

2020 Clouds Second

Hannah Moller
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I. Introduction

The purpose of this picture was to explore the concept of flow visualization in the form of clouds. Ultimately, the goal was to generate a image that was aesthetically pleasing, while also indicative of the atmospheric fluid flow conditions that generated the subject cloud. With cloud photography we are looking at what the atmosphere conditions and weather to see how these clouds form and what causes the sky to look so beautiful. Clouds come in many forms and depending on the light a multitude of colors can paint the sky. The cloud analyzed in the following document was taken near Mt. Rainer in Washington while in an airplane going to the Seattle airport on October 29th, 2020 at 5:50 pm WCT. The cloud pictured spanned out across the mountain into the far distance.

II. Flow Phenomenon

Looking at the contextual clues did not help as much in identifying the type of cloud that was pictured. This is partly since the Skew-T diagram was for Quillayute, WA which is 248 miles from Mt. Rainer, so relying heavily on the Skew-T is not accurate. Due because this was in a plane, I could not accurately gauge the height from looking at the cloud. Therefore, since commercial planes fly about 38,000 feet in the air and Mt. Rainer had a peak at 14,500 feet played a part in figuring out what kind of cloud this was. Because I was looking down at the plane and peak was not covered, it was probably around 9,000 to 8,000 feet. This would classify this type of cloud as an Altocumulus clouds.

Altocumulus clouds can become tufted in appearance when in an area of increased instability of the air [1]. Thus, seeing the tufts in the cloud picture makes since because the moist air coming in from the coast is experiencing uplift when reaching Mount Rainer. The CAPE 19.05 shows that it is an unstable atmosphere which makes since because of the off and on rain showers that the area experienced in the following week.

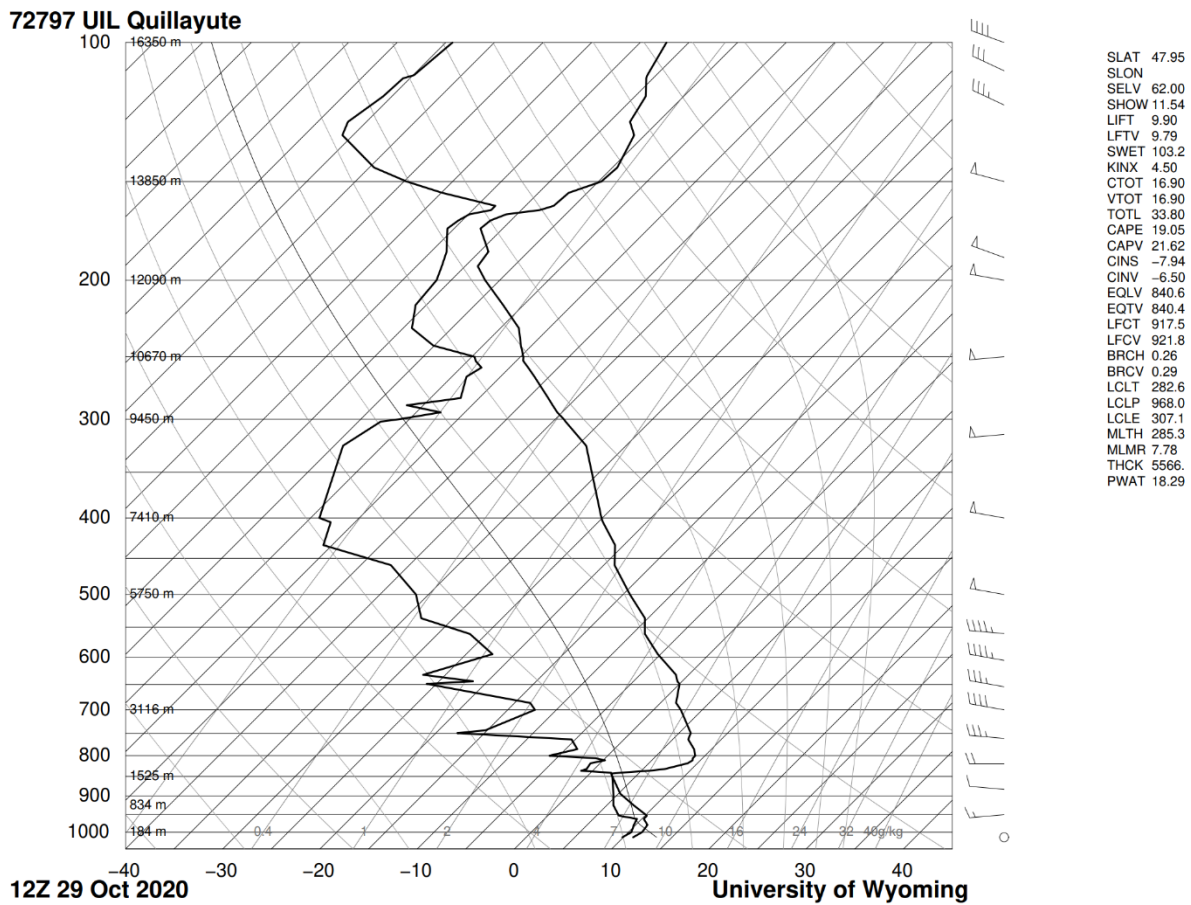


Figure 1: Skew-T diagram from Quillayute, Washington the day the photo was taken.

III. Photographic Technique

The camera used for this image was a DSLR Cannon Rebel T7, which comes with a 70 to 300 mm zoom lens. The settings were set to the following specifications, F4.0 aperture value, 1/200 shutter speed, an ISO speed of 100, and using manual focus. These settings were used to compensate for the low lighting in the airplane and the setting sun. The original photograph can be seen in Figure 2 below which has 6000 x 4000 pixels.



Figure 2: Unprocessed cloud 2 photo.

Post processing on this photo was done in Digital Photo Professional 4 by Cannon. In the processed photo, to increase the contrast and to make the natural colors of the sunset really stand out, the highlighting in the photo was increased, the color tone was decreased, and then fine-tuned the blue tones in the photo.



Figure 3: Picture of the photo after post-processing.

IV. Conclusion

I really enjoyed working with this image and researching the clouds and weather patterns within it. I felt like this image is an incredible representation of the power, beauty, and vastness of our natural environment and how simple it is to appreciate it every day. In the future I would like to take more images of clouds and possibly take more measurements like barometric pressure, temperature, and wind speed on location to give a better understanding of what clouds may have and/or will form. I enjoyed learning more about the science of cloud mechanics through this report, providing me with an appreciation variety of the clouds above us and scientific knowledge to back up my mountain weather intuition