

Aldwin Bretoux MCEN 4151: Flow Visualization Section 001 October 28th, 2020 Pyrocumulus, Altostratus, Cirrus 6:19 PM Boulder, CO For this assignment I decided that I wanted to try my hand at another cloud image, especially for the image that I was able to capture. Ever since I had captured this image I knew I wanted to use it to be able to explore some of the physics behind the photo. My intent for this photo was to capture some interesting photos with the large smoke clouds that had occurred during the Boulder wildfires.

I was able to capture this photo in the parking lot of the Bear Creek Apartments at 6:19 PM on October 21st 2020 I was on my way to the grocery store and saw the way that the smoke clouds looked with the sunset and other clouds in the sky and decided to capture it really quick on my phone before the sunset went away. I zoomed in a little bit and my camera was about 30 degrees from the horizontal.

Looking at the Skew-T diagram and the photo, I believe the clouds that are captured here are a mixture of cirrus, altostratus, and pyrocumlus clouds. Looking at the Skew T, the CAPE value in the was zero meaning that the atmosphere was stable, supporting these types of clouds as they appear in stable atmospheres. The cirrus clouds appear at the very top and are very wispy in shape . The altostratus clouds are more in the middle of the sky and appear long with visible thickness. Pyrocumulus clouds, the third type of cloud in this photo, are formed when the heat from wildfires are great enough to create an updraft and are usually dark in color thanks to the smoke from the fire.



Figure 1: Skew-T Diagram for October 21st, 2020

To capture this photo, I had used my iPhone 8 camera since that is what I had one me at the time and wanted to capture the sunset and not lose the opportunity. The picture was captured with dimensions of 3024 x 4032pixels, an F-stop of f/1.8, exposure of 1/118 sec, and an ISO of ISO-20 and focal length of 4 mm. I edited the photo in Darktable by first cropping out all the

unnecessary elements of the photo like the cars on the highway and some of the trees. I then darkened out the bottom part to bring more focus to the clouds. I wanted to create kind of a looming, ominous feeling from the clouds considering the situation that was happening at the time. Below is the original unedited picture that I had taken.



Figure 2: Original Image

Overall I'm really happy about how my image has turned out. I think cropping the photo improved the framing of the photo and the feeling and impact I get from the photo is increased from the colors from the photo. I also think the distracting elements of the photo have been removed and lets you really focus on the clouds. I think to improve this image further is to do a timelapse of the pyrocumulus starting to form from the fire.

Appendix

Specktor, Brandon. "What Are Pyrocumulus Clouds? California Fires Spawn Eerie Formations." *LiveScience*, Purch, 12 Dec. 2017, www.livescience.com/61167-what-are-pyrocumulus-clouds.html.

http://weather.uwyo.edu/cgi-bin/sounding?region=naconf&TYPE=PDF%3ASKEWT&YEAR=2020&M ONTH=10&FROM=2100&TO=2200&STNM=72469