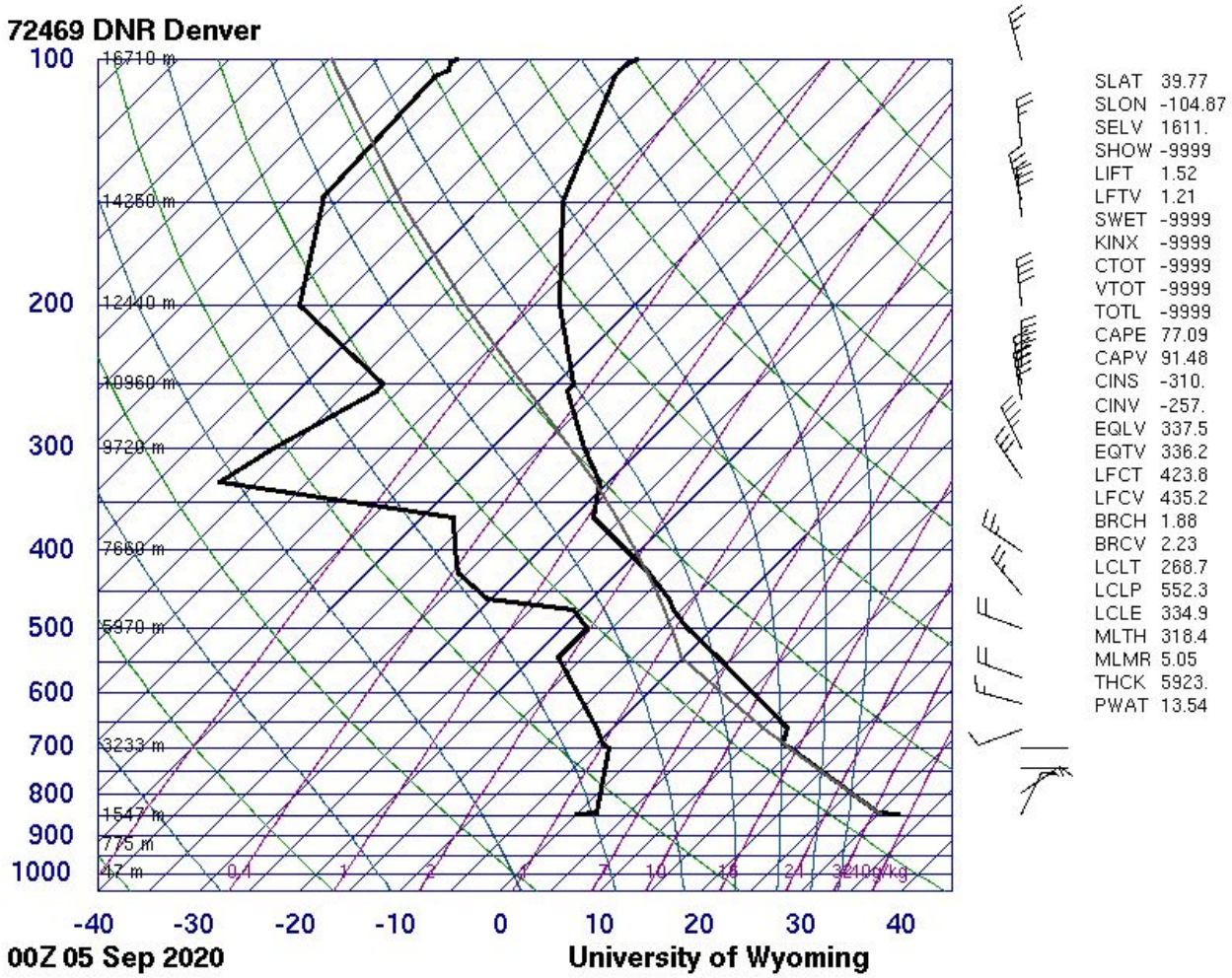
Jacob Christiansen
University of Colorado Boulder
College of Arts & Sciences Undergraduate
ATLS 4151-001
Cloud #1
10/26/2020

# Clouds Timelapse: Cumulonimbus & Rain Shower

The goal of this project was to capture cloud fluctuations as a passing shower rolled in. Specifically, I wanted to see how vast of a change could be visible over the course of a two hour period. I executed this experiment by capturing images from a mirrorless once every 10 seconds for a set period of time while the shower was passing through. Then it was put together as a video in post. The results of this project was this video: https://youtu.be/UVVgCjBjB9g. Here is a still for reference.

I set my camera up outside the northern facing window on the third floor of my apartment building (~40ft off the ground). I rotated the camera at an angle so the shot was pointing north westerly. It was also pitched a couple degrees positive, in order to balance the shot composition. My apartment is located just across the road (Colorado Ave) from CU Boulder's East Campus. The Department of Chemical and Biological

Engineering building is just to the right of the frame. This video was shot from 2:07PM – 4:36PM on Sept. 4th, 2020.




The clouds in this image seem to primarily consist of the Cumulonimbus variety, from my understanding. Cumulonimbus can commonly be observed during or around storms that pass through your area, which is why I identified them as such. Furthermore, the observable cloud height seemed to agree with my identification, although it might be harder to distinguish in the video than it was in real life. I estimate the cloud heights ranged from 5,000ft - 20,000ft over the course of the video. Before the storm rolled through, it was quite sunny but still obvious that some rain was coming. You can actually see some of the rain falling in the video, as well as a couple droplets on the lens. After I cut the timelapse, the weather stayed dreary with low visibility for the rest of the day. The winds weren't very strong throughout the storm, as evidenced by the tree movement in the video, but it wasn't calm either. In the Skew-T diagram above, you can tell that the atmosphere was in an unstable condition. The best evidence for this is in the CAPE value shown, clocking in around 77. This further matches my

identification. In terms of physics, Cumulonimbus clouds are very dense with water, and carried along by strong upwards air currents, which is consistent with the diagram.

**Specs:**

| | |
|---|---|
| Camera | Sony a7iii, mirrorless |
| Field of view | Estimated at ~65° |
| Distance from object to lens | ~5000-10000 ft |
| Focal length | 34mm |
| Shutter Speed | 1/10 sec |
| ISO | 100 |
| Aperture | f/22 |
| Software processing | Edited in Adobe Lightroom & Premiere Pro 2020. Grading: Slight boosts in contrast, vibrance, and sharpness. Slight reduction in highlights. Exported @ 30fps |
| Image width (final & original) | 6000x4000 px |

Original image:

What I enjoy most about this video is how it reveals the change in cloud patterns over the course of a storm. You can really see the small details, like the change in wind direction, how the cloud fluid physics evolved, and where exactly rain fell over the course of the two hours. These are things the images just simply can't capture, so I consider my intentions on this project fulfilled. There still is some room for improvement on future projects. I have questions about what other types of cloud might have been present, but not captured in the frame. I would like to maybe see a wider field of view capturing a similar situation. But overall I'm extremely pleased with the outcome!