

Cloud Image #3 Report

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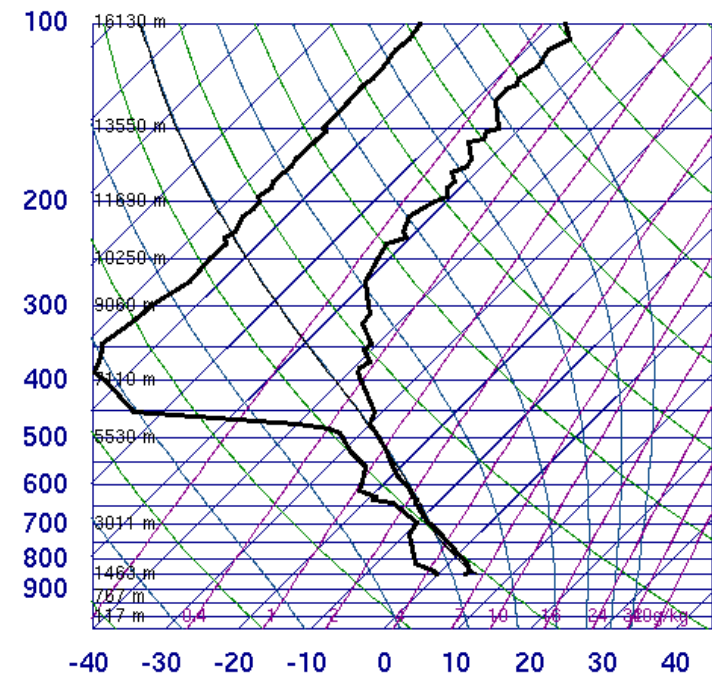
4/19/2010

The goal for this image was to capture a good example of an interesting cloud formation or phenomenon. This image captured a cumulus cloud as it was growing upwards into a cumulonimbus cloud that would accompany the storm to come just an hour after this image was captured. It is certain that it was a cumulonimbus cloud forming as approximately one hour after this image was taken it began hailing fairly heavily in the area.

This image was captured in Arches National Park approximately one quarter mile from the trailhead of the Delicate Arch in the Wolfe Ranch region of the park. The time at which the image was taken on March 23, 2010 at 1:04 PM and was taken with the camera pointed northwest. It was shot with a shutter speed of $1/1000^{\text{th}}$ of a second, iso-100, aperture of f/5.0, and focal length of 80mm using a Canon Rebel Xsi with a 28-135mm f/3.5-5.5 IS USM Lens. The bright daylight available from the otherwise mostly clear sky allowed for the low iso and high shutter speed combination which brought out a large amount of definition in both the clouds and the landscape.

It is important to notice that the nearest location from which Skew-T data was available is Grand Junction CO. This means that the data is coming from over 100 miles away and therefore may not be the most accurate reading for the location this image was taken at. As we would expect with cumulonimbus formation the atmosphere was quite turbulent with a cape of 33.74. This instability is most likely due to the turbulence created by the warmer air rising and creating the cumulonimbus clouds in the image. By looking at the Skew-T we also see that the neighbors line begins to sharply deviate from the parcel line an altitude of approximately 800m, which we can assume is the bottom of the thunderhead forming. We also see at around 10,000m that the parcel and neighbor lines become approximately parallel again meaning that the atmosphere has stabilized again. This stabilization can actually be seen in the photograph, and is a part of what makes this image so insightful into the physics involved in how the top of a thunderhead is capped by the boundary between layers of the atmosphere. Near the top of the cloud formation the cloud begins to spreading outwards, this is due to the atmosphere stabilizing as the cloud rises to the boundary between the troposphere and stratosphere and the momentum of the air can no longer travel upwards so it is forced out to the sides.

72476 GJT Grand Junction



	SLAT 39.11
	SLON -108.53
	SELV 1475.
	SHOW -9999
	LIFT 0.15
	LFTV 0.11
	SWET -9999
	KINX -9999
	CTOT -9999
	VTOT -9999
	TOTL -9999
	CAPE 33.74
	CAPV 41.18
	CINS -32.3
	CINV -27.7
	EQLV 527.3
	EQTV 518.5
	LFCT 698.4
	LFCV 700.4
	BRCH 13.57
	BRCV 16.56
	LCLT 268.8
	LCLP 752.1
	MLTH 291.7
	MLMR 3.76
	THCK 5413.
	PWAT 7.54

00Z 24 Mar 2010 University of Wyoming

In this image I decided to crop out a small amount of empty sky and some of the foreground from the bottom of the image. I made this decision as without having them removed it was detracting from the main cloud formation I was interested in capturing without adding any useful information to the scene. The only other changes made to the image have been to increase the contrast to increase the definition of the clouds and to darken the blue sky to make it more visually pleasing. Some modifications to this image I would want to make in the future would be to do a time laps showing how this cloud formation grows from a purely cumulous cloud all the way to a cumulonimbus cloud dumping precipitation down onto the desert. This could either be melded together to create a video clip, or to have a number of images side by side to illustrate how the cloud forms over time.