

The image described in this report is one that completes the Clouds 1 image assignment. The purpose of this assignment was to photograph numerous images of clouds and after many photographs were taken, the photographer was to choose a final desired cloud image. The photographs were meant to help the photographer visualize and experience the physics and flow phenomena of clouds. Too often clouds are overlooked and their beauty misjudged, but when one pays close attention and learns the physics behind the numerous types of clouds, a true appreciation can be achieved. For this assignment, I was trying to find a cloud image that resembled a stormy cloud.

The image was taken on February 13, 2010 at Boulder Reservoir in the afternoon at about 2:00 PM looking between the south and south-east direction. This large group of clouds was several miles away in the distance, so the picture was taken at a small angle above the horizon. The first few images showed the horizon about 1/5<sup>th</sup> of the way from the bottom of the image. But the original photograph to this image was zoomed in and taken at an angle slightly greater than those images with the horizon in the picture.

When I first began analyzing the cloud image, I had thought it looked very much like a Cumulus Congestus cloud. But I was only paying attention to the top of the cloud where it looks like cauliflowers. I also found that for it to be classified as a Cumulus Congestus, it needs to be taller than it is wide, and this cloud does not fit that description. Then I began to think that it was a Cumulus Mediocris cloud because of the moderate vertical extent compared to the horizontal size and also it displayed sprouting at the top. The other option that this cloud could be is a Stratocumulus cloud, this is because they are usually composed of clumps or rolls and they often show strong variations in tone (from bright white to darker grey). Though, my only issue with the clouds being classified as Stratocumulus is that Stratocumulus clouds are joined into a layer, and Cumulus clouds are detached. After closer inspection of this image and research into the Skew-T plots, I believe this image captures a transition from a Stratocumulus stage to a Cumulus Mediocris and might have possibly lead to a more stormy cloud such as a Cumulus Congestus due to the instability of the atmosphere on this day. This cloud was off in the distance so more detail could possibly found if the cloud was to be inspected and photographed at a closer viewpoint. Though, this image shows the very height and width of this cloud and after adjusting the curves in Photoshop, it can be seen that this image captures large clumps of clouds coming together. The top of the sky above the cloud was very blue and calm, with the tops of the cloud

very white. The bottom of the sky and the clouds were very dark and gloomy. Earlier in the day, before this picture was taken, the clouds were very calm and the Skew-T for the morning (2/13 12:00Z) showed a cape of 0.00, being stable. The Skew-T for the afternoon (2/14 0:00Z) showed a cape of 1.38, thus, leading me to believe that these clouds were formed and continued to grow due to the atmospheric instability. These clouds were not close enough to determine if they caused any snow or rain, but due to the very dark appearance under the clouds, I believe some sort of precipitate was formed at the time of this picture. From viewing the precipitation line of the Skew-T plot and the height range for certain clouds, I believe these cloud forms were in the 3,000-7,000 ft range (very roughly estimated).

I experimented with several different photographic techniques when taking pictures of clouds. I was unable to attain a tripod, so most of my pictures were taken with a normal to fast shutter speed in order to achieve clarity, as well as a trying to use a low F-stop number to achieve a good depth of field. This picture was taken with a focal length of 60 mm, a shutter speed of 1/1250 second, an aperture value of f/4.9, an ISO of 80, and no flash was used. The camera used was a digital Canon Powershot SX110 ISO. The size of the image in pixels is 3456 pixels in the x-direction and 1542 pixels in the y-direction. The estimated distance of the clouds horizontally is approximately 2-2.5 miles. The Photoshop processing that was done was a Curves adjustment, adding more blue and increasing the contrast. Then I adjusted the Levels, increasing the intensity. And finally, I used the Brightness/Contrast tab to increase the contrast to 25.

The image reveals the transition between Stratocumulus clouds to a Cumulus Mediocris cloud due to instability of the atmosphere. The thing I really like about this picture is that when I first look at the image, I get mixed feelings about what is happening. The tops of the clouds are so bright and white, the sky is blue, it feels calm, and happy, but the darker bottoms of the clouds catch your eye and as you look at the image longer and longer, the darkness below the clouds give you a feeling of a weird calm anger and mess below the clouds. I dislike that the image is somewhat pixelated; I was using my friend's Canon Powershot because I did not have my camera available the day I took this photo. I feel that if I would have taken the photo with my camera in a RAW format, the darkness of the clouds would be less pixelated. I also wish I was able to get a more definite estimate on the height and distance of these clouds. For the Clouds 2 assignment, I hope that I can take an image of a very angry, tall, and dark Cumulonimbus cloud that rises very high into the atmosphere.