

Clouds 1

Benjamin Carnicelli

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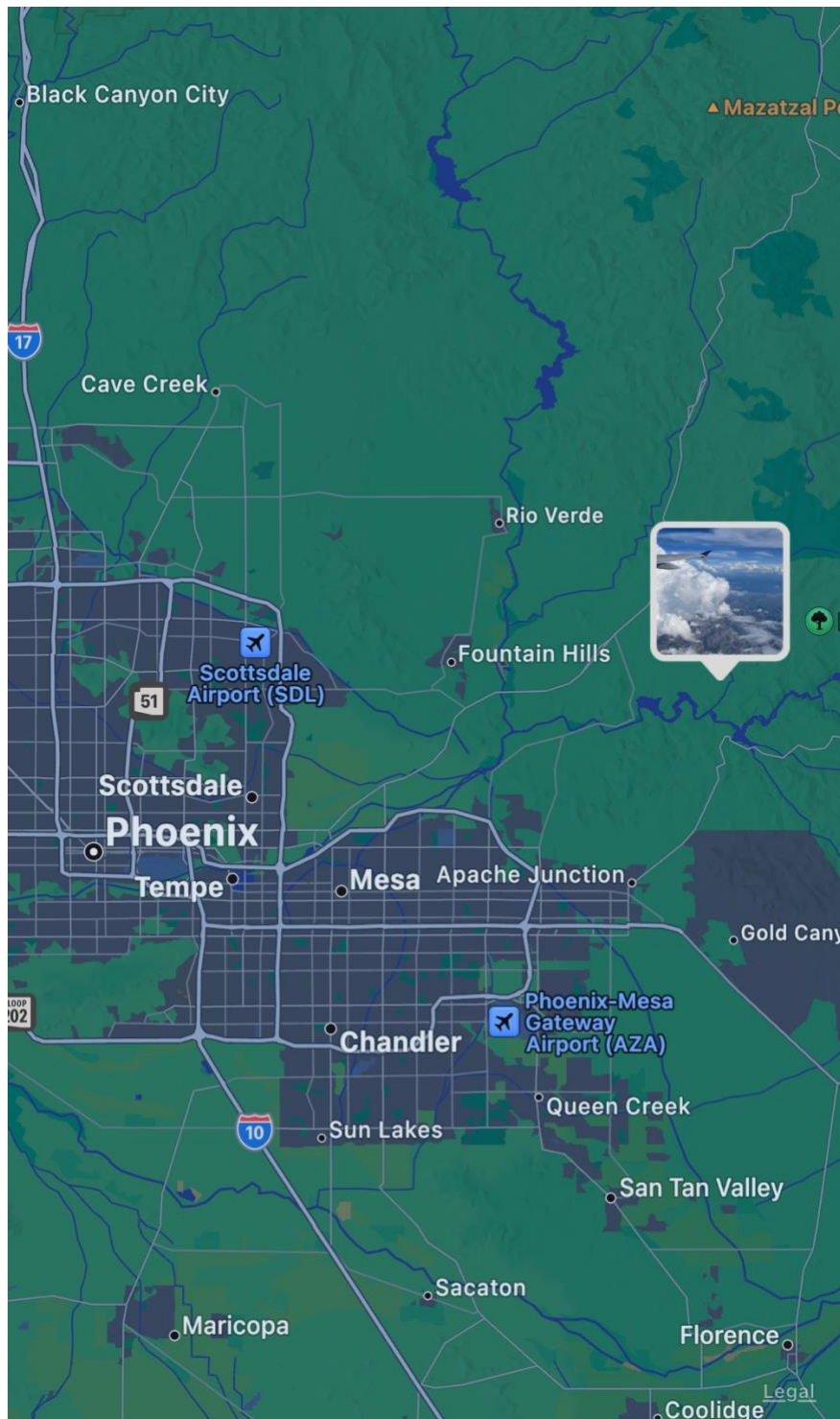


Introduction:

Although I tend to get motion sick on planes, I've always enjoyed a window seat just for the experience of being able to see the clouds and ground below me. When I flew to Arizona on August 24th, 2022, to see family I was able to capture this picture out the window of the clouds somewhere near Phoenix. The image shows a large cumulonimbus near the plane along with multiple smaller ones in the distance and some Cirrus clouds above.

Circumstances:

Due to this photo being taken from a plane and the constraints that come with airplane mode, it is difficult to know exactly where this photo was taken. Luckily this was taken on an iPhone with location services turned on, so it gives me a guess to where the photo was taken. The image data for this is shown below.



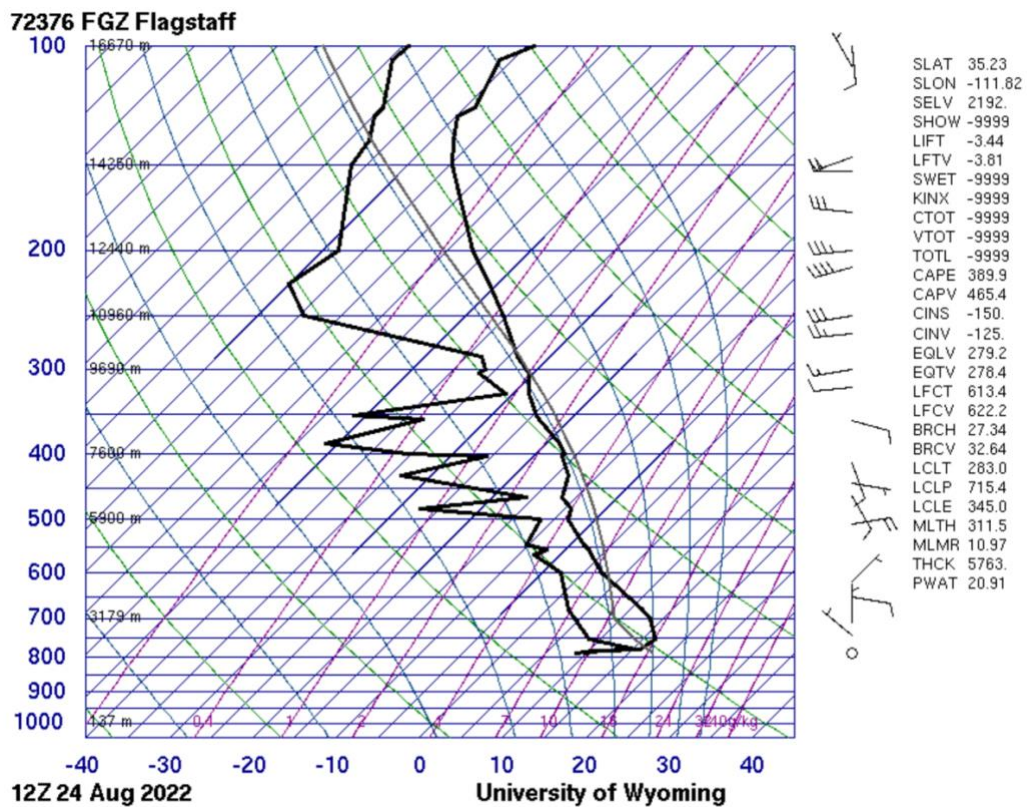
This is the approximate location that Apple suggests for the location of the photo but I'm not sure how much I believe it as I was flying to Phoenix airport (not either of the ones shown in the image weirdly) which is just west of Tempe shown in the image. I believe that the photo was taken about 30 minutes prior to landing and given that airplanes fly at ~500 mph this seems a little bit close to Phoenix. I wonder if the location shown is just when my phone first got GPS connection after the photo was taken. When mapping the distance between a guess for this point and Phoenix airport it seems to be around 45 miles which would be around 6 minutes away if travelling "as the crow flies" at 500 mph. That being

said, I believe the photo was taken somewhere near this location so we will use Phoenix as an approximate location for further analysis on this image.

The weather on August 24th at 5:51 pm was 103°F with a 12mph eastern wind. The humidity was 27%¹. The weather prediction showed partially cloudy all day. We can also guess the height of the clouds by

Cloud Data:

The closest available skew-T diagram location for this image is from Flagstaff, a city about 150 miles north of Phoenix. The Skew-T diagram shows the atmospheric conditions at a range of temperatures. It can be used to guess cloud height by noting where the left and right black lines get close to each other. Based on the diagram below it would make sense that the cloud in the image is near the 9690m mark as this is roughly the height planes fly at (30,000 – 40,000 ft) and the cloud looks about level with the plane. In the distance in the image you can also see some clouds at lower heights which makes sense with the Skew-T diagram below. There are multiple other sections where the left line dips back towards the right line.



Photographic Techniques:

This was taken on an Iphone 11 using the wide camera. It had a focal length of 32mm, an f-stop of 1.6, an ISO of 32, and a shutter speed of 1/9091s. The original image was 4032x3024 pixels. All of this was automatically selected by the Iphone. The post processing

¹ <https://www.timeanddate.com/weather/usa/phoenix/historic?month=8&year=2022>

includes some color correction to increase the contrast seen in the clouds and cropping to remove unneeded information.

Artistic Techniques:

The goal of this image was to get as many of the multiple different types of clouds shown and to get the airplane wing to show scale. When looking out the window of the plane there were smaller wispy clouds lower down with the large cumulonimbus cloud in the center of the image and the cirrus clouds above. I feel like this image really helps to show the variation in cloud types at this height. If this was taken from the ground at the same location it would be very difficult to pick out the different types of clouds. Being in the air at such height really shows the depth of each cloud and the different altitudes that they reside at.

Bibliography

University of Wyoming. (2022, August 24). *Grand Junction Skew T*. Retrieved from University of Wyoming Weather: <http://weather.uwyo.edu/cgi-bin/sounding?region=naconf&TYPE=GIF%3ASKEWT&YEAR=2022&MONTH=08&FROM=2412&TO=1400&STNM=72376>

Past weather in Phoenix, Arizona, USA - August 2022. Weather in August 2022 in Phoenix, Arizona, USA. (n.d.). Retrieved November 14, 2022, from <https://www.timeanddate.com/weather/usa/phenix/historic?month=8&year=2022>