

Cloud 2 Report

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In everyday life, clouds are perhaps one of the most spectacular examples of complex fluid dynamics but are usually never given a second glance. This project motivated the class to pay closer attention to the flow interactions that take place above our heads every day. The image that I selected for this project shows uncommon cloud lines against the Front Range in Boulder, Colorado.

This image is facing WSW in Boulder from Scott Carpenter Park with the camera around 30 degrees from horizontal. It was taken in the evening, just after a breezy afternoon.

Based on the appearance of the clouds and the weather conditions, the majority of these clouds are classified as altocumulus clouds. They appear to be flat bottomed, higher altitude, and have an interesting separation of layers.

Post processing was used to desaturate the image and enhance the contrast in order to bring out the white and allow the faint flow in the clouds to brighten up. A contrail was cropped out, as I felt it was a distracting element to the fluid dynamics that I wanted to focus on. The exposure for the photo was $1/250^{\text{th}}$ of a second with an ISO of 250 and an f-stop of f/10 on a Canon Rebel T2i digital camera. These were all results of the "autofocus" option on the camera, because manual adjustments produced inferior quality.

I believe this image shows a very intriguing example of a rare formation of clouds. In retrospect, it would have been insightful to produce a time lapse of this to analyze the development and disintegration of the water vapor.

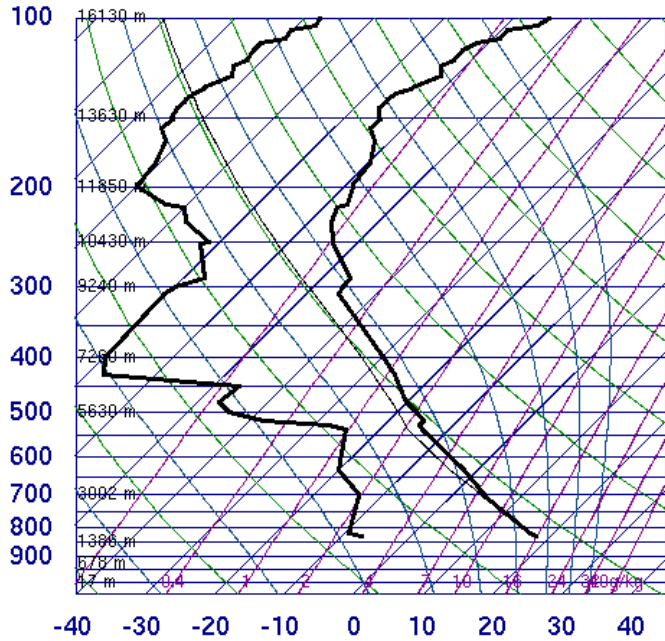
Appendix:

Unedited image:



Skew-T:

72469 DNR Denver



	SLAT	39.77
	SLOE	-104.87
	SELV	1625.
	SHOW	-9999
	LIFT	2.62
	LFTV	2.39
	SWET	-9999
	KINX	-9999
	CTOT	-9999
	VTOT	-9999
	TOTL	-9999
	CAPE	0.00
	CAPV	0.00
	CINS	0.00
	CINV	0.00
	EQLV	-9999
	EGTV	-9999
	LFCT	-9999
	LFCV	-9999
	BRCH	0.00
	BRCV	0.00
	LCLT	258.6
	LCLP	549.6
	MLTH	306.9
	MLMR	2.28
	THCK	5613.
	PWAT	5.23

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University of Wyoming

Image Assessment Form

Flow Visualization

Spring 2013

Name(s): Cameron Misegadis

Assignment: Clouds I

Date: 2/27/14

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

Art	Your assessment	Comments
Intent was realized	√	
Effective	√	
Impact	√	
Interesting	~	
Beautiful	√	
Dramatic	√	
Feel/texture	!	

No distracting elements	√	
Framing/cropping enhances image	!	

Flow	Your assessment	Comments
Clearly illustrates phenomena	√	
Flow is understandable	√	
Physics revealed	√	
Details visible	√	
Flow is reproducible	√	
Flow is controlled	√	
Creative flow or technique	+	
Publishable quality	+	

Photographic/video technique	Your assessment	Comments
Exposure: highlights detailed	√	
Exposure: shadows detailed	√	
Full contrast range	!	

Focus	√	
Depth of field	√	
Time resolved	+	
Spatially resolved	√	
Photoshop/ post-processing enhances intent	√	
Photoshop/ post-processing does not decrease important information	√	

Report		Your assessment	Comments
Collaborators acknowledged		NA	
Describes intent	Artistic	√	
	Scientific	√	
Describes fluid phenomena			
Estimates appropriate scales	Reynolds number etc.	√	
Calculation of time resolution etc.	How far did flow move during exposure?	√	
References:	Web level	+	
	Refereed journal level	+	
Clearly written		√	
Information is organized		√	
Good spelling and grammar		√	
Professional language (publishable)		√	
Provides information needed for reproducing	Fluid data, flow rates	√	
	geometry	√	

flow	timing	√	
Provides information needed for reproducing vis technique	Method	√	
	dilution	√	
	injection speed	√	
	settings	!	
lighting type	(strobe/tungsten, watts, number)	+	
	light position, distance	√	
Provides information for reproducing image	Camera type and model	+	
	Camera-subject distance	√	
	Field of view	√	
	Focal length	+	
	aperture	+	
	shutter speed	!	
	Frame rate, playback rate	NA	
	ISO setting	!	
	# pixels (width X ht)	+	

	Photoshop and post-processing techniques	!	
	"before" Photoshop image	√	