



Yevgeniy Fedotov
Flow Visualization
Clouds 2

Figure 1. Cumulus and Altocumulus Mountain Wave Clouds.

Clouds 2

The intent of this cloud image was to capture the detail of the rolling mountain wave clouds. My goal was to capture the depth in the image and because the clouds seemed to be spaced at a similar distance from each other and appeared that way all the way to the horizon. The photo was manipulated using Photoshop by inverting the colors. This modification made the sky look orange and the trees white, which appears to look like doomsday.

Weather Conditions:

The image above was taken in Wyoming, approximately 20 miles north of the Colorado border. The image was taken at on March 27, 2010 at 2:45pm. At the time the picture was taken it was partly cloudy with a snow storm coming later in the day and very high winds in the area. The weather conditions can be found in Figure 3.

Cloud Identification:

The clouds in the image are Altocumulus and Cumulus mountain wave clouds. Altocumulus are mid level clouds, between 6,500 and 23,000 ft, and often come before a cold front. These clouds are made mostly of water droplets, and when water temperatures are very low droplets turn to ice crystals. The altocumulus clouds are in the upper right portion of the photo above the rolling cumulus clouds. Cumulus clouds, known as fair weather clouds are the main clouds in the photo and appear to be layered. Cumulus clouds are low level clouds made of water droplets that have flat bases and bumpy tops. Cumulus clouds often form on sunny days. The photo was taken at 2:45pm with winds ~30 mph coming in from the NW. Based on the Skew-T plot for March 27, 2010, at 6PM the atmosphere was stable with a CAPE of 0, and the clouds would be expected to be at approximately 20,000ft. The atmosphere for these clouds is neutrally stable based on the Skew-T.

72469 DNR Denver

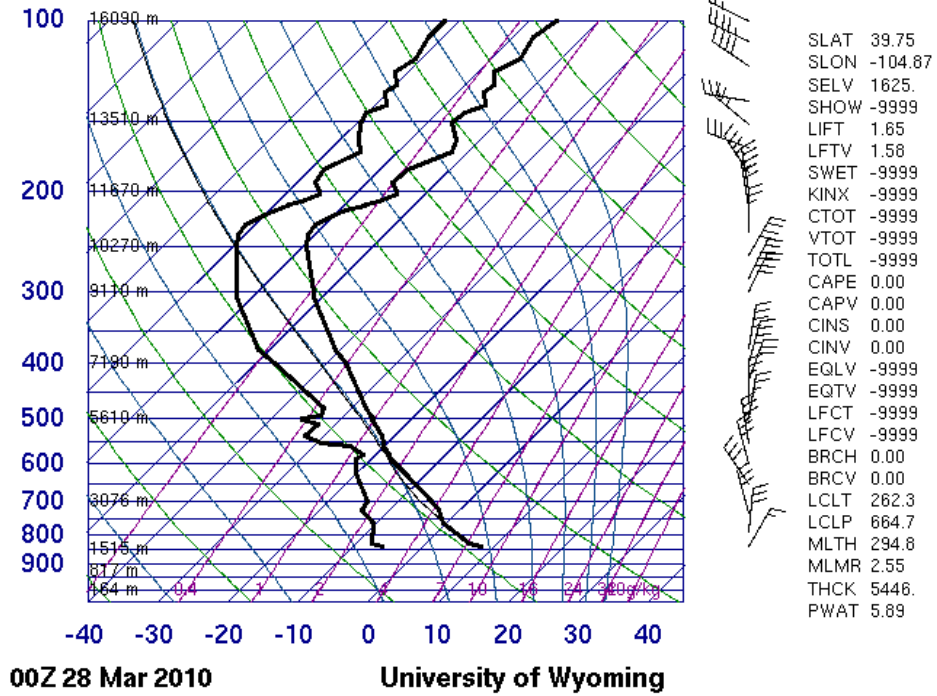


Figure 2. Skew-T Plot for Denver, March 27, 2010 6PM.

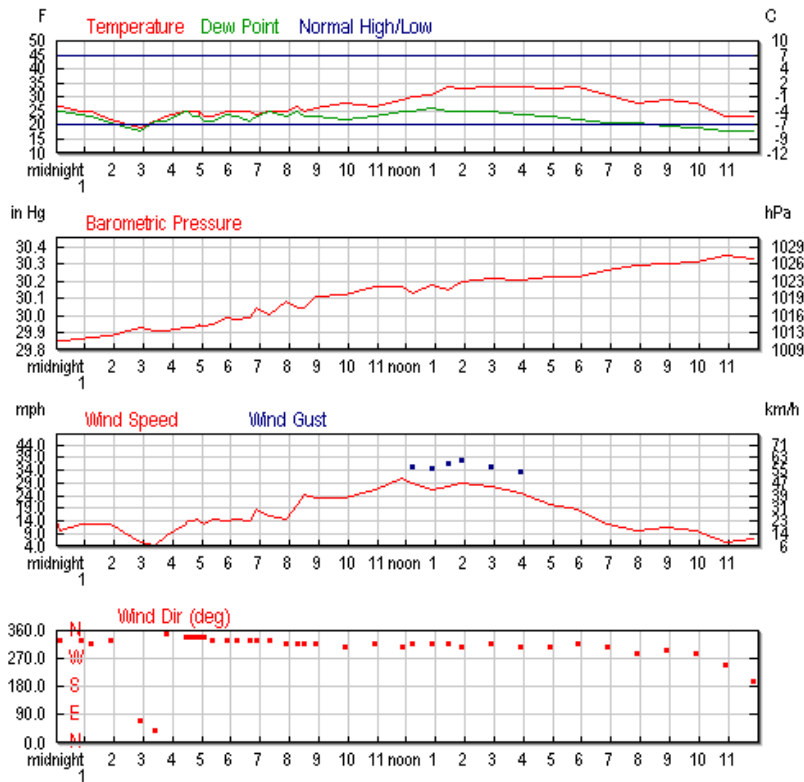
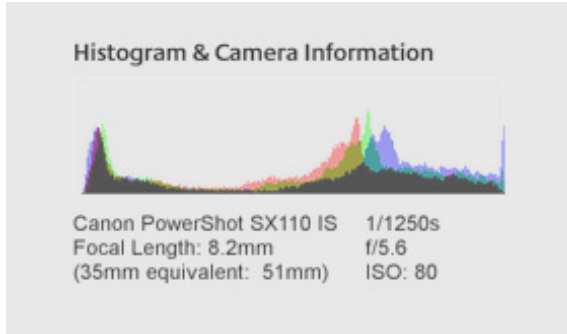


Figure 3. Weather Conditions. March, 27, 2010. Weather Underground Laramie.

Photographic Technique:

Camera Settings:



Filename: IMG_2975.JPG	
Location: Desktop\Flow Vis\	
Size: 3.4MB	Date: 3/27/2010 2:44:39 PM
Property	Value
Dimensions:	3456 x 2592 pixels
Camera make	Canon
Camera model	Canon PowerShot SX110 IS
Camera Date	2010:03:27 14:44:39
Resolution	3456 x 2592
Orientation	Normal
Flash	Not Used
Focal length	8.2mm
35mm equivalent	51mm
CCD width	5.82mm
Exposure time	0.001s (1/1250)
Aperture	f/5.6
ISO	80
Exposure bias	0.00
Metering Mode	Matrix
Thumbnail	160 x 120 pixels
JPEG Quality	95 (422)
Unique ID(DB)	1ac11f3c8cdb0bd700000000000000...

Photoshop:

This cloud image has been processed and does not appear to be naturally occurring. Because of the pixel invert, which inverts the color of each pixel, the darks turn white (the trees and bushes) and the clouds and sky turned grey and orange. Besides the inverting of the colors the only other adjustment made was to increase contrast which made the trees more defined.

Reflection

This image did not turn out exactly how I wanted to. Initially I wanted to keep the photo as is and only adjust the contrast but I found that there was not enough focus and detail in the image which made it not very interesting. I decided to invert the colors to create a dramatic effect and to highlight the trees and bushes as a frame for the clouds. The trees and bushes do seem to be too bright and take some of the focus away from the clouds. Further image processing can provide a solution to that problem.

Further information and other images can be found here:

<http://www.colorado.edu/MCEN/flowvis/galleries/index.html>