

Clouds First

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Flow Visualization: The Physics and Art of Fluid Flow

The goal of this project was to capture an image of a cloud and be able to determine different metrics based on data and the look of the cloud. I found myself taking numerous cloud pictures since the initial mention of the Clouds First assignment in class. The images I had been taking throughout the semester featured more picturesque aspects of the clouds like bright colors at sunset. As we began discussing the assignment in class I discovered that my focus should be on the phenomena of the cloud itself rather than the sunset and the beauty of the colors.

To introduce my cloud picture, it was taken on October 8th, around sunset in downtown Denver, Colorado. This picture was taken near the Broncos stadium on i25 while I was in bumper to bumper traffic coming back to Boulder. Based on the Skew-T diagram for this day, at sunset and located in Grand Junction, we can see that there is some minor instability in the cloud due to the cape number being 2.30. This however does not indicate that there was any sort of weather system, the cape number would have to be much larger for this to be true. The lines on the diagram show that there are clouds around 1500m as well as 7500m. This cloud type appears to be stratocumulus clouds due to the flat bottoms, with the decent density of the clouds as well as the layering through out.

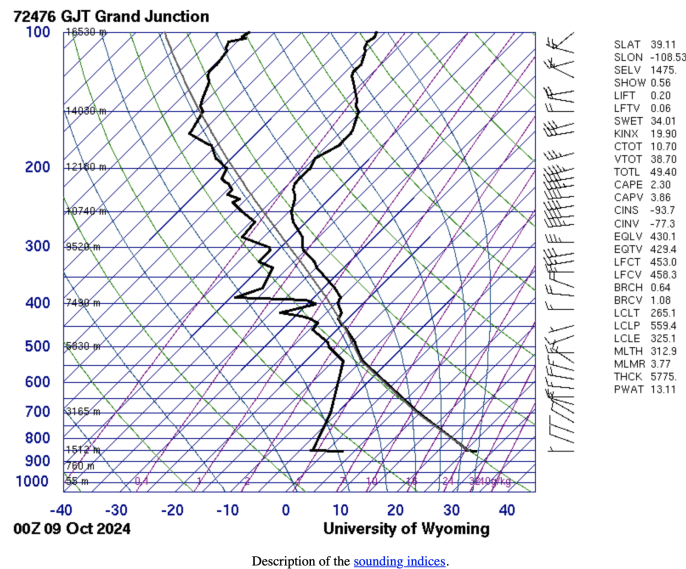


Fig. 1: Skew-T Diagram

This image was taken using my iPhone 14, which has two different cameras but I decided to utilize the 1x camera rather than the 0.5x or wide angle lens. Looking back at the image I wish I would have tried the 0.5x camera because I feel like the scale of the clouds would

have been much more impactful. The iPhone camera is mostly automated so the settings that ended up being used were a 1/25000 shutter speed, f/1.6 f-stop, 5.1mm zoom, and 40 ISO. The image size was 4032x3024 pixels which I sized down to 1156x866 pixels in order to fit the requirements of upload on the Flowvis website. The two images below show both the raw image and the edited image.



Fig. 2: Unedited Raw Image



Fig. 3: Edited Final Image

My choice for editing was very minimal, I think that the contrast of the bright sun shining through the parting of the dark clouds speaks for itself in this image. For the most part all I edited was the darks and lights to try and make the dark clouds really outline the light clouds breaking through the center of the image. I decided to leave the image uncropped to try and give a sense of depth with the trees and structures on the ground. In the critique people had found this as a distracting element and going forward I will crop out this type of feature to prevent distractions from the focus.

For the second cloud image post and going forward for all cloud imaging I will try to capture the magnitude of the cloud and try to focus on the cloud rather than other elements. I will also edit the image in a way that is more efficient than modifying the saturation and darkness/brightness values. This could be achieved by using the color graph that is in darktable. Overall, I think this cloud picture is very interesting and shows the unique stratocumulus cloud type that also has an interesting part in the middle to show the sunlight poking through.