A Light Cloud Rises

Cloud Image 2

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Introduction

Clouds are inspiring. They are the images on the original big screen. In this world that pushes us to be too busy to enjoy ourselves, many of us have lost the age-old joy of cloud appreciation. This photograph captures a cloud forming behind a mountain range. The valley reveals the cloud building in the perpendicular valley behind the peaks. The artist hopes you appreciate the feeling on contest, between stone titans and a white giant that cannot be shattered.

Conditions

This image was captured on 01 March around 10 a.m., from my back yard in Westminster, looking west by northwest at roughly 5º elevation. It was common conditions for March 1ˢᵗ, at 38º F and 46% humidity and a 8 mile per hour wind out of the southeast. We received no precipitation for more than two weeks prior or after. It had been a bit cooler than usual before, and warmed a bit above average in the days following, Table 1 provides more detail on surrounding weather conditions.

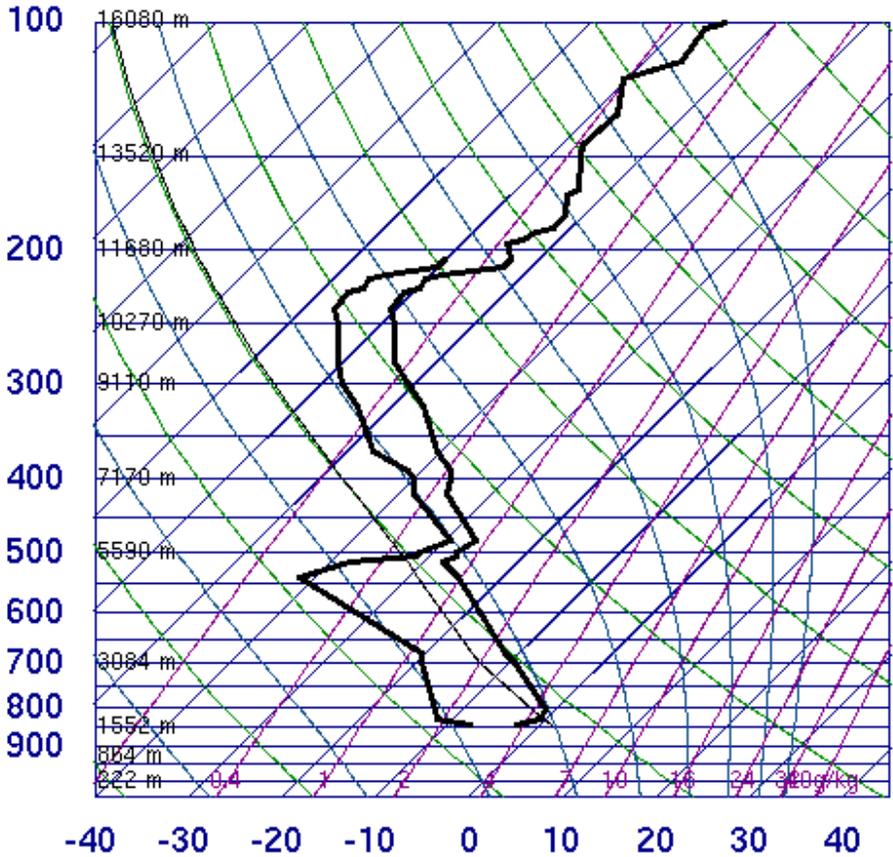Table 1: Weather Conditions Days Surrounding Image Capture[1]

Date	Daily High Temperature	Average Wind Speed	Conditions
02/25/13	34 °F	2.5 mph	Clear all day.
02/26/13	33 °F	10.2 mph	Cloudy all day.
02/27/13	36 °F	5.8 mph	Clear all day.
02/28/13	43 °F	6.9 mph	Clear most of the day.
03/01/13	44 °F	4.1 mph	Partly cloudy.
03/02/13	60 °F	1.5 mph	Clear all day.
03/03/13	63 °F	6.9 mph	Clear all day.
03/04/13	34 °F	4.7 mph	Cloudy midday.
03/05/13	39 °F	1.8 mph	Clear all day.

The cloud is a prime example of a Foehn cloud wall. Foehn clouds are formed on the lee side of a mountain range when the air is passing perpendicular to the mountain range. Foehn refers to the typical wind pattern, but when the temperature and humidity are just right the moisture in the air condensates as it drops into the valley, then re-evaporates as it goes up, in this case, the final mountain ridges. Once the air enters into the plains, the temperature conditions, especially this cool morning, are such that the water stays in the air. The mountain range helps to block sun from warming the valley, but the plain is already warming from the morning rays. The Skew-T[2] from Denver near that time, shows a stable atmosphere and the strongest propensity for cloud growth near 6,000 m above sea level. There were clouds above, but this photograph focuses on the Foehn cloud, so the upper clouds were cropped out. The Skew-T diagram is included on the following page in Figure 1.

The image captures about 3.6 miles of the ridge line, at a distance of about 10.5 miles.

Figure 1: Skew-T Diagram from Denver[2]

The Image

Taken with a Pentax K-5, the original RAW image was saved as a PEF file. To utilize the GIMP editing program, I first saved the image as an 8-bit TIFF file using PENTAX Digital Camera Utility 4 (PDCU4). This transformation took the file from roughly 20 MB to 47MB. Alternatively, PDCU4 is capable of exporting 16 bit TIFF files at around 94 MB per image, but since GIMP is only capable of handling 8 bit photographs and the color specificity is not recognizable by the human eye, the artist only uses the 8-bit TIFF images to export the file data. Unfortunately, the TIFF format does not keep the EXIF data, so the artist also exports the photo from PDCU4 into JPEG format for less formal digital presentations.

Table 2: Camera and Original Image Data

Camera:	Pentax K-5		Width:	4950 pixels
Lens:	SMC Pentax-DA L 55-300 mm		Height:	3284 pixels
Focal Length:	62 mm		Horizontal resolution:	300 dpi
F-stop:	F/13		Vertical Resolution:	300 dpi
Exposure:	1/250 sec.		Bit Depth:	24
ISO Speed:	ISO-250		Color Representation:	sRGB

The photograph color was enhanced in GIMP using the curves modulation, with the intent to brighten the blue in the sky and to expose some of the detail in the cloud; in the original image, and to the naked eye, the snowy mountain behind the central valley appeared to simply be the could; the color adjustment exposes the hole in the wall cloud. The image was severely cropped on the bottom and top. The top exposed the clouds above and the bottom was cluttered with power poles and wind turbines. It was also cropped slightly on the right to better center the two prominent mountains. The final image is 4624 x 584.
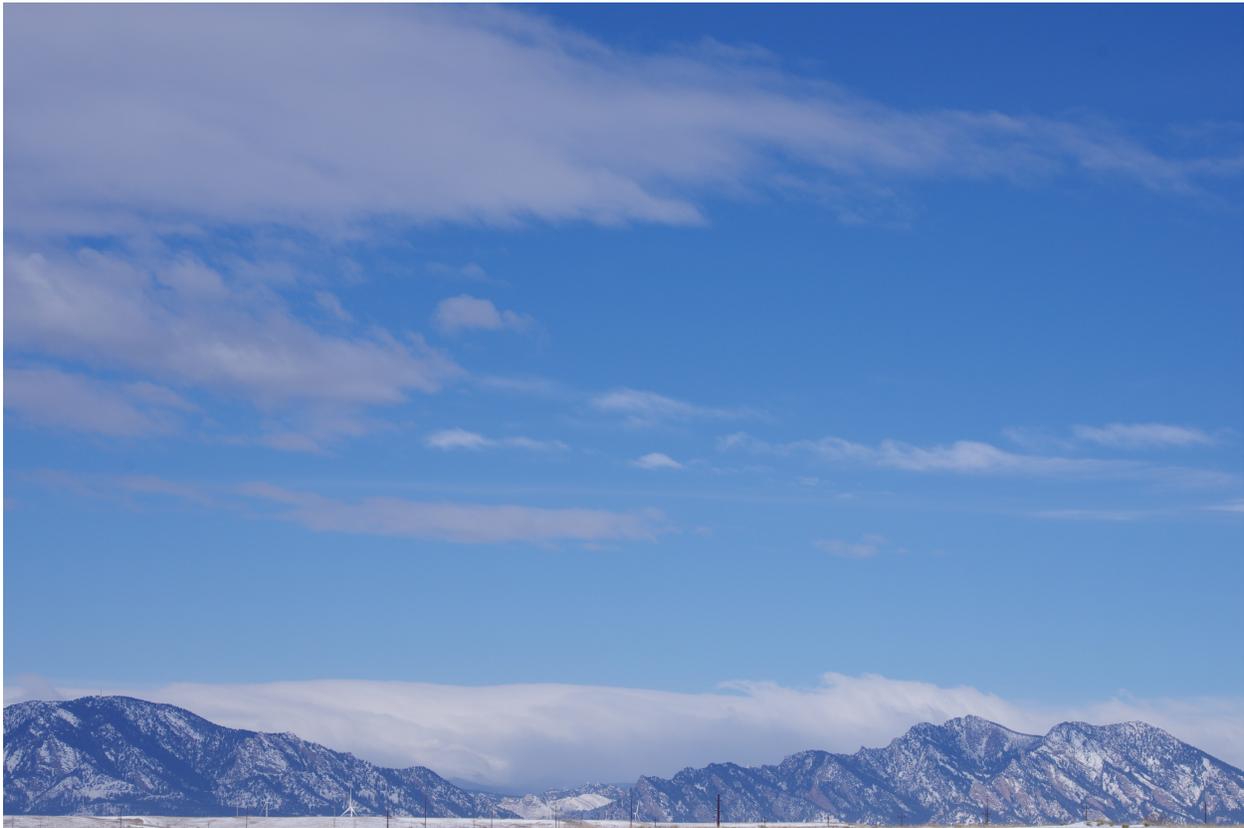

Figure 3. Original image

Conclusion

The photograph intends to expose a atmospheric phenomenon unique to streight mountain chains.   The early morning light provided nearly ideal lighting to capture the structures. The artist is pleased with the image appearance. Had he considered it, he would have taken multiple, more zoomed in, shots and stitched them together.

References

(1) *Weather Spark*. (n.d.). Retrieved from: http://weatherspark.com/#!dashboard;a=USA/CO/Westminster
(2) *University of Wyoming, College of Engineering, Department of Atmospheric Science Sounding Data*. (n.d.). Retrieved from: http://weather.uwyo.edu/upperair/sounding.html
(3) *The Cloud Collector's Reference.* (Gavin Pretor-Pinney). Retreived from: http://cloudappreciationsociety.org/collecting/
(4) *Foehn – Cloud Structure in Satellite Images.* (n.d.). Retrieved from: http://rammb.cira.colostate.edu/wmovl/vrl/tutorials/satmanu-eumetsat/satmanu/cms/fh/structure.htm