Clouds First Image

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This image was taken for the Clouds First assignment. For this image, I was just trying to capture a photo of some beautiful clouds. My main concern was the artistic value of the image and how good it looked. A secondary concern was the type of cloud I was taking a picture of and how well my image conveyed the science of the cloud.

This image was taken on October 8th at 2:18 PM outside of the Jennie Smoly Caruthers Biotechnology Building, which is located on the University of Colorado Boulder East Campus. This is the same building that is captured in the image. This is roughly at an elevation of 5,430 feet. The angle the photo was taken at was roughly 70 degree angle from the horizon. The photo was taken facing the Northeast.

In general, all clouds come from water condensing in the atmosphere and being in a state of vapor-liquid equilibrium. This liquid water suspended in the air along with other particulate diffract light from the sun and allow us to see the cloud. On the skew-T diagram the line on the left indicates the dewpoint temperature at that elevation, which is simply the temperature at which water vapor begins to condense into a liquid. The line on the right is the recorded temperature at that elevation. So, when the actual temperature is close to the dewpoint temperature, or when the two lines pinch in towards each other, the water vapor is more likely to condense and form clouds. The shape and type of cloud is dependent on whether the atmosphere is stable or unstable and what elevation the cloud formed at. Flat, wispy stratus clouds form in stable atmospheres while fluffy textured cumulus clouds form in unstable atmospheres (Funk).

I believe the clouds in this image are mostly cirrostratus with some altocumulus below them. The skew-T diagram for the atmosphere when the photo was taken is pictured below in Figure 1. First off, the CAPE number is 0 so the atmosphere is stable and more likely to form stratus clouds. These clouds are characterized by flatter shapes that are more separated. This goes

along with the appearance of the cloud in the image, the upper layers are flat and are broken up into several layers of clouds. The pinch in the skew-T diagram is around 7,500 m or 24,000 ft. This indicates what elevation clouds are likely to form at. Cirrostratus clouds are found above 20,000 ft so this matches up with the skew-T diagram. However, there is another smaller pinch around 5000 m or 16,000 ft (Funk). I thought the appearance of some of the lower clouds in the image looked fluffier and more continuous which is more like altocumulus clouds which form between 6,000 and 20,000 ft which matches up with the lower down pinch on the skew-T diagram (Funk). The sky was pretty clear apart from the clouds in the image. It is important to note that it snowed later that evening. This supports having multiple types of clouds present since when it snows, the snow usually comes from clouds that have transitioned from higher up cirrostratus clouds into lower, thicker clouds such as stratocumulus (Funk).

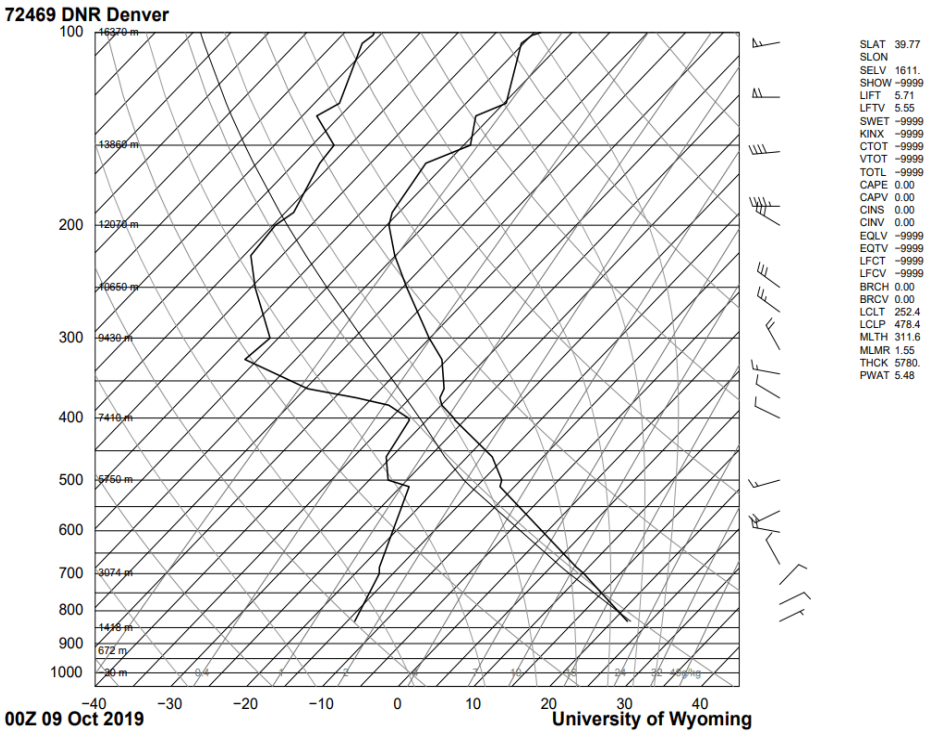

Figure 1: Skew-T Diagram

This photo was taken using a Google Pixel 3a smartphone. The ISO was 77, the f-stop was 1.8, the shutter speed was 1/4695 seconds, and the focal length was 4.44 mm. The phone automatically used these settings. I then very slightly bumped up the exposure and contrast when editing the photo. I edited it using the phones build in software. The unedited image is shown below in Figure 2.

Figure 2: Unedited Image

I really like how the clouds in the image form a nice diagonal across the photo, this is the main reason why I chose this photo. I also think the contrast between the red bricks of the building and the blue sky really adds to the photo. If I had the ability and knowledge to, I would try to edit out the lamp post in the lower right hand corner of the image. I think overall, the image showed off the cloud and the physics behind it well.

Works Cited

Funk, Ted. “Cloud Classifications and Characteristics.” *Weather.gov*, www.weather.gov/media/lmk/soo/cloudchart.pdf.