Name: Pedro Valdez

Cloud type: Cumulus-type cloud

Date: October 9, 2026

Time: Approximately 5:00–6:00 PM MDT

Location: Boulder, Colorado

Clouds First: Capturing Cumulus Cloud Structure

I decided to take a picture of a cloud for this assignment. I wanted to be able to see its shape and texture. There was one big puffy cloud that I wanted to use. I wanted to display how it looked like it had 3D dimensions with bumps on the outside and some lighted areas and some darker areas. I wanted to compare my picture to data that we learned about clouds in class and what causes them to grow the way they did. Such as using a skew-T diagram and using cloud base height data from the skywatch ceilometer at the University of Colorado Boulder.

This picture was taken on October 9th, 2026 at approximately 5-6 pm MDT. I used my iPhone 17 pro max and pointed it towards the west at > 45° above the horizon. The sky was blue and some parts of the cloud had light hitting it while others were a bit darker/grey. It was getting windy throughout the day and I do not believe it was raining. I took this picture at a steep angle so I could get a better look at the clouds shape and texture.

The cloud in the picture appears to be a cumulus cloud due to it being round and fluffy looking. Air rises and as it rises it cools because atmospheric pressure decreases. If the air cools enough then water vapor will begin to condense into tiny cloud droplets. If the conditions are favorable for air to keep rising then the cloud can continue to grow vertically. Many factors can play a role in cloud growth such as atmospheric stability and moisture content. As well as heat from the ground and wind speed.

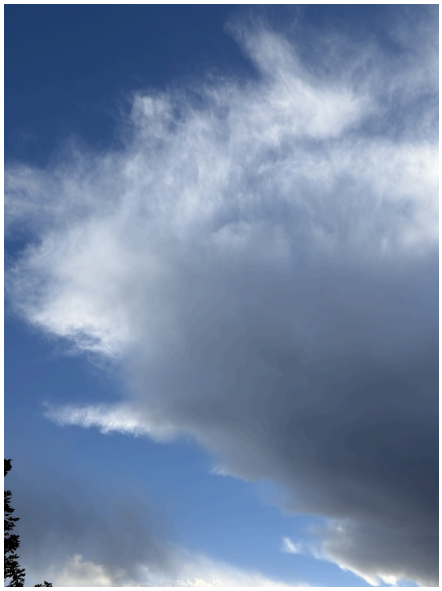
I looked at the skywatch ceilometer graph from the University of Colorado Boulder. Throughout the evening it showed detections of cloud base at varying heights. There were many times where it showed cloud base detections around 4-4.5km. And lower at other times. These numbers can be used to tell you where there is a detected cloud base. It would not tell you the cloud top height. Since it changes so much I don't think it would give us the cloud height for this picture.

I found a skew T diagram from the ECMWF models. You can see where temperatures and dew points are at certain heights in the atmosphere. With these numbers and environmental temp we can find if our atmosphere is stable or unstable. I couldn't find a diagram that matched the location of this photo so I used this diagram. Which was at 03z on 10/10/26. I don't know for sure that this picture had rising air but based off my picture it seems that it does.

There is no way for me to find out how tall this cloud is from the picture that I took. The skywatch ceilometer only shows where cloud base is located. I didn't notice any rain that day but I know that the wind picked up as the day went on. I would have to find past weather history to know if there was any fronts coming in. What direction and speed the wind was blowing at and if our atmosphere was stable or unstable.

I used my iPhone 17 pro max to take this picture. I faced my camera west and had it tilted at an angle of >45° from the horizontal. I did not mess with any camera settings, I just kept them on by default. The picture is a 24 megapixel picture with a 4:3 ratio. I edited my picture to make it a little nicer and cut out some of the clouds. I wanted to cut out the extra clouds so my audience could pay attention to the shape and texture of my main cloud.Futhermore, I brought back some of the trees to show how I was looking up to see such cloud.Also I created multiple layers and changed the lighting/highlights and shadows to bring out the cloud more. Below includes the original picture and my final edited picture. Also based on apple the default specs would be the following “f/1.78 aperture, second-generation sensor-shift optical image stabilization, 100% Focus Pixels”.





I enjoy that my picture allows the audience to see the shape of the cloud. Having the blue sky made it easier for them to see the clouds bumps. By cutting out the other clouds around my cloud it makes it stand out more. I feel as though I accomplished my

goal for this picture which was to get a good view of a cloud shape. It was beneficial to compare my picture to other images and information to learn about how clouds are able to form and grow. In further investigation I would want to find a skew T diagram that is more in correlation to my pictures location and time. And try to find my clouds height. Maybe take multiple pictures of my cloud throughout the day to see how it morphs with the wind.

References

Apple. (n.d.). *iPhone 17 Pro and iPhone 17 Pro Max — Technical specifications.* https://www.apple.com/il/iphone-17-pro/specs/

European Centre for Medium-Range Weather Forecasts (ECMWF). *Model Skew-T sounding initialized at 18Z October 9, 2026, valid at 03Z October 10, 2026, for 38.66° N, 105.91° W.* [Insert the URL of the page where the sounding was obtained.]

University of Colorado Boulder. *Skywatch*. https://skywatch.colorado.edu/