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Clouds Second
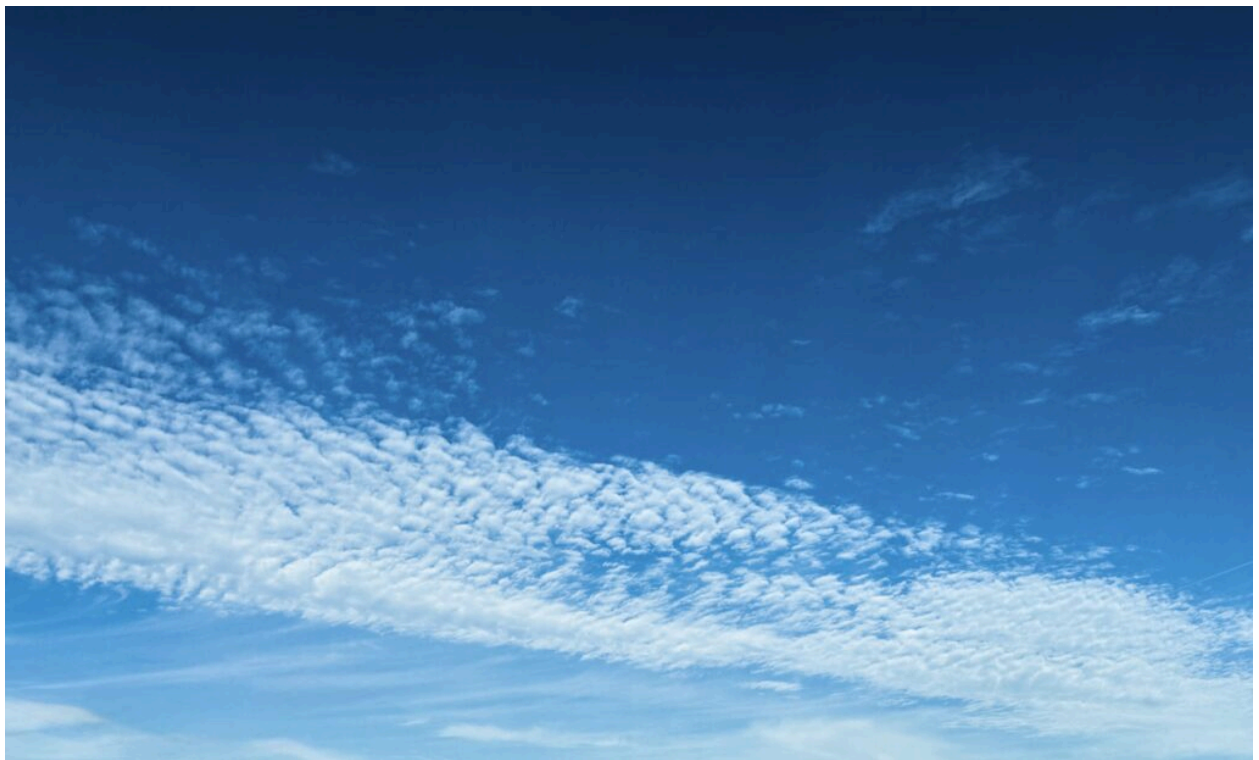## MCEN 5151
December 5, 2025

Figure 1: Final Image

Introduction

This image was the final product for my Clouds Second assignment. Given my location in the Pacific Northwest, my intent was to capture something other than an overcast sky that was pleasing to the eye. Whenever there was a rare moment where there was a visually striking cloud in the sky and I was outside to witness it, I tried to get a good photo of it. The final image was chosen because it was one of the more interesting clouds I captured and you can see a distinct "patchiness" in part of the cloud.

Image Circumstances

This image was taken on December 1st, 2025 at 11:49am PST while in the passenger seat of a car driving on Oregon Route 217 North. The specific coordinates are 45.453864°N, 122.784478°W. The camera was facing North and angled upward at around 10° above the horizon. This day was one of the few times in the winter where the sky above Portland, OR is not either overcast or perfectly clear.

Cloud Identification

The main clouds featured in this image appear to be altocumulus clouds, as determined by the patchy, cotton-like masses of clouds. There also appears to be some lighter, wispy clouds around the same altitude as the altocumulus clouds or higher. These are likely some altrostratus and cirrus clouds.

The closest sounding data came from Salem, OR. Figure 2 below shows the Skew-T plot at 12Z on December 1st, 2025. The parcel path is never to the right of the temperature line after the LCL. This means there is no LFC or CAPE value indicating a stable atmosphere. Above the LCL, the dewpoint and temperature lines are relatively close together starting from around 750 mb up through 150 mb. This corresponds to potential cloud formation between 2500 m and 13500 m. This lines up with the reported surface high-pressure system that was moving in through the area, which would hinder low level cloud formation. This system when combined with surface heating and evaporating moisture can see small parcels of warm, moist air forced up into the middle atmosphere hence the altocumulus clouds being dominant in the image with seemingly no clouds below or around them. The sky is mostly clear aside from a few groups of clouds here and there [1]. The slow rising air pockets are also what allows for the formation of the cirrus clouds seen in the image. Cirrus clouds like this can indicate an advancing warm front [2], which seemed to be true in this case, as rain occurred a couple days later on December 3rd-5th.
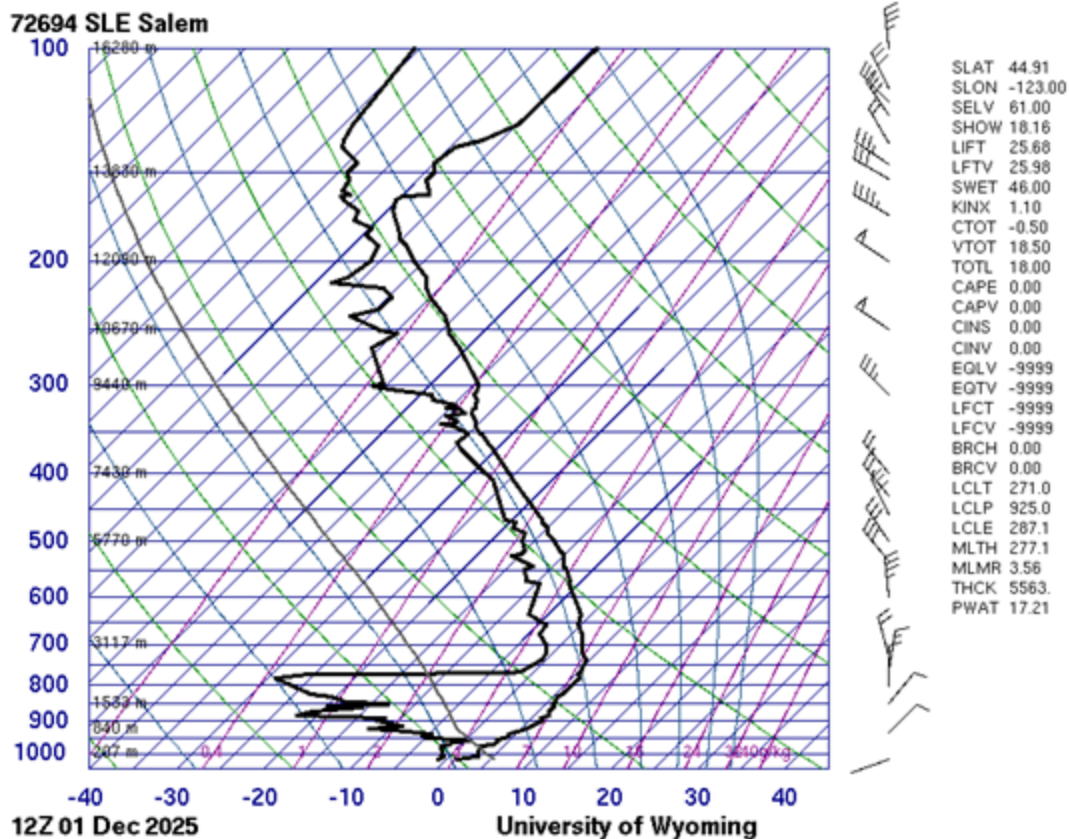
Figure 2: Skew-T Plot

Photographic Technique

The cloud was captured using an iPhone 16 Pro. The capture settings were as follows: ISO of 80, shutter speed of 1/6400, focal length of 24 mm, and an aperture of f/1.8. The original image had a resolution of 5712 x 4284 pixels, and the final cropped version is 3826 x 2314 pixels.

Using darktable, I increased the contrast and skew, slightly increased the saturation, slightly decreased the global chroma and brilliance, used the tone equalizer to bring down the lows and highs while increasing the mids, and artificially increased the exposure. This really worked to bring out the different shades of blue in the sky and make the clouds pop. The original image can be seen below.

Figure 3: Original Image

Reflection

The final image gives a good depiction of clouds that can form during stable conditions that are usually conducive to completely clear skies. The dark blue contrasts with the patches of altocumulus clouds which really draw attention to them. Overall, I believe I fulfilled my intent to capture an interesting cloud in the typically monotone sky of the PNW. One thing I would like to improve is taking the picture somewhere with less business going on so that I could include more of the sky and perhaps some of the foreground to give a sense of scale.

References

[1] Monica Devlin. "What Is a High-Pressure System and How Can You Measure It?". *Kestrel Instruments,* 6 October 2025.
[2] Met Office. "Cirrus Clouds". *Met Office,* n.d.