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Film 4200 Flow Visualization
Prof Hertzberg
3/4/2011

First Clouds Image Report

While investigating the mechanics and phenomenon of various flows for the Film/Engineering class Flow Visualization, the class for its second project focused on the flow of clouds within our atmosphere. As a staple of weather classification, many people fail to see the complex underlying forces that create the unique variants of clouds. As a student of the University of Colorado at Boulder, the setting of Boulder presents its own unique combination of variables for cloud formation and flow. Resting at the base of the immense Flat Iron Mountain Range, the wind structure and atmospheric pressures are heavily affected. Clouds that move through and above Boulder tend to move incredibly rapidly and in a upward spiraling motion, slowly disintegrating into the upper levels of the atmosphere. I attempted to capture an image of a cloud whilst it is in a state of transitioning between levels of the atmosphere.

My image was taken on February 18, 2011 at 1:09 PM along the intersection of Broadway and College in Boulder, Colorado. Facing west and framed against the roof lining of a two-story house, the photograph captured a large cloud formation heading in a northwest trajectory. Taken on a tripod roughly three and a half feet off the ground tilted at a 45-degree angle skyward.

I believe to have successfully captured an image of a stratocumulus cloud formation as it begins to move progressively into a midlevel altocumulus cloud. By looking at the cluster located on the left, these clouds are clearly stratocumulus as

broken bits of blue sky penetrate through the gas despite its well-defined bases. Past the left frame line, the cloud formation extends far beyond into a much larger area. This stratocumulus can also be defined as duplicatus, as the clouds merge together at different altitude levels. In the middle and progressing into the above right composition is the disintegration into altocumulus. Easily described as patches of cloudlets. Still in its initial process the altocumulus is floccus in species, taking up a small area and exhibiting tufty aesthetics with ragged bases. By consulting Skew T plots and weather forecasts, a large approaching front created these clouds. The strong wind patterns over the Front Range drove the clouds east, then the atmospheric pressure generated by the approaching front caused the clouds to rise in elevation and progress northwest. Almost in a spiral motion, these clouds moved at high speeds and seemed to tumble and roll over each other until they entered a higher atmosphere and began to disperse. My estimated elevation ranges from 7k to 17k/18k.

Using a Digital SLR Canon Rebel XT armed with a 50mm lens I successfully exposed the image at an aperture value of f5.6 at 1/3000 sec. An ISO of 400 allowed me to capture the fast moving clouds and still retain crucial light detail. The distance to foreground elements was roughly 15-20ft. Beyond that the distance was 7k of elevation. In post I converted the image to grayscale and heightened the contrast to bring out the lining of the clouds and also to add a sense of depth.

The image reveals a transition of stratocumulus as it elevates to altocumulus. I believe the composition of the foreground elements add a sense of scale, depth and texture that would otherwise be a simple picture. In a perfect world I would have

wished for the trees to not exist, they are distracting and add foreboding tone in the grayscale. In the future I would like to combine artful architecture photography with clouds. Most cloud images tend to me rendered in a nature setting. I think the combination of architecture and cloud flow would pair very well.

Works Consulted

Pretor-Pinney, Gavin, and Bill Sanderson. *The Cloudspotter's Guide: the Science, History, and Culture of Clouds*. New York: Berkley Pub. Group, 2006. Print.