

## Clouds Assignment

For the initial clouds assignment the intent was to capture the flow of the clouds and an easily identifiable cloud while making a rather interesting photo. I went about by looking for a day where there would be relatively visible skies and small amounts of clouds that were easily identifiable. I went about looking towards the sky, and captured what seems to be a stratus cloud that broke off from a mountain wave cloud. I took several images of the same cloud throughout time to notice what was happening to the cloud with time.

The final image of the cloud was taken in Boulder, CO at roughly ~100 feet from South 44<sup>th</sup> street. The angle of the shot was nearly 90 degrees to the horizontal of the street. More simply put the images were taken as straight up as possible to reduce the possibility of getting the sun in the image and reduce damage to the camera. The final image was taken on Tuesday February 21<sup>st</sup>, 2012 at 4:00 pm which is approximately 2200 UTC time. The image was also taken with approximately at 5x zoom. Then there were several shots taken of the same cloud to conclude that it was breaking up/ dissolving as time went by.

The best description of the cloud viewed in my image is a most probable a stratus<sup>1</sup> cloud. This is based on several factors and evidence collected by physical conditions of the day and the data collected from the attached skew-T plot. In terms of physical observations of the sky that day the appearance of clouds were far and few. In the morning there were a few more clouds but as the afternoon rolled around there were few numbers of what would most likely be stratus and altostratus clouds. More so the day before and after had numerous clouds of different types and felt rather windy compared to the day the photo was taken.

The physical observations were that there was little wind that day especially at in the afternoon. It also was seen that the sky was rather clear in terms of amounts of clouds. Also according to the data collected from the skew-T plot the CAPE was 0 so the atmosphere was rather very stable and the cloud formed at roughly 6590m in elevation. Also, the temperature was roughly 30 degrees celsius at around 500 millibar which could very possibly be the conditions for a formation of a stratus on a stable day. The physics of cloud would also seem to make sense based on the plot because I photographed the same cloud multiple times and watched as it was torn to pieces, this would possibly coincide with the fact the winds at the elevation were very fast and could have been the cause for the dissipating of the cloud.

The photograph technique used was quite simple but crafty. The biggest obstacle was overcoming the suns glare on the lens of the camera. For the clouds image I used a point and shoot Sony Cyber-shot Exmore because of its smaller size made it easier for me to carry nearly everywhere. The problem was that with this point and shoot there was glare when directing the lens straight up trying to take a picture of the cloud. This was easily fixed by the application of my hand near lens not allowing direct sunlight resulting in no more glare. The image was taken with a 10.2 megapixel Sony Cybershot

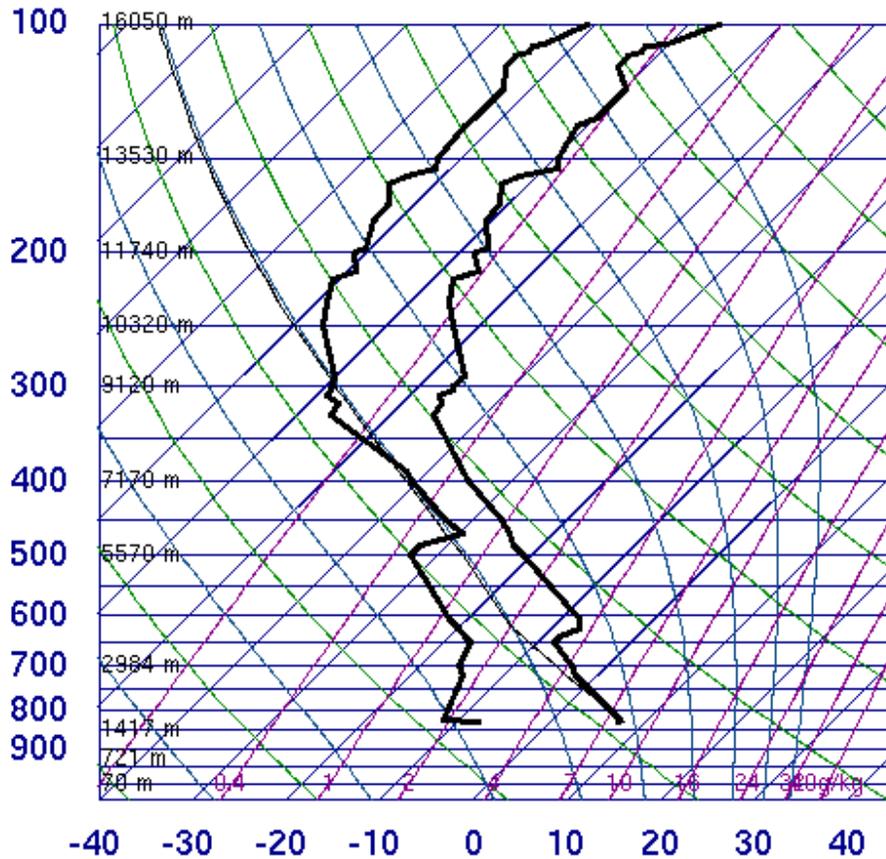
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<sup>1</sup> "Learn How to Identify Cloud Types | Sciencera", n.d., <http://sciencera.com/earth-sciences/meteorology/learn-how-to-identify-cloud-types/>.

digital camera and resulted in dimensions of 3648x2736 pixels. Also, the image was taken with an F-stop of f/6.3, as well as an exposure time of 1/640sec, and an ISO of 125. More so the focal length was 14mm and there was a max aperture of roughly 3.625. Then the only post image photo manipulation was an adjustment of the levels to give an overall more saturated color to really make the clouds pop out from the rest of the sky.

Overall the image revealed exactly what I had in mind. It was ideal in that it was a picture of just a single cloud. It was also nice that the cloud was relatively easy to identify due to it being one of the only clouds that day. It was also a good example of how the fluid physics of clouds work it shows definitely how pressure, temperature, and condensation can be put together to create a very unique cloud. Mostly my intent was fulfilled next time I would like to take a enough series of images to stitch together a frame by frame movie of how the cloud was evaporating. Also, in the future I will plan ahead and use some sort of device to reduce the glare from the sun and next time I will change my ISO to adjust for the amount of light in the cloud.

### 72469 DNR Denver



*Handwritten notes:*  
 100 hPa  
 200 hPa  
 300 hPa  
 400 hPa  
 500 hPa  
 600 hPa  
 700 hPa  
 800 hPa  
 900 hPa

SLAT	39.75
SLOE	-104.87
SELE	1625.
SHOW	-9999
LIFT	6.44
LFTV	6.39
SWET	-9999
KINX	-9999
CTOT	-9999
VTOT	-9999
TOTL	-9999
CAPE	0.00
CAPV	0.00
CINS	0.00
CINV	0.00
EQLV	-9999
EQTV	-9999
LFCT	-9999
LFCV	-9999
BRCH	0.00
BRCV	0.00
LCLT	257.7
LCLP	612.7
MLTH	296.4
MLMR	1.89
THCK	5500.
PWAT	5.30

00Z 22 Feb 2012

University of Wyoming

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Flow Visualization Spring 2012

Benjamin Pacheco

03/5/2012

References:

“72469 DNR Denver Observations at 00Z 21 Feb 2012 - 00Z 22 Feb 2012”, n.d.

[http://weather.uwyo.edu/cgi-](http://weather.uwyo.edu/cgi-bin/sounding?region=naconf&TYPE=GIF%3ASKEWT&YEAR=2012&MONTH=02&FROM=2100&TO=2200&STNM=72469)

[bin/sounding?region=naconf&TYPE=GIF%3ASKEWT&YEAR=2012&MONTH=02&FROM=2100&TO=2200&STNM=72469](http://weather.uwyo.edu/cgi-bin/sounding?region=naconf&TYPE=GIF%3ASKEWT&YEAR=2012&MONTH=02&FROM=2100&TO=2200&STNM=72469).

“Learn How to Identify Cloud Types | Sciencera”, n.d. <http://sciencera.com/earth-sciences/meteorology/learn-how-to-identify-cloud-types/>.

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[sciencera.com/earth-sciences/meteorology/learn-how-to-identify-cloud-types/](http://sciencera.com/earth-sciences/meteorology/learn-how-to-identify-cloud-types/).

<sup>2</sup> “72469 DNR Denver Observations at 00Z 21 Feb 2012 - 00Z 22 Feb 2012”, n.d., <http://weather.uwyo.edu/cgi-bin/sounding?region=naconf&TYPE=GIF%3ASKEWT&YEAR=2012&MONTH=02&FROM=2100&TO=2200&STNM=72469>.