# Cloud Second

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Flow Visualization: 4151-4200-001

Nimbostratus | April 07, 2018 | 17:30 PM | Hanover Ave, Boulder CO

This picture was taken for the second cloud assignment. It was meant to capture the diffusion and reflection of the sun through a cloud. It was originally thought that this cloud was an altostratus cloud, but some calculations revealed it is a nimbostratus cloud. This is strange since a nimbostratus is typically considered a stable rain cloud, but considering it rained earlier that day it is understandable. This cloud is probably the remnants of the rain cloud after it released most of its moisture.

The image was taken on April 7th in Boulder Colorado along Hanover Ave around 5:30 pm. The camera was positioned facing west at an inclined angle of approximately 20 degrees from the horizon. The initial image is shown below in Figure 1.

*Figure 1: Original Picture*

The clouds in the picture extended over the entirety of the sky, and it remained that way for the remainder of the day. The National Weather Service foretold no significant weather fronts approaching that day, but there was a slight bit of precipitation earlier that day. There was an average windspeed of 1 mile per hour in a northern direction, and according to Weather Underground the wind speed was 3.5 miles per hour in a north-eastern direction at the time the picture was taken. The elevation of the clouds that day can be calculated through Equation 1.

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

$$\frac{50-35.6}{4.4} * 1000 + 5430ft = 8703ft \text{ or } 2.7 \text{ km}$$

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 give the reason to why this cloud was classified as a nimbostratus instead of an altostratus. The clouds in this picture are under little to no influence of the wind, which only reach speeds of up-to 5 miles per hour in a northern direction. This allows them to keep their thin sheet-like shape and diffuse the sunlight.

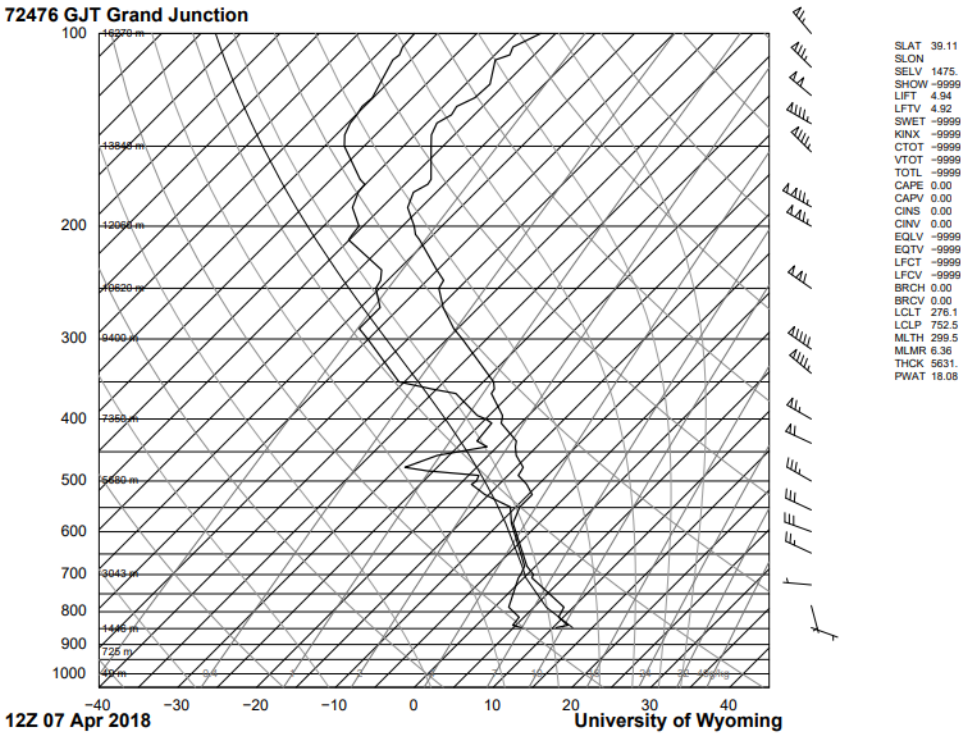


*Figure 2: Skew-T Diagram*

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 along with majority of the picture's post-processing. The image's adjusted curves are displayed in Figure 4, and it was cropped from a size of 3872 by 2592 pixels to 2566 by 1608 pixels.

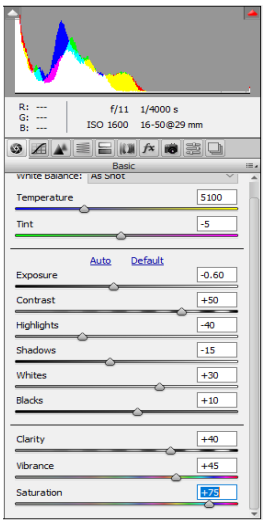


*Figure 3: Camera Settings/Picture Modifications*

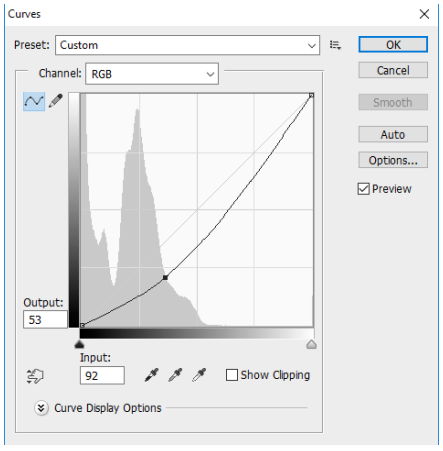


*Figure 4: Adjusted Curves*

This picture displays a focus on the effect clouds have on the sun's light. I enjoy the ominous nature of the light seeping through 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 backwash to the entire picture in general since they are not the primary focus of the picture, but they are the entire reason it came out like this. In the future it would be nice to get a picture of an actual altostratus to compare the two.

References:


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