Hannah Schumaker
Flow Visualization
Project: Clouds 2
Due: 4/18/13

Cloud Image 2 - Lenticularis

The second cloud assignment for the flow visualization course once again directs us to capture images of interesting cloud formations. The image I chose to submit was taken while walking east along Arapaho in Boulder, near 28th street. I photographed it on the afternoon of March 13th. I stopped on the sidewalk to try to capture this large isolated cloud I saw to the east, and a little south. I took the image with my phone as that was all that I had on me, holding it up as still as I could. The unedited image can be seen in Figure 1.

Figure 1. Unedited Image

The Skew-T diagram, seen in Figure 2, gives a little insight into the atmospheric conditions present at the time of the photograph. The atmosphere on this day was stable, as evidenced by the CAPE = 0 (see **Figure 2**). This stability is present in the lower atmosphere, but in the upper atmosphere we see alto cumulus clouds, suggesting instability there. The cloud present in the image is an alto cumulus lenticularis. These clouds are not rare here in Boulder, but I do not notice them frequently, which is why I was so compelled to take the image.

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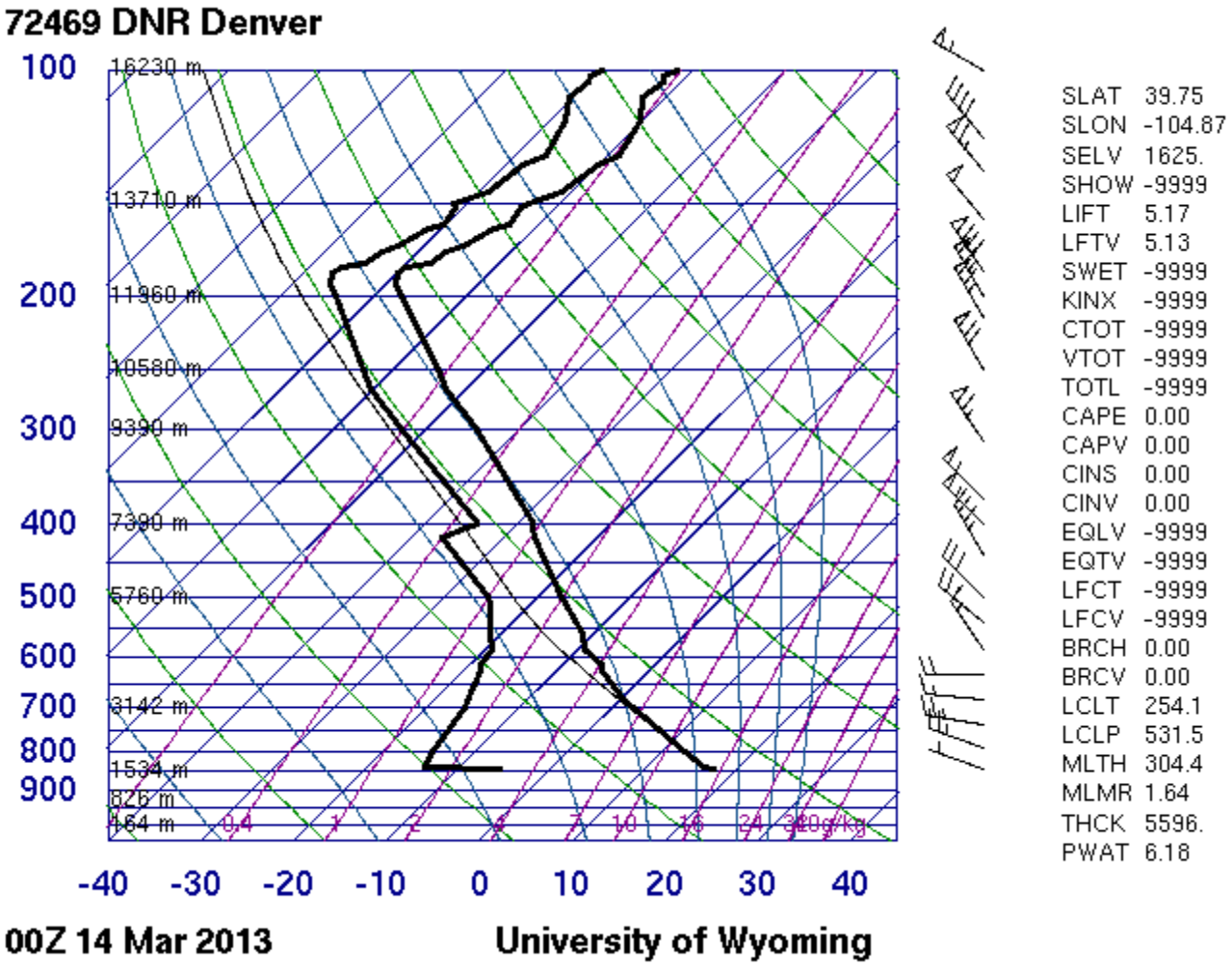

Figure 2. Skew T

Because I took this photograph with my phone (iphone 4) I had little control over the camera settings. That being said, I think the auto-settings on the phone did very well in capturing what I intended. I took several images at the time, trying different variations on distance and framing. The camera settings are given below:

Original Image Specifications

Width (pixels)	2592
Height (pixels)	1936
F-stop	f/2.8
Exposure	1/769 s
ISO	ISO-80
Focal Length	4 mm

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I did little editing in Photoshop – I cropped part of the ground out to put more emphasis on the cloud, and I increased the contrast slightly to bring out more detail in the cloud. The edited image was 2592x1629 pixels and can be seen in Figure 3.

Figure 3. Unedited Image

I am disappointed that the image is a little grainy, but that is a general side effect of taking images with a camera phone. I like that the image captures the entire cloud mass – I was struck by the size and shape while I was walking that day and I think the image conveys that well. I would have liked to take the image from a higher point of view. I would rather have avoided the presence of those buildings, but they are there none the less.

References

[1] "Atmospheric Soundings." *Atmospheric Soundings*. University of Wyoming, College of Engineering, n.d. Web. 05 Mar. 2013.
[2] Hertzberg, Jean. "D8. Clouds 2." *Flow Visualization - Course Lectures*. MCEN Colorado, n.d. Web.

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Image Assessment Form
Flow Visualization
Spring 2013

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Scale: +, ! = excellent √ = meets expectations; good. ~ = Ok, could be better. X = needs work. NA = not applicable

Art	Your assessment	Comments
Intent was realized	!	I feel that I accomplished most of what I wished and that the image conveys that. The cropping especially enhanced the image, and removed the distracting elements.
Effective	√	
Impact	√	
Interesting	!	
Beautiful	√	
Dramatic	!	
Feel/texture	!	
No distracting elements	√	
Framing/cropping enhances image	!	

Flow	Your assessment	Comments
Clearly illustrates phenomena	!	The image is a little grainy due to the camera used.
Flow is understandable	√	
Physics revealed	√	
Details visible	√	
Flow is reproducible	N/A	
Flow is controlled	N/A	
Creative flow or technique	N/A	
Publishable quality	√	

Photographic/video technique	Your assessment	Comments
Exposure: highlights detailed	√	The post-processing was successful in enhancing the image intent, but perhaps not the image quality
Exposure: shadows detailed	!	
Full contrast range	!	
Focus	√	
Depth of field	√	
Time resolved	N/A	
Spatially resolved	N/A	
Photoshop/ post-processing enhances intent	!	
Photoshop/ post-processing does not decrease important information	√	

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Report		Your assessment	Comments
Collaborators acknowledged		N/A	Most of the categories in the "report" section of this evaluation seem to be yes/no questions. Most of which I included in my report, giving myself a !, as they were completed.
Describes intent	Artistic	√	
	Scientific	√	
Describes fluid phenomena		N/A	
Estimates appropriate scales	Reynolds number etc.	N/A	
Calculation of time resolution etc.	How far did flow move during exposure?	N/A	
References:	Web level	√	
	Refereed journal level	N/A	
Clearly written		!	
Information is organized		!	
Good spelling and grammar		!	
Professional language (publishable)		√	
Provides information needed for reproducing flow	Fluid data, flow rates	N/A	
	geometry	N/A	
	timing	N/A	
Provides information needed for reproducing vis technique	Method	√	
	dilution	N/A	
	injection speed	N/A	
	settings	√	
lighting type	(strobe/tungsten, watts, number)	√	
	light position, distance	N/A	
Provides information for reproducing image	Camera type and model	!	
	Camera-subject distance	√	
	Field of view	!	
	Focal length	!	
	aperture	!	
	shutter speed	!	
	Frame rate, playback rate	N/A	
	ISO setting	!	
	# pixels (width X ht)	!	
	Photoshop and post-processing techniques	√	
	"before" Photoshop image	!	