

Stella Newman

Clouds Second Report

Flow Visualization Fall 2020

Alto-stratus and alto-cumulus lenticularis

November 10, 2020

12:00 pm

Image taken in the King Soopers parking lot Boulder, CO



When I was walking to the local King Soopers to get dry ice for my Image-Video 3 experiment I looked up and saw this crazy cloud phenomenon. I was interested in these clouds not only because of the unique shape and texture but also because of the contrast between the

types of clouds seen in the image. Initially, I was trying to capture the wave-like shape formed by the alto-stratus cloud, which turned out to be a fascinating texture in the final image.

I captured this image on November 10, 2020 at 12:00 pm. Because I was in a parking lot, I had to angle the camera above other distractions and still ended up cropping some of the bottom of my image out. My phone camera was angled at about 120° above ground level facing north-west.

I classified these clouds as alto-stratus and alto-cumulus lenticularis. I came to this conclusion after studying the Skew-T diagrams (figure 1) and discussing my image in critique. The stable atmosphere on and surrounding this date helped me classify the alto-cumulus lenticularis clouds because these wave shaped clouds are caused by the topography and require a stable atmosphere. November 9th was the start of a cold front moving into Boulder (seen in figure 2), which means there were downslope winds that were moving low speed to high speed creating the undulatus. The winds were moving at an average speed of 11.8 miles per hour from 12:00 pm to 6:00 pm on November 10th. The Skew-T diagrams also help distinguish the elevation at which these clouds rest. I estimated these clouds to be at about 7100 meters above ground level, this is because of the change in wind speeds and slight instability seen at that point on the graph.

This image was taken on my iPhone XR and the exposure specs are as follows, aperture f/1.8, ISO 25, and focal length 4mm. The pixel dimensions of my final image are 4032 in width and 3024 in height. I did have to crop the height because of distracting buildings and telephone wires. As I mentioned before, the cloud was approximately 7100 meters off of the ground, so I would expect my camera to be about that distance from the cloud as well. After cropping I would estimate the field of view to be 1 mile wide by ½ mile high. In my post production I decreased the shadows and brightness and increased the contrast and highlights. I also had to do some slight retouching on the bottom cloud to eliminate the telephone pole that was in view. Figure 3 is my original image for comparison.

This image does capture the undulatus or the waves of the alto-cumulus lenticularis cloud with interesting texture which is something I really love about this image. I am also proud of how the post production turned out even though the change wasn't super dramatic. I think the final image looks way cleaner and stands out more than the original. If I could change anything about this image it would be to take the image from a higher elevation so the entire bottom cloud could be seen in the image because I think it creates an interesting contrast in the image.

Figures to be seen on the next page

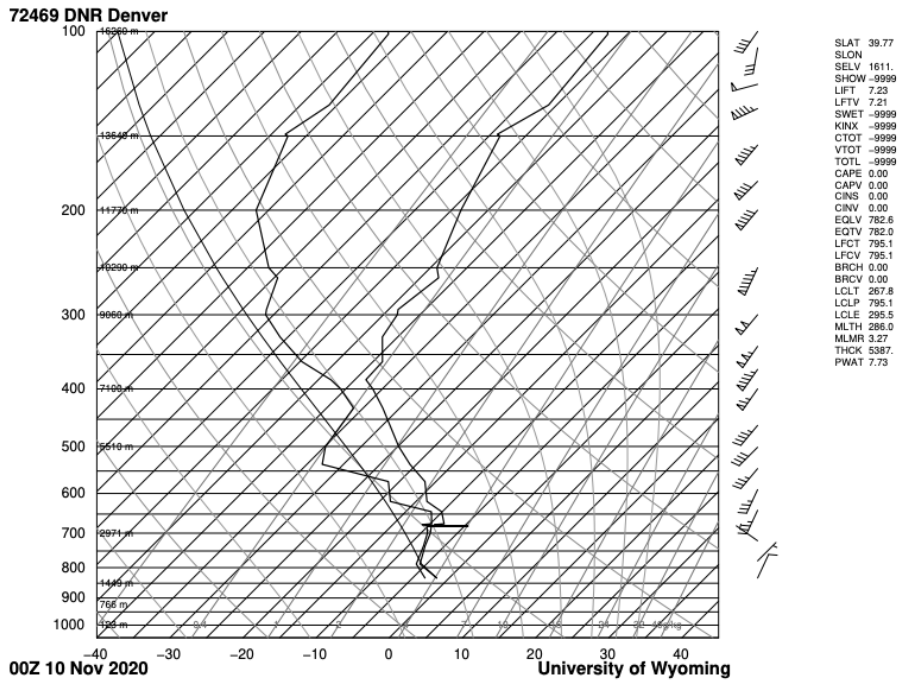
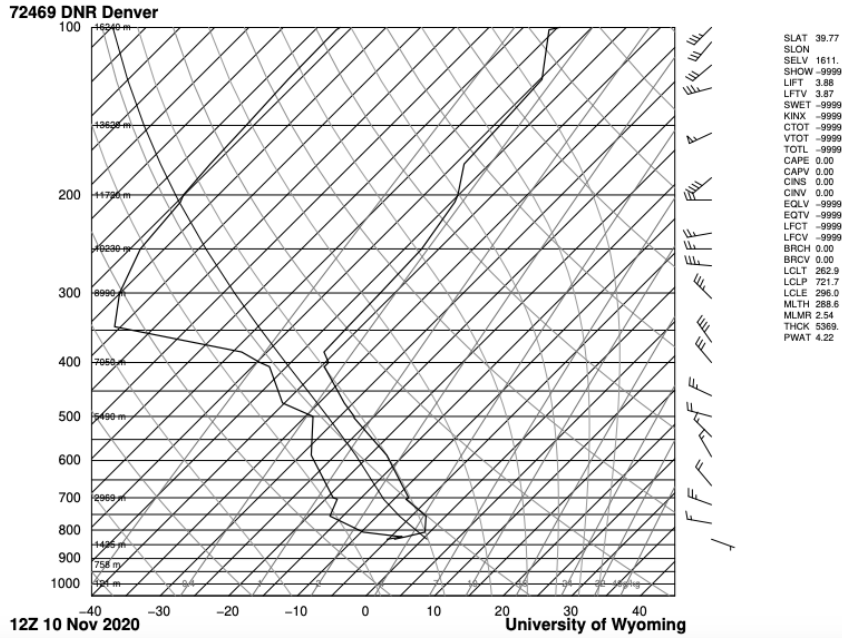


Figure 1; Skew-T diagrams for November 10, 2020 (both included since the image was taken at 12:00 pm exactly)

<https://www.flowvis.org/wp-content/uploads/2020/12/SkewT-Clouds2.pdf>

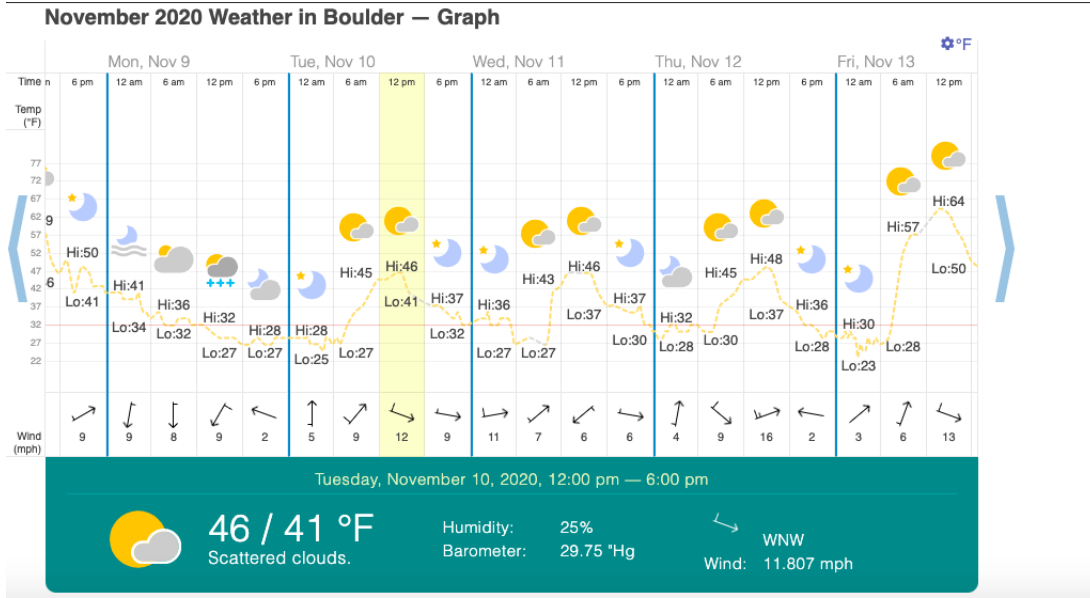


Figure 2; Weather report on November 10th and the surrounding dates

<https://www.timeanddate.com/weather/usa/boulder/historic?month=11&year=2020>



Figure 3; original image