Course: Flow Visualization
Assignment: Clouds 2
Submitted by: Vigneshwaran Selvaraju

Final Picture:

Fig.1: Final Picture

Introduction:

The Cloud picture was taken towards the second clouds assignment for Flow Visualization course during spring 2014. Among the many pictures captured for four weeks, this theme was chosen because the rain clouds were impressive and represent prosperity. It can also be noted from the picture that it is visibly raining in a specific area and from another perspective, it appears like a personal cloud and reminds of the old cartoons where the creepy castles atop a hill has its own personal cloud(fig2). The impression was also taken from a popular image of rains over Coimbatore city (11.0183° N, 76.9725° E) [1], captured from Conoor (11.3500° N, 76.8200° E) [1] which is provided for reference in fig3. The biggest difference is elevation and it could not be met in the clouds 2 image because of physical constraints.

Fig.2. Creepy castle stereotype

Fig.3 Rain over Coimbatore

Cloud types:

The clouds observed were of the following types

1. Nimbostratus
2. Stratocumulus

The respective names have been labelled in fig. 4.

Fig.4: Cloud Types

Atmospheric conditions:

06th April 2014 at Boulder was mostly stable during the morning and changed to slightly turbulent condition after noon with mild shower and snow. The rain bearing clouds were moving north-east with the wind and the rain passed along.

The nearest applicable Skew-T diagram (fig.5) from Denver also confirms a dynamic atmosphere with a CAPE number of 18.

From weatherspark.com the cloud ceiling was found to range from 6500 ft. indicating low clouds which matches with the picture.
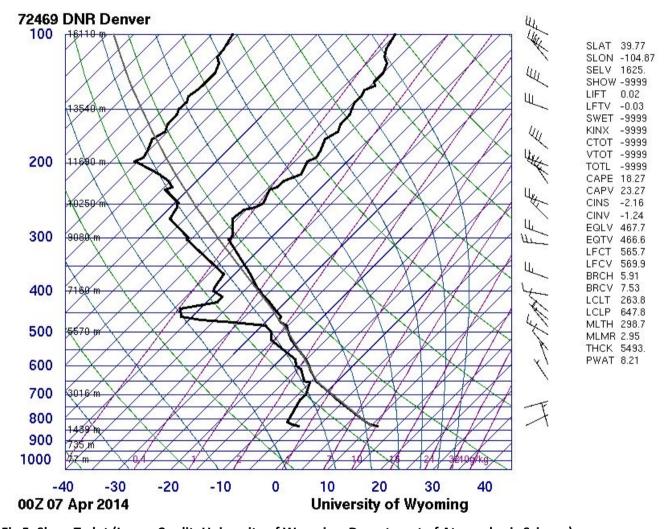

Fig 5: Skew-T plot (Image Credit: University of Wyoming, Department of Atmospheric Science)

Photography:

The shooting spot was at 30th street and Canyon creek Rd, Boulder, CO 80303 form a private parking lot. The picture was taken with a pitch of +30° pointing upwards to the clouds as subject of focus.

The Image details are as follows

File Name	Vigneshwaran S Clouds 2 original.CR2
Camera Model	Canon EOS REBEL T3i
Firmware	Firmware Version 1.0.2
Shooting Date/Time	4/6/2014 12:12:38 PM
Owner's Name	
Shooting Mode	Program AE
Tv(Shutter Speed)	1/1600
Av(Aperture Value)	25.0
Metering Mode	Evaluative Metering
Exposure Compensation	0
ISO Speed	3200
Auto ISO Speed	OFF
Lens	EF-S18-55mm f/3.5-5.6 IS II
Focal Length	44.0mm
Image Size	5184x3456
Image Quality	RAW
Flash	Off
FE lock	OFF
White Balance Mode	Auto
AF Mode	One-Shot AF
AF area select mode	Automatic selection
Picture Style	Auto
Sharpness	3
Contrast	0
Saturation	0
Color tone	0
Color Space	sRGB
Long exposure noise reduction	0:Off
High ISO speed noise reduction	0:Standard
Highlight tone priority	0:Disable
Auto Lighting Optimizer	Standard
Peripheral illumination correction	Enable
Dust Delete Data	No
File Size	28659KB
Drive Mode	Single shooting
Live View Shooting	OFF
Camera Body No.	362077139256

Post Processing:

The original image had a traffic sign board and a streetlight interference which were removed using duplicate layers. The saturation was increased to enhance the dark nature of the nimbus cloud making it bolder in appearance. The increase in saturation also lit up the branches with enhanced sunlight. Few disturbing cloud spots were blurred to blend into the picture. Adobe Photoshop C6 licensed to University of Colorado was used to do the post processing.

Fig 5: Original Picture

Review:

It was made sure that the problems faced during Clouds 1 assignment like camera tilt was averted this time. But still there were few problems like high ISO distortion creating speckle on the picture which got enhanced by increasing the saturation during postprocessing. Also, the picture was not planned. It just happened to rain and the picture was taken. A higher elevation nearby like Williams village tower could have been used for a better result.

References:

1. Coordinated obtained using google maps.

2. Fig.5: Skew T Atmospheric Sounding chart generated using open source software owned by University of Wyoming, Dept. of Atmospheric science

3. Fig.2 Source: http://www.screenjunkies.com/movies/movie-lists/6-movie-castles-that-are-as-scary-as-they-look

4. Fig.3 source : http://www.veethi.com/a-view-from-coonoor-mettupalayam-ghat-road-clouds-pouring-rain-in-coimbatore/PH12425