

Brock Ewing

Flow Visualization

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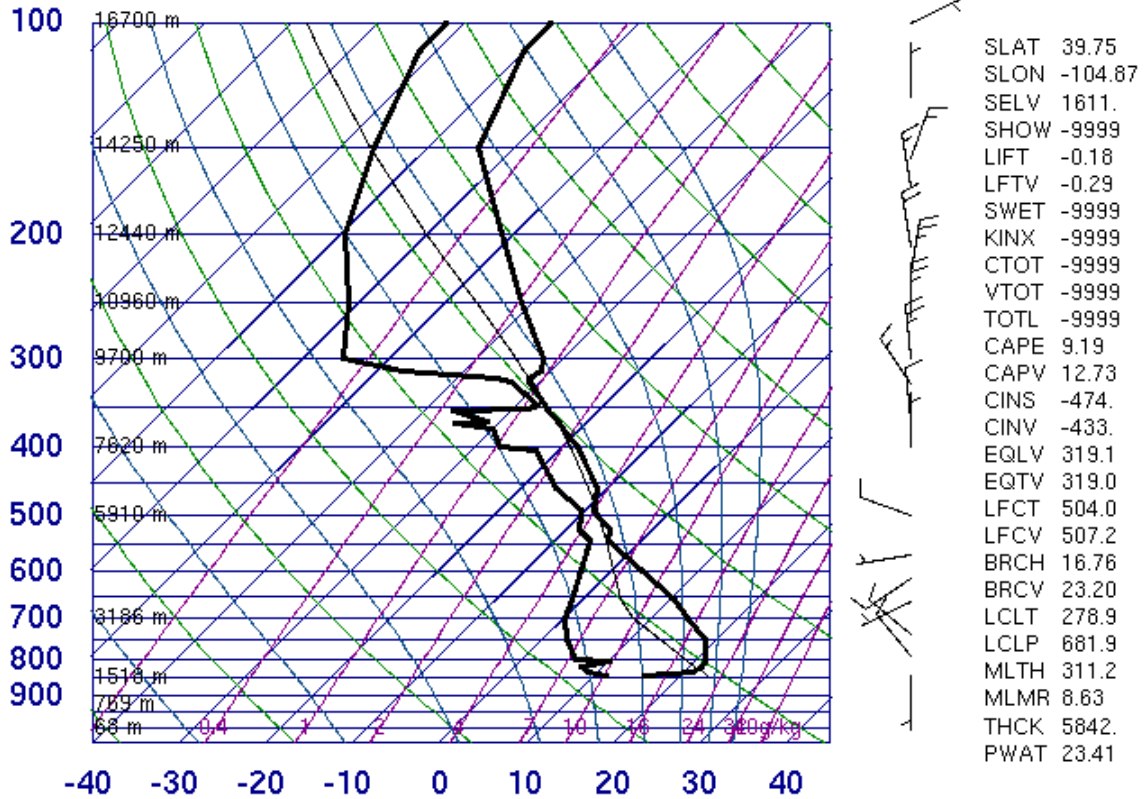
Clouds 1

The purpose of this assignment was to show the complexity and beauty of fluid flow through clouds. One of the coolest parts of this project is that the same physical properties and phenomena that applied in our small-scale experiments from last project still apply at a much larger scale. For my image, I wanted a photo that was both visually pleasing and demonstrated a common cloud formation. After months of shooting the sky and a sore neck, I eventually went with one of the first pictures I took. I really liked the texture of the clouds in this image.

The set-up for this picture is very simple and I feel does not need a diagram to explain. I am on the ground pointing the camera nearly straight up at the clouds. The clouds are lit by sunlight from the top-left corner. The clouds shown are altocumulus and based on the skew-T plot from that day are about 28,000 feet above me. These clouds indicate an instability in the air. The small almond shaped clumps of approximately two finger widths indicate to me that they are altocumulus clouds. The moisture breaks into these clumps because there is a lot of rising and falling of air at that altitude.

Skew-T plot:

72469 DNR Denver



12Z 01 Sep 2007

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As said before, the clouds were lit by sunlight as the tiny water droplets were too far away to light using flash or other lighting source. The sunlight provided cool shading effect.

It is hard to estimate the size of the field of view, but based on the altitude of the clouds (28000 ft) and approximate angle of view, I would estimate it to be about 2.5 miles by 2.5 miles. The photo was taken with a 6 Mega Pixel Casio Ex-Z60 (or as Prof. Hertzberg calls it, a PHD). It was shot using a focal length of 19 mm (equivalent to 114 mm on a 35 mm film camera). The image is 2816 x 2112 pixels. The photo was taken with an aperture of 3.3, shutter speed of 1/160 sec, and f-stop of f/8.4. I chose not to use

any photoshop manipulations because I wanted the image of this very natural occurrence to be natural as well.

This image does a good job of showing how unstable air flows can generate lots of small, evenly spaced clouds. I feel the spaced white clouds with blue in between give the image a good texture. The direct sunlight provided for some shading across the clouds. However, if I could redo this image, I would like to take it at sunset, to give the clouds more vibrant colors.