

Lost Spring Days

Clouds 2 Assignment



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MCEN 4151
March 18, 2013

Purpose

This image was taken for the CU Boulder Mechanical Engineering course MCEN 4151 Flow Visualization "Cloud 2" assignment. The intent of this assignment was to capture the everyday flow phenomenon, clouds, in a way that outlined their fluid dynamic characteristics. Within my image I wanted to capture the fluffy cumulus clouds contrasting the altocumulus undulatus gravity wave clouds behind them.

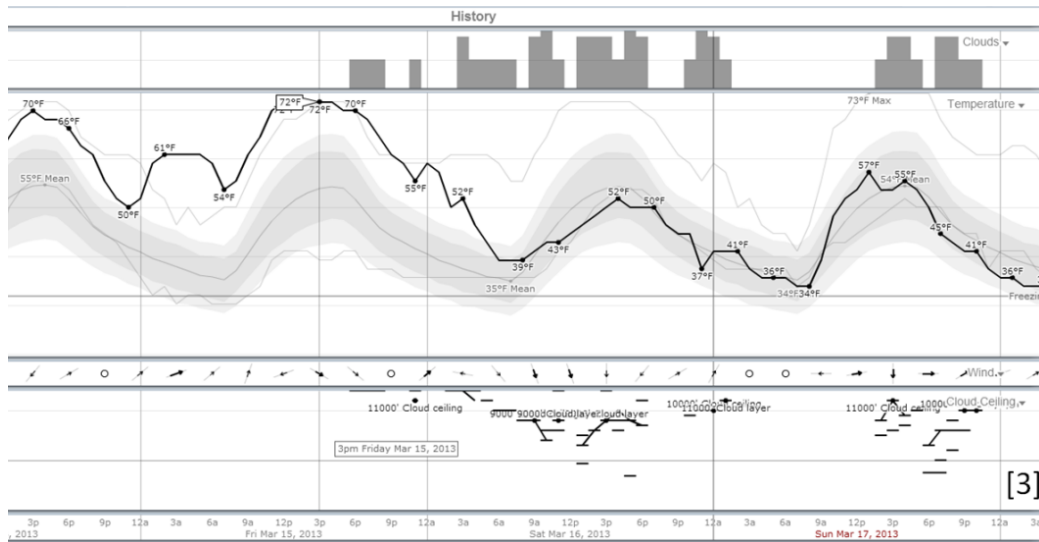
Circumstance

This image was captured the afternoon of March 15th, 2013 at 1:47 PM in Boulder Colorado. It was taken from a parking lot on the North side of the University of Colorado's engineering center, near the intersection of Colorado Ave and Regent Drive (shown below). The image was taken in the western direction at approximately 45° above horizontal.



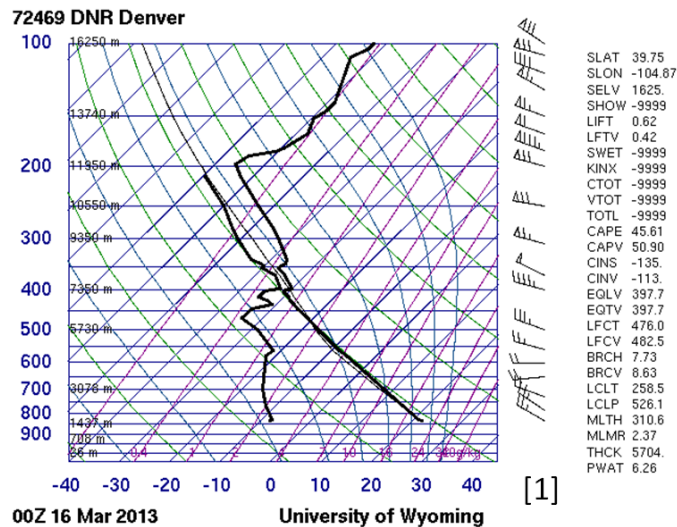
Cloud Phenomenon

As mentioned before, this image captures the fluffy cumulus clouds contrasting the altocumulus undulatus gravity wave clouds behind them. At the time the image there was a little wind and the temperature was around 72°F [3]. From that perspective the atmosphere seemed relatively stable until you look at the Skew-T and the weather the next day. Reviewing the weather history from Weather Spark (below) one can see that the day after this image was taken clouds moved in and it became considerably cooler.



[3]

When this information is paired with the Skew-T data (below) from the nearest available city, Denver [1] we can see that the atmosphere is in fact not completely stable. This Skew-T for 00Z 16 Mar 2013 is for about four hours after the picture was taken (March 15th, 2013 at 1:47 PM). It depicts a Convective Available Potential Energy (or CAPE) value of 45.61 indicating that the atmosphere contains unstable layers. I feel it was these unstable layers that drew in cooler air dropping the temperature for the following days.



[1]

Photographic Technique

The focus for this image was automatically set to infinite and was taken on a wide angle 24mm lens. To "allow a greater dynamic range between the lightest and darkest areas"[2] and to boost the colors of the image the "HDR Art" mode was used. This mode on my high speed Casio EX-ZR100 quickly snaps multiple images at different exposures and combines only the correctly exposed parts of each image in to one image. The resulting image from this process creates a 3648 x 2736 pixel Jpeg. The

exposure information provided in the final image by the camera was f/3, 1/1000sec, and 100 ISO. The exposure info is not very helpful though because it doesn't indicate the exposure for all of the images it combined from the HDR processing.

As for post processing, Photoshop was used to stitch together two images (below) in to one to provide a wider view of the sky. The resulting image was then cropped down to eliminate distracting elements such as the light post and parts of the engineering center building resulting in a final resolution of 4039 x 2368 pixels. I chose to keep a bit of the engineering building to provide the image with some scale as well as some depth.



Reflection

After all was said and done, I feel my image does a good job revealing the differences between the cumulus clouds and the altocumulus undulatus clouds behind them. I really enjoy the contrast the vivid blue sky provides as well as the wide angle of the shot. I don't dislike much about this image except if I were to sacrifice the wide angle I could maybe have more detail in the gravity wave clouds. I feel I fulfilled my intent completely and am very content on how my image turned out. If I were to explore this idea further I would like to take a higher perspective from either a mountain peak or an airplane.

[1]"Atmospheric Soundings." Atmospheric Soundings. N.p., n.d. Web. 18 Mar. 2013.

[2] "High Dynamic Range Imaging." Wikipedia. Wikimedia Foundation, 03 June 2013. Web. 18 Mar. 2013.

[3]"WeatherSpark Beta." Beautiful Weather Graphs and Maps. N.p., n.d. Web. 18 Mar. 2013.