"Clouds"

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Context and Purpose

All too often people look at the weather as an annoyance. The cold causes icy roads, heat is uncomfortable to exercise in, and fog and snow make it hard for people to commute. As a result of all good and bad weather is the formation of clouds. Different types of weather create different clouds supplying unlimited possibilities for taking photographs. The intention of this photograph was to capture the beauty behind weather that is normally looked at as an annoyance and taken for granted.

Background and Theory

To determine the type of cloud that was photographed details of the weather was important for the day the photograph was taken. The date of the photograph was logged on January 30 which allowed for the conditions of the day to be researched using Reference 1. Unfortunately the Skew T plot was unobtainable. The weather several days before the photograph was taken consisted of cool temperatures and overcast with light precipitation. High winds that day suggested a low pressure warm front was moving in causing the existing high pressure system to diverge. Warmer weather several days following the photograph proved the theory correct. The clouds were low, starting at about the tops of the Front Range Mountains suggesting that the altitude was around 8500 feet. The color, as featured in the photograph, was that of opaque dark gray. The clouds at times appeared to be blurry. Nimbostratus clouds carry similar traits to the description of the clouds that day. Nimbostratus clouds are precipitation clouds that are dark, sometimes appear blurry, and reside at low altitudes and are assumed to be the type photographed.

The photograph is separated by dark Nimbostratus clouds on the left and then red, pink and orange highlights on the right with vortex motion within the cloud centered. The vortex type motion may be caused by the high winds moving down the flatirons and circulating back upwards. This upward motion would further help to solidify that the clouds are Nimbostratus because the upward motion of air allows for moisture to be gathered in the atmosphere creating possible thunderstorms for the eastern plains. Nimbostratus clouds are often a precursor to thunderstorms on the eastern plains. The clear weather on the right side of the image is due to the warm front pushing the cold air out east.

Visualization Technique

The technique used to capture the supplied image was fairly simple. The camera was set to focus on infinity to enable the clouds to be in focus. The weather was mostly overcast causing the natural lighting to be low. The exposure was set to a lower setting to compensate for the light. A wide angle lens was used to help maintain appropriate exposure length while allowing ample amounts of light to take the picture. Buildings and trees were blocking the view from ground level so the picture was taken from the third story of an apartment complex. No external lighting was used to take the photograph.

Photographic Technique

Technique is limited when taking pictures of clouds in comparison to that of more complicated human procured motion. The use of filters can alter the lighting and change the contrast of the image, but most often beautiful images of clouds come with just taking a plethora of photographs. The main technique for gathering this image was to just take as many photographs in as many different orientations as possible in order to obtain the best image.

- Field of view: .5 mile
- Distance from object to lens: 2700 feet
- Lens: 28mm, Wide Converter Nikon WC-E80 0.8x
- Camera: Digital, Nikon COOLPIX 5700
- Exposure: Aperture F2.8, Exposure 1/200 sec
- Resolution: 2560x1920

Image Context and Conclusion

The image taken reveals an important aspect of science: the phenomenon of warm and cold fronts in the creation of clouds. Artistically the image is beautiful in the sense of contrast and accomplishes the original intent of the image. On the left gives feeling of a grim disgruntled mood, but it is being overtaken by the beauty of the refracted light on the right. I like the image because it has such contrast. The image suggests destruction replaced by beauty and growth of a better aura. What I do not like about the image is that it is not easily reproducible. The conditions have to be almost exactly the same which is at a very low probability.

One solution to the vortex flow is the circulation caused by the interaction of the mountains and the indentation of Boulder, however, circulation is caused by a multitude of other phenomena. I would like to know more about what type of flow phenomena happen at the trailing edge of storms and weather systems and if it deviates from the front of central sections of the storm.

References

1. National Weather Service,”Denver-Boulder CO”, Jan 30 2006, http://www.wunderground.com/US/CO/Boulder.html