a Canon EOS Rebel T3i digital camera with settings of f/5.6, ISO-400, and 1/100 second exposure at a focal length of 53 mm. Though it can be difficult to accurately estimate the distance of a cloud, they seemed relatively close. The original image was taken at a resolution of 5202x3464 pixels. Editing included increased contrast and sharpness of the image to bring forward the wispiness and color of the upper cloud layer, and a slight crop bringing the final image to 5148x3221 pixels. The original unedited photo is show below in Figure 2.

*Figure 2: Original Un-Edited Photograph*

In conclusion, this image provides the viewer with intuition that clouds forming at different elevations can have vastly different appearances despite existing in the same portion of the sky. It also portrays the wind affected motions of the clouds via their shape and apparent densities with assistance from the skew-T diagram as well. As for potential improvements to the process or image itself, there are many details that are lost with imaging of clouds that would normally be apparent to the naked eye. A longer exposure time may have helped capture the finer details of the clouds, or use of a higher resolution sensor. All in all, the image came out well by my standard.