

MCEN 4151: Flow Visualization

Section 001

Clouds First Report

Abdul Dawlatzai



This image was taken for the first clouds assignment. The intent of this image was to capture the colors of the sun reflecting on a cloud. Also, I was trying to take a photo of a cloud with different textures to showcase how many different types of clouds we have in the world.

This image was taken in Thornton, CO near a neighborhood basketball court at an elevation around 5600 feet. The direction the camera was facing was north, where the sun light was coming from the west near the flatiron mountains. The angle of the camera was around 45 degrees with respect to the horizontal, the date and time this photo was taken was on October 12th, 2020 at 6:34 PM MDT.

From observation, the clouds seem to be a mountain wave-form cloud. Altostratus towards the bottom of the cloud and the altocumulus at the top. The reason why it is altocumulus at the top is because of the grainy like shape of the cloud. Towards the bottom of the cloud, an individual can see slits of air that come from a mountain wave cloud. Also there is a contrail towards the top that fades into an altocumulus cloud. There was a cold front coming in from the west that day that eventually turned into a rain cloud. My initial guess of this cloud was an altostratus because of the low elevation of the cloud and that I could not place three fingers to cover up the cloud. The winds were strong that day which could be a cause of the distinct shape of the cloud in this image. From the SkewT diagram, the stability of the clouds were stable because of the CAPE value of zero. The location of the SkewT was Denver International Airport at 6:30 PM MDT the same day the image was taken. Shown below is the SkewT and national weather map (reference 1) in figures 1 and 2, respectively.

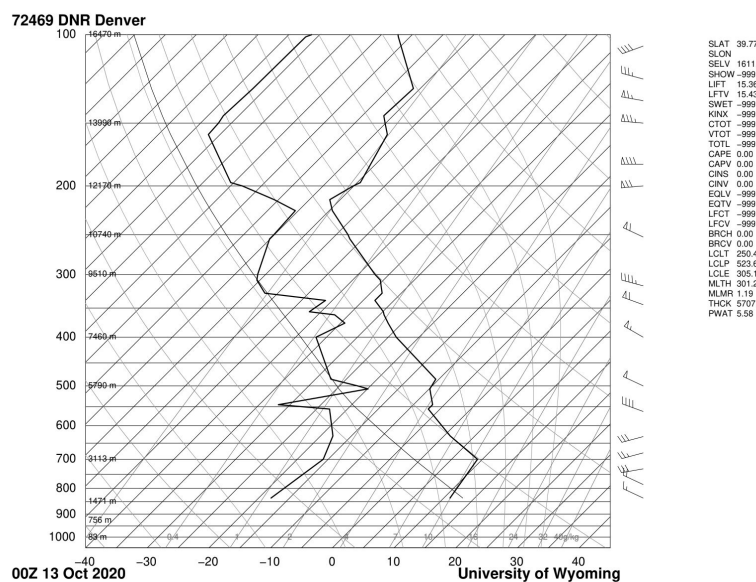


Figure 1: SkewT Diagram

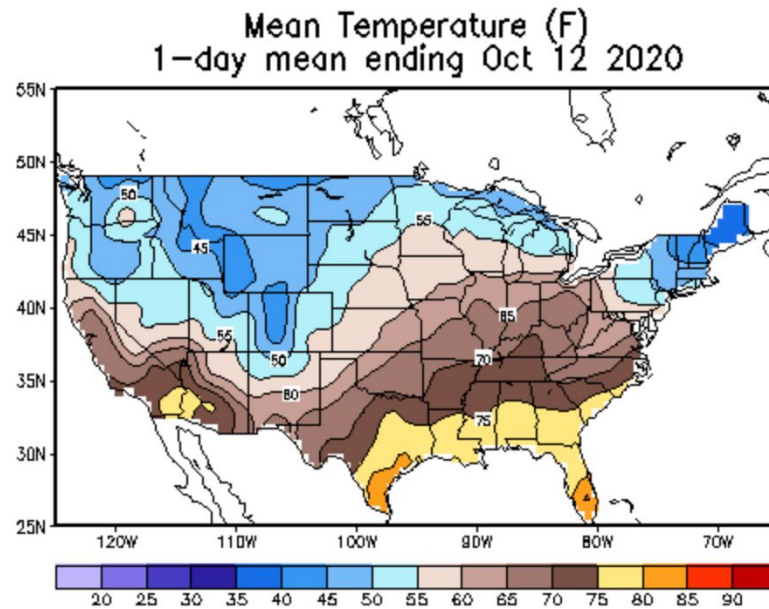


Figure 2: Mean Temperature of US when photo was taken

This image was taken from an iPhone 7s Plus. The exposure was estimated to be 1/527 with an f stop of f/2.8 and an ISO of 25. The field of view was estimated to be around 1.5 miles with a focal length of 6 mm. Using a image editing software, DARKTABLE, I increased the sharpness of the image as well as the saturation of the image to bring out the raw colors of the sun light hitting the cloud. I also cropped the image from the bottom to remove a tree that could be a distraction to the viewer. The original image is shown below is shown in figure 3.



Figure 3: Unedited original photo

This image reveals how sunlight creates beautiful colors that are reflected onto clouds. The colors in the image amaze me nothing that I did not change the colors of the image. One thing that I like about the image was the ability to capture different textures of the cloud in the image, towards the top is a grainy texture while the complete opposite in the bottom. Yes, I fulfilled my intent with this picture by capturing raw colors from the sun hitting this mountain wave-form cloud. I would like to improve the field of view of this image because it could have captured a bigger cloud. To make this idea of capturing the sunlight on clouds, I could capture images of clouds at different times of day to see the variety of colors.

References

1. US Daily Temperature Analysis. (n.d.). Retrieved October 23US, 2020, from https://www.cpc.ncep.noaa.gov/products/tanal/temp_analyses.php
- 2.