

David Gagne

CLOUD IMAGE REPORT II

MCEN 4151 FLOW VISUALIZATION

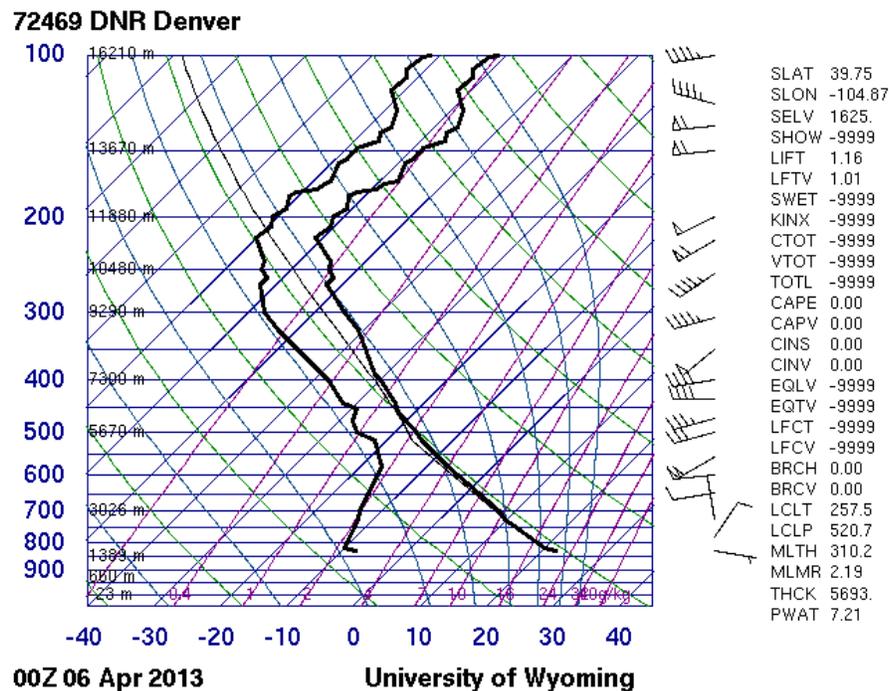


This is my second cloud image. The image was captured in order to analyze cloud formations and how they pertain to physical flow phenomenon. In this image I was trying to capture a lenticulars type cloud that was created through a unique cloud formation occurrence known as the mountain wave formation.

The image was taken Saturday, April 6 in Nederland Colorado, at 2:30 pm. I was at approximately 8,000+ feet in elevation and was pointing the camera due East. The clouds were moving with the wind, which was moving east.

The Skew T below shows that the wind was rather uniformly moving east at all elevations, and with a cape of zero, it was a very stable atmosphere. The weather had been quite stable for some days previous to this, but these clouds made up the “front” of a weather cell that was moving in from the east, preparing to dump 10+ inches of snow on the Front Range. In fact, it was not 6 hours later, that snow began to fall at this location. The clouds featured in this image are some

cumulus and stratocumulus, which are the low clouds with the “puffy” appearance. These are the “lower” clouds in the image, the clouds have developed and stay at lower elevations. The clouds “higher”, at greater elevation, in the image are some altocumulus and altocumulus lenticulars, which are formed during the mountain wave effect. Where warm moist air moving over a mountain range, is forced up and down. Cooling and condensing in the process, creating clouds with a layered appearance. The best example of this is the large cloud centered and to the right in the image, if you look closely this cloud and the one it appears to be attached to, have a unique look as they though they are layered or stacked.



The image I captured was done so using a poor quality point and shoot type digital camera. With a small aperture and “infinite” focal length, I was able to capture almost all of the sky and the objects close to me in relatively clear focus. The camera was set to a “high” shutter speed, and moderate ISO, as it was very bright out I was not concerned about capturing enough light. But more concerned that the speed that the clouds were moving could cause blur if I did not use a high enough shutter speed. I attempted to frame the clouds using the features that were present (ground, barrier, sign, and tree), which were very uninteresting, to keep the focus on the clouds, but give the image a very “rural” feel. I can estimate that the distance from the nearest clouds to me were 1000 to 2000 meters, with the highest clouds being more than 6000 meters. This is only

an approximation based on my elevation, and the typical elevation that certain types of clouds exist at. I used Photoshop to “enhance” the final image to the desired effect, which was to contrast the clouds so they would appear “crisp” and white, against an “ideally” blue background.

This image reveals a beautiful cloudscape, featuring many excellent examples of common cloud types. It also helps make more apparent how the mountain wave clouds are formed, as you can see the landscape in the image which may help the mind’s eye visualize the air as it moves up and over mountains. Further development of this type of image and cloud phenomenon would be best done by several cameras, from several locations, capturing time lapse images. This would allow us to see how generation occurs, and the multiple vantage point would allow for a much better idea of depth (in this case height) and position of where formation is occurring.