

# MCEN 4151: Flow Visualization

## Section 001

### Clouds Second Report

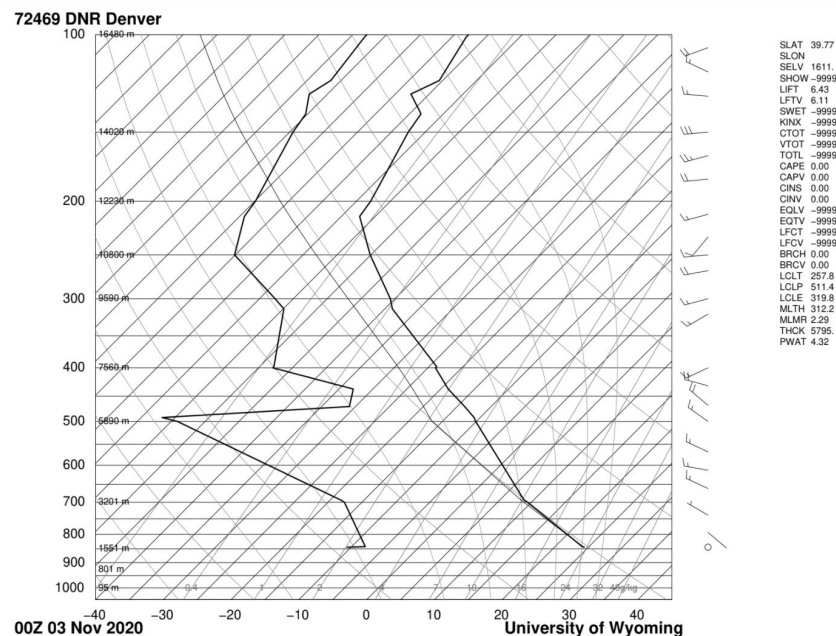
Abdul Dawlatzai



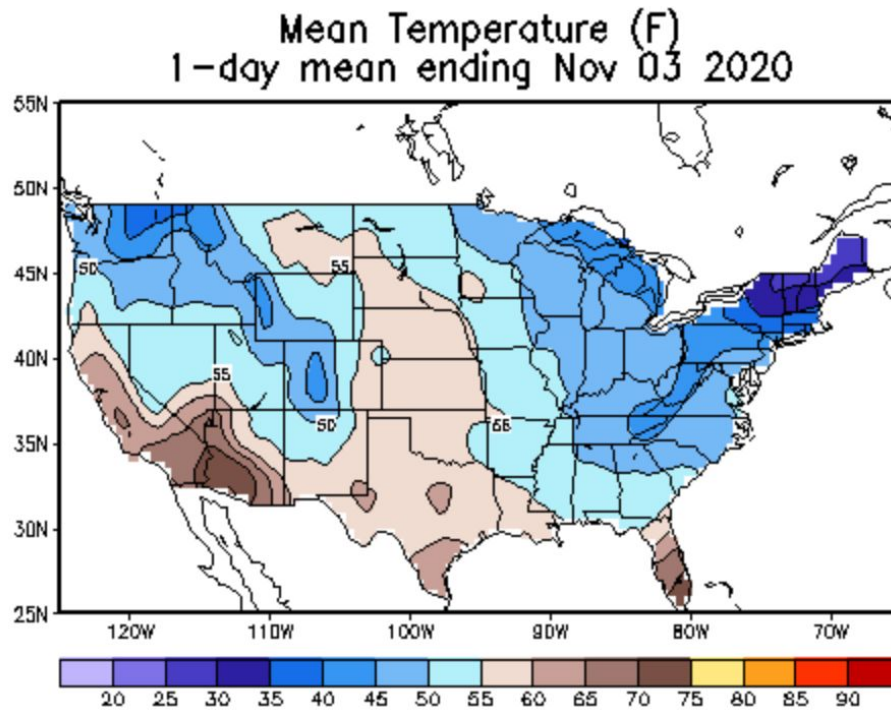
This image was taken for the Clouds Second assignment. The intent of this image was to capture the different textures of the clouds and the formations of the clouds in the image.

This image was taken in Antonito, Colorado near the New Mexico Border where the elevation is around 5600 feet. The direction the camera was facing was north, where the sunlight was coming from the west. The angle of the camera was around 60 degrees with respect to the horizontal, the date and time this photo was taken was on November 3rd, 2020 at 6:35 AM MDT.

From observation, an apples to apples comparison, my initial guess of this cloud was an altocirrus because the cloud formation was thin and “feathery”. Cirrus clouds typically form in cold weather. Due to the high wind speed, the ice crystals formed in the clouds form the shape you see in figure 1. 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 AM 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/1.6 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 an image editing software, DARKTABLE, I increased the sharpness of the image and added the vignette to empathize the middle formation of clouds



***Figure 3: Unedited original photo***

This image reveals how wind speed affects the cloud structure. I enjoyed the overall colors in my image and the angle at which the photo was taken. My questions to the reader would be how I would be able to better post-process this image to strongly emphasize on the cloud formation. To better fulfill my intent for the image, I would like to take a picture of the cloud where it transitions into the cirrus stage.

**References**

1. US Daily Temperature Analysis. (n.d.). Retrieved October 23US, 2020, from [https://www.cpc.ncep.noaa.gov/products/tanal/temp\\_analyses.php](https://www.cpc.ncep.noaa.gov/products/tanal/temp_analyses.php)
2. (2010). Retrieved December 05, 2020, from [http://ww2010.atmos.uiuc.edu/\(Gh\)/guides/mtr/cld/cldtyp/hgh/crs.rxml](http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/cld/cldtyp/hgh/crs.rxml)