Cloud First

Michael Guenther

Flow Visualization: 4151-4200-001

Stratocumulus | March 05, 2018 | 12:30 PM | Table Mesa Dr, Boulder CO

This picture was taken for the first cloud assignment. It is meant to capture a stratocumulus (a stable low altitude) cloud's behavior on a moderately windy day. There were some delays in taking this picture because of the wind and how it affected the clouds on March 5th. However, some lucky timing and a decent viewing angle allowed for this picture to be taken.

As stated before, the image was taken on March 5th in Boulder Colorado along South 40th Street around 12:30 pm. The camera was positioned facing south west at an inclined angle of approximately 30 degrees from the horizon. The initial image is shown below in Figure 1.
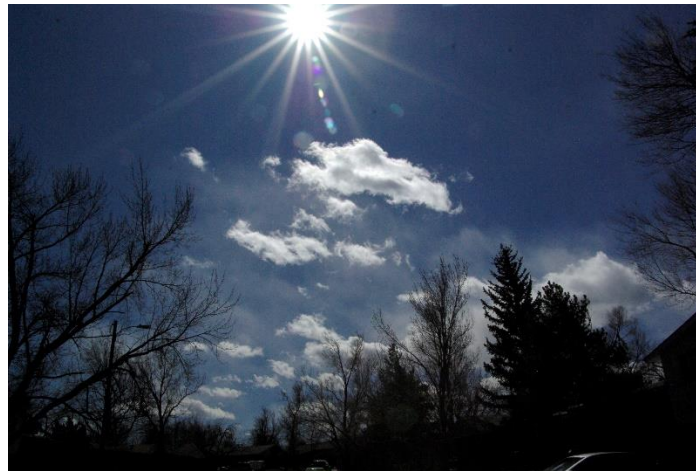

Figure 1: Original Picture

Besides the clouds in the picture the rest of the sky was mostly clear, and it was expected to remain clear for the remainder of the day. The National Weather Service foretold no significant weather fronts approaching that day, and there was no precipitation of any kind. There was an average windspeed of 20 miles per hour in a western direction, and according to Weather Underground the wind speed was 35.7 miles per hour in a west by south west direction at the time the picture was taken. The elevation of the clouds that day can be calculated through Equation 1.

$$(1) \quad \frac{Temp - Dew\ Point}{4.4} * 1000 + Base\ Elevation = Cloud\ Hieght$$

$$\frac{37.4-(-4)}{4.4} * 1000 + 5430ft = 14830ft \text{ or } 4.5 \text{ km}$$

A Skew-T diagram provided by Wyoming University, shown in Figure 2, provided information that indicated that the atmosphere was stable that day. This expected altitude and the atmospheric data provided are both conducive to the formation of stratocumulus clouds. The clouds in this picture are under the influence of winds that reach speeds of up-to 60-70 miles per hour in a western direction, giving them a dynamic feel inside this still.
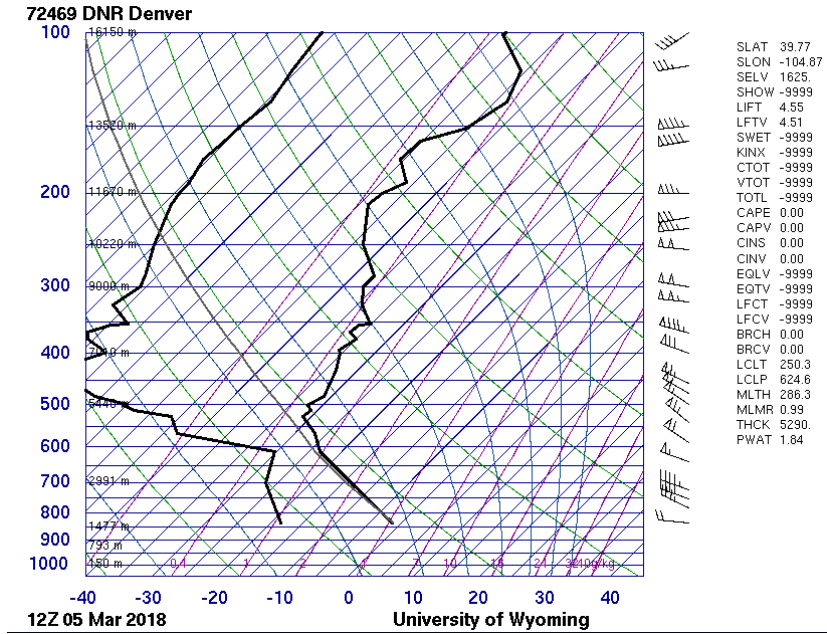
Figure 2: Skew-T Diagram

This picture was taken with a Pentax K10D SLR Digital Camera with the cloud seemingly 3 km away from the lens. The camera specs at the time of the picture are shown in Figure 3. As for the post-processing the image's color was adjusted as seen in Figure 4, and then cropped to a size of 2362 by 1692 pixels.
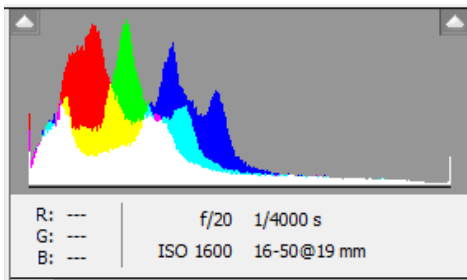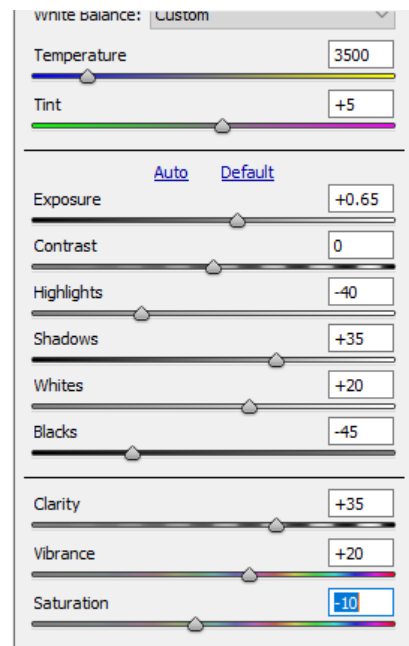

Figure 3: Camera Settings

Figure 4: Picture Modifications

This picture displays a more dynamic nature of clouds on a windy day. I enjoy the wispy nature of the clouds, but it would be nice if the shape of the clouds were more distinct and interesting to look at. The clouds demonstrate an interesting integrity to their original formation while they are degenerating due to wind. In the future it would be nice to get a better perspective to further evaluate the nature of the clouds.

References:

National Weather Service Climate. (2005, October 24). Retrieved March 23, 2018, from
       http://w2.weather.gov/climate/index.php?wfo=BOU

Weather History for KBDU - March, 2018. (n.d.). Retrieved March 23, 2018, from
       https://www.wunderground.com/history/airport/KBDU/2018/3/5/DailyHistory.html?req_city=
       &req_state=&req_statename=&reqdb.zip=&reqdb.magic=&reqdb.wmo=