

# *The Weather Wire*

May 2011

Volume 18 Number 5

## **Contents:**

- **Severe Weather/Definitions**
- **Drought Monitor**
- **April Summary/Statistics**
- **May Preview**
- **Sunrise/Sunset**
- **Snow Totals**

## **Severe Weather/Definitions**

Severe Weather season in Colorado begins in May as warm and cold air clash over the Front Range. Storms moving in from off of the Pacific Ocean or dropping out of Canada still contain the chill of winter aloft while the additional sunlight of spring warms our temperatures into the 70's and 80's. The large temperature difference from air near the surface and the air higher in the atmosphere creates an unstable environment causing the air at the surface to rise much more rapidly than in the winter. The accelerated vertical motion in the air creates cumulus clouds and eventually cumulonimbus clouds which we know as thunderstorms. Throw in some moisture from the Gulf of Mexico as additional fuel and we have all the ingredients for super cell thunderstorms: cold air aloft, warm air at the surface, moisture and a passing cold front for spin. These super cell thunderstorms quite often become severe producing large hail, damaging winds and tornadoes. The strongest storms are usually limited to areas east of I-25 but they do occur in and adjacent to the foothills from time to time. Once the jet stream begins its retreat northward later in the spring and summer severe storms become less common but slow moving moderate to heavy rainfall producing thunderstorms take their place.

Since we are entering the severe weather season it is always beneficial to review what constitutes a severe thunderstorm and what the associated watches and warnings mean. Recently the NWS has changed from  $\frac{3}{4}$ " to 1" hail size for severe thunderstorm criteria which was intended to give greater meaning to warnings with fewer warnings issued. This change over in Colorado occurred on January 5, 2010.

**Severe Thunderstorm definition:** A storm containing 1" hail or larger, or winds in excess of 58mph, or a tornado is present. One or all of these conditions may be experienced during a severe thunderstorm.

**Severe Thunderstorm Watch:** Conditions are favorable for the formation of severe thunderstorms in AND NEAR the watch area. By definition, a severe thunderstorm has hail 1" inch or larger, and/or winds greater than or equal to 58mph. Note heavy rain is not a necessary component of a severe thunderstorm. Watch the sky and stay tuned to know when warnings are issued.

**Severe Thunderstorm Warning:** Issued when severe weather is detected by radar or reported by storm spotters (Hail 1" or greater, winds 58mph or more). Information in this warning will include the location of the storm, what areas will be affected, and the primary threat associated with the storm. People in the affected area should seek safe shelter immediately. Remember that severe thunderstorms can produce tornadoes with little or no advance warning. Warnings can be issued without a watch already in effect.

**Tornado Watch:** Conditions are favorable for the formation of tornadoes in AND NEAR the watch area. Implicit in this watch are the possibility of severe thunderstorms, as defined above. Remain alert for approaching storms. Know what counties are in the watch area by listening to NOAA Weather Radio or your local radio/television outlets.

**Tornado Warning:** A tornado has been sighted by spotters in the field, or indicated by NWS Doppler radar.

With the wild land fire activity this spring due to below normal precipitation and periods of strong winds the threat for flooding has actually increased in and around areas that have burned. The flood threat has not increased because above normal precipitation is expected or heavier than normal rainfall it is due to runoff problems as it will take far less moisture to produce debris flows and flood conditions in steep sided drainages. We will likely see quite a few flood watches and warnings for burn areas of Larimer, Jefferson and Boulder Counties.

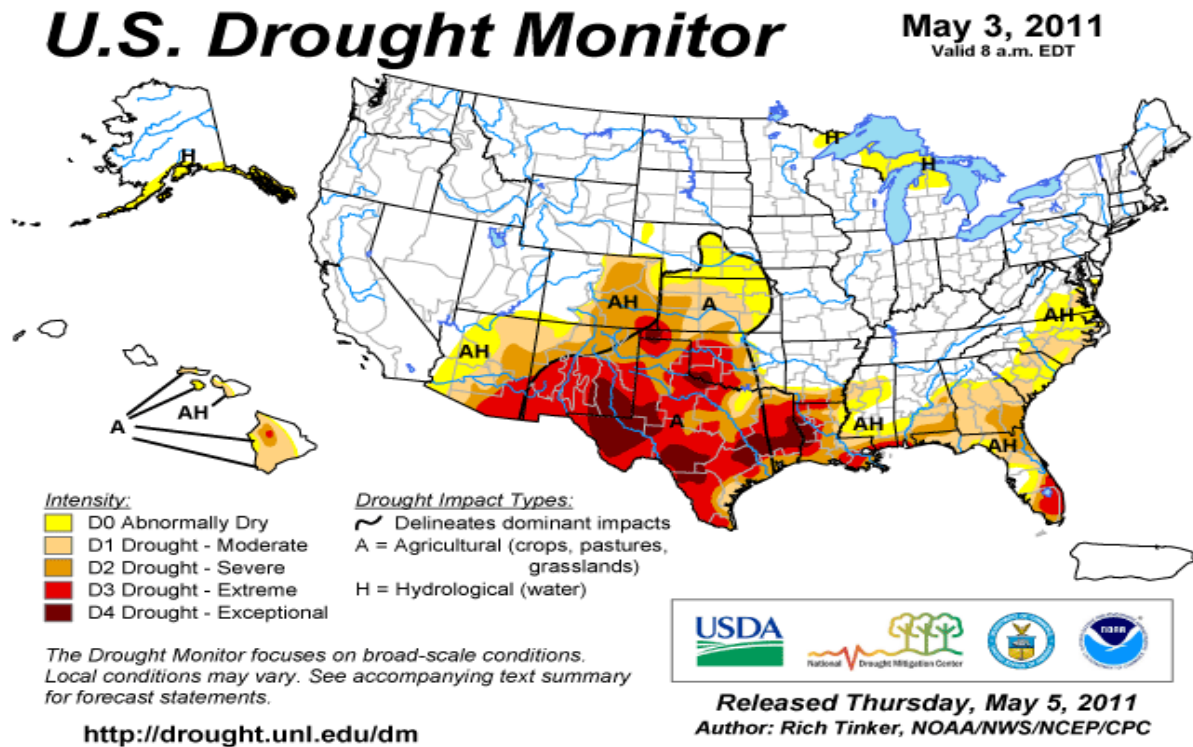
**Flash Flood Watch:** Issued when conditions are favorable for the development of severe weather in and close to the watch area. The size of the watch can vary depending on the weather situation and is usually issued for a duration of 4 to 8 hours. During the watch, people should review severe weather safety rules and be prepared to move to a place of safety if threatening weather approaches.

**Flash Flood Warning:** Issued when flash flooding is in progress, imminent, or highly likely. Those in the affected area should evacuate immediately or move to higher ground if possible. Information in this warning will include the locations in the flood and any areas which may be impacted. Flash Flood Warnings can be issued without a Flash Flood Watch in effect.

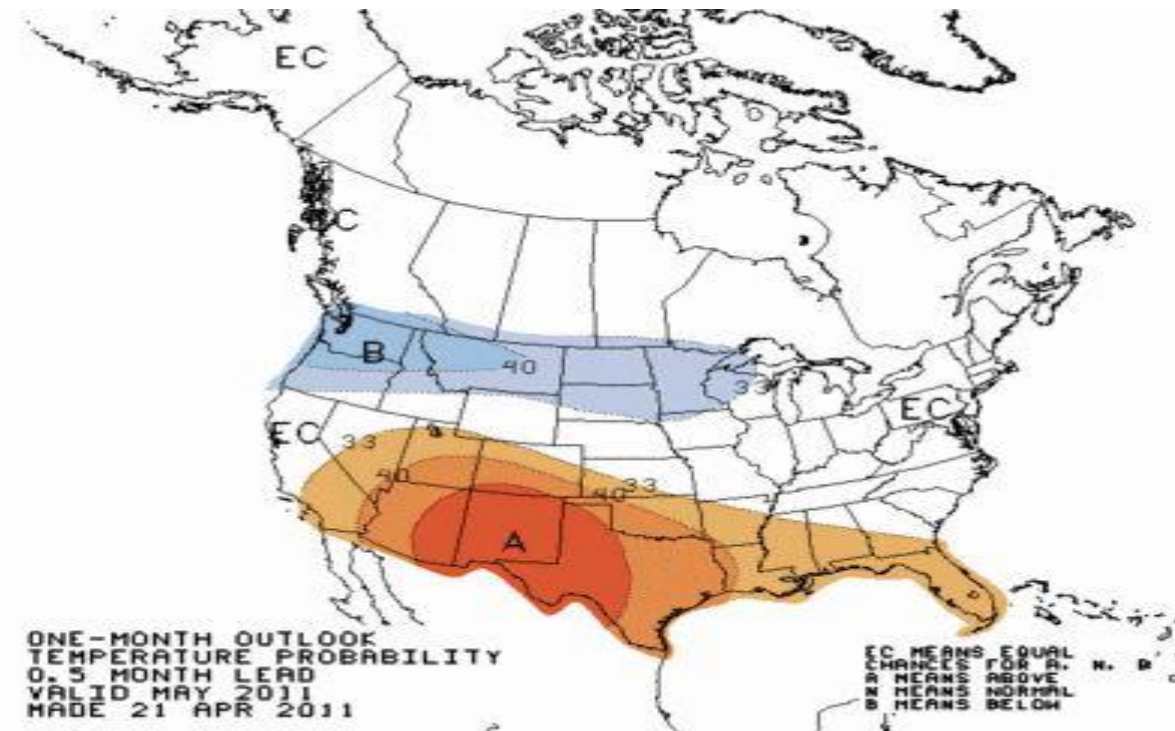
Definitions can be found at: [http://www.crh.noaa.gov/lbf/?n=severe\\_terms](http://www.crh.noaa.gov/lbf/?n=severe_terms)

## Drought Update

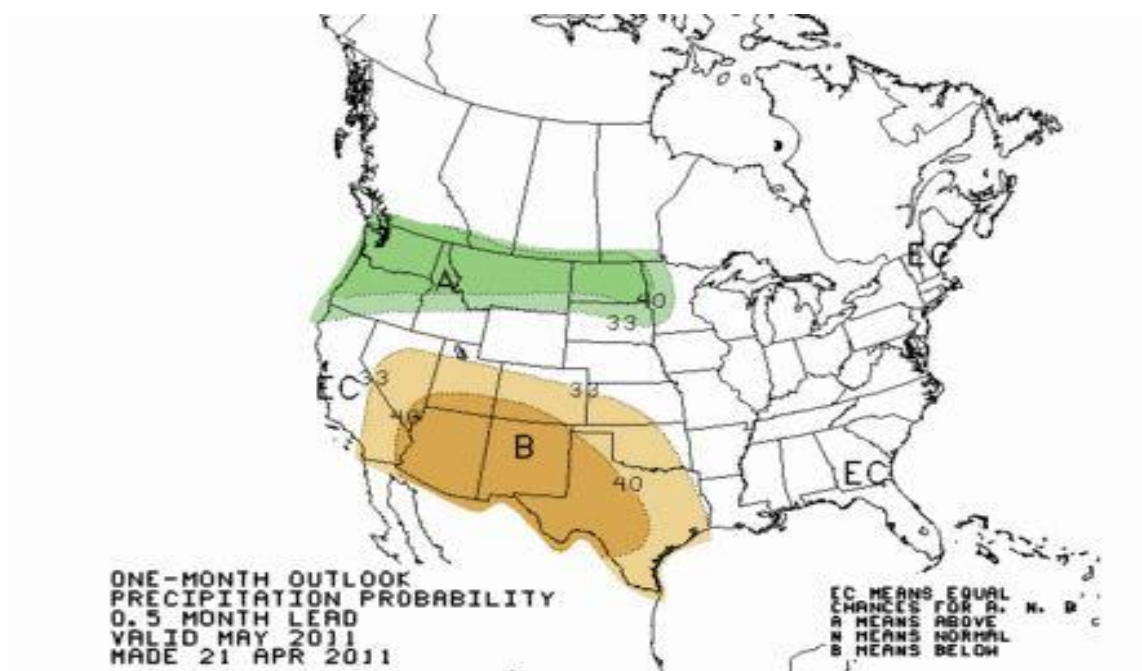
Dry conditions since mid August have brought severe drought conditions to eastern Colorado which is growing more severe each month.



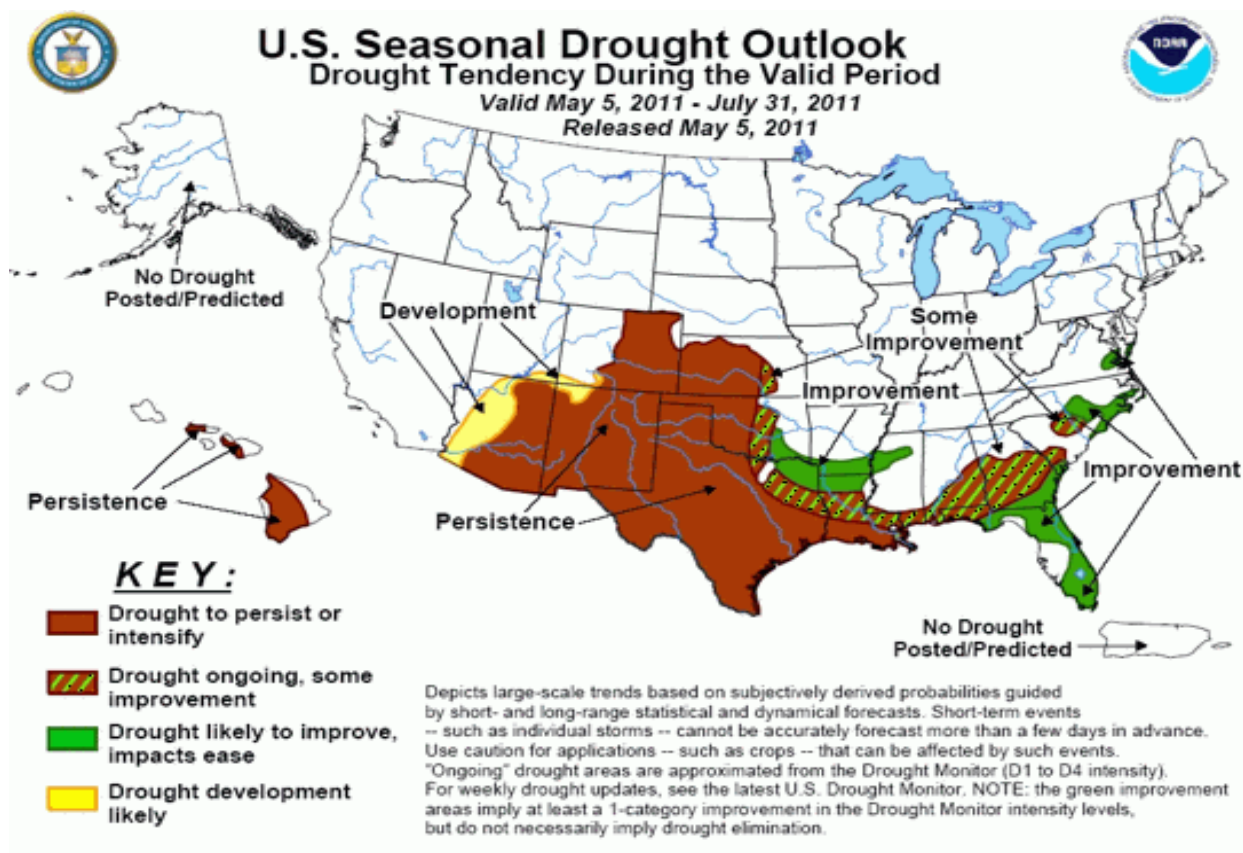
The map below shows forecasted temperature deviances for May 2011. As can be seen, above normal temperatures are expected for much of Colorado for the month.



The map below shows forecasted precipitation deviances for May 2011. Below normal precipitation amounts are expected across most of Colorado with near normal precipitation extreme northern areas.



Widespread drought is expected to persist or intensify across eastern Colorado.



## April Summary

April of 2011 continued to produce above normal temperatures and below normal precipitation for the Front Range. The average high temperature for the month was 62.7 compared to 60.9 on average which was 1.8 degrees above normal. The average low for the month was 34.0 slightly colder than the 34.2 average but as a monthly mean temperatures were 0.8 degrees above normal. The highest temperature of the month was early in the month on the 2<sup>nd</sup> with a temperature of 84 degrees which also set a new record. The coldest day of the month quickly followed with 19 degrees on the 4<sup>th</sup>. Precipitation for the month was 1.07" at DIA but many other Front Range locations received even less moisture. Normal for April is 1.93" producing a deficit of 0.86" for the month and for the year the precipitation stands at 2.44" which is 1.77" below the normal of 4.21". Drought conditions are becoming more severe along the I-25 corridor. April is typically the 3<sup>rd</sup> snowiest month of the year but this April only produced 1.2" of snow at DIA compared to 9.1" on average. For the winter season as a whole only 21.8" of snow has fallen compared to 55.0" on average. The snowfall deficit of 33.2" has now eclipsed the actual snowfall reported. The winter season of 2010-2011 will go down as one of the least snowiest in recent memory.

## April Stats

### TEMPERATURE (IN DEGREES F)

AVERAGE MAX	62.7	NORMAL 60.9	DEPARTURE 1.8
AVERAGE MIN	34.0	NORMAL 34.2	DEPARTURE -0.2
MONTHLY MEAN	48.4	NORMAL 47.6	DEPARTURE 0.8
HIGHEST	84	on the 2 <sup>nd</sup>	
LOWEST	19	on the 4 <sup>th</sup>	
DAYS WITH MAX 90 OR ABOVE	0	NORMAL	0.2
DAYS WITH MAX 32 OR BELOW	0	NORMAL	0.2
DAYS WITH MIN 32 OR BELOW	11	NORMAL	11.4
DAYS WITH MIN ZERO OR BELOW	0	NORMAL	0.1

### TEMPERATURE RECORDS

Record high of 84 on the 2<sup>nd</sup>.

### HEATING DEGREE DAYS

MONTHLY TOTAL	492	NORMAL 524	DEPARTURE -32
SEASONAL TOTAL	5309	NORMAL 5801	DEPARTURE -492

### COOLING DEGREE DAYS

MONTHLY TOTAL	0	NORMAL 2	DEPARTURE -2
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YEARLY TOTAL 0 NORMAL 2 DEPARTURE -2

**PRECIPITATION (IN INCHES)**

MONTHLY TOTAL 1.07 NORMAL 1.93 DEPARTURE -0.86  
YEARLY TOTAL 2.44 NORMAL 4.21 DEPARTURE -1.77  
GREATEST IN 24 HOURS 0.20" on the 20<sup>th</sup> through 21<sup>st</sup>  
DAYS WITH MEASURABLE PRECIP. 10

**SNOWFALL (IN INCHES)**

MONTHLY TOTAL 1.2 NORMAL 9.1 DEPARTURE -7.9  
SEASONAL TOTAL 21.8 NORMAL 55.0 DEPARTURE -33.2  
GREATEST IN 24 HOURS 1.2" on the 3<sup>rd</sup> through the 4<sup>th</sup>.  
GREATEST DEPTH NA

**WIND (IN MILES PER HOUR)**

AVERAGE SPEED 12.0mph  
PEAK WIND GUST 52mph from the WNW

**MISCELLANEOUS WEATHER**

NUMBER OF DAYS WITH THUNDERSTORM 0 NORMAL 2  
NUMBER OF DAYS WITH HEAVY FOG 6 NORMAL 1  
NUMBER OF DAYS WITH HAIL 0  
NUMBER OF SUNNY DAYS 3  
NUMBER OF PARTLY CLOUDY DAYS 19  
NUMBER OF CLOUDY DAYS 8  
AVERAGE RELATIVE HUMIDITY 48%

## May Preview

May is the wettest month of the year in Denver and surrounding areas with precipitation occurring on average once every three days. Precipitation can fall in almost any form with rain, snow, sleet, hail and graupel all possible during the month of May. Severe thunderstorm season begins in May with strong thunderstorms producing large hail and tornadoes on the eastern plains but winter usually has one last stand with 1.3" of snow on average. There are typically 6 thunderstorm days during the month. The last freeze is typically over by May 5<sup>th</sup> but freezing temperatures can be felt all the way into June on colder years. The average high for May is about 10 degrees warmer than April at 70.5 degrees. The average low is 43.8 resulting in a monthly mean of 57.2. Precipitation for the month is 2.32" on average but with a strong La Nina still in place drier and warmer than normal conditions are expected to continue.

### ENVER'S NOVEMBER CLIMATOLOGICALLY NORMAL (NORMAL PERIOD 1971-2000)

#### TEMPERATURE

AVERAGE HIGH	70.5
AVERAGE LOW	43.8
MONTHLY MEAN	57.2
DAYS WITH HIGH 90 OR ABOVE	Less than 1
DAYS WITH HIGH 32 OR BELOW	0
DAYS WITH LOW 32 OR BELOW	2
DAYS WITH LOWS ZERO OR BELOW	0

#### PRECIPITATION

MONTHLY MEAN	2.32"
DAYS WITH MEASURABLE PRECIPITATION	11
AVERAGE SNOWFALL IN INCHES	1.3"
DAYS WITH 1.0 INCH OF SNOW OR MORE	Less than 1

#### MISCELLANEOUS AVERAGES

HEATING DEGREE DAYS	267
COOLING DEGREE DAYS	23
WIND SPEED (MPH)	9.3mph
WIND DIRECTION	South
DAYS WITH THUNDERSTORMS	6
DAYS WITH DENSE FOG	1
PERCENT OF SUNSHINE POSSIBLE	64%

#### EXTREMES

RECORD HIGH	95 on 5/26/1942
RECORD LOW	19 on 5/3/1907
WARMEST	64.6 in 1934

COLDEST	48.7 in 1917
WETTEST	8.57" in 1876
DRIEST	0.06" in 1974
SNOWIEST	15.5" in 1898
LEAST SNOWIEST	0.0"

## Sunrise/Sunset (Jan - June Denver area)

	JAN	FEB	MAR	APR	MAY	JUN	
	sr - ss	sr - ss	sr - ss	sr - ss	sr - ss	sr - ss	
01	0721-0446	0707-0518	0633-0550	0644-0722	0600-0753	0534-0821	01
02	0721-0447	0707-0519	0631-0551	0642-0723	0559-0754	0533-0821	02
03	0721-0447	0706-0520	0630-0552	0641-0724	0558-0755	0533-0822	03
04	0721-0448	0705-0521	0628-0553	0639-0725	0557-0756	0533-0823	04
05	0721-0449	0704-0522	0627-0555	0638-0726	0556-0757	0532-0823	05
06	0721-0450	0703-0524	0625-0556	0636-0727	0554-0758	0532-0824	06
07	0721-0451	0701-0525	0624-0557	0635-0728	0553-0759	0532-0825	07
08	0721-0452	0700-0526	0622-0558	0633-0729	0552-0800	0532-0825	08
09	0720-0453	0659-0527	0621-0559	0631-0730	0551-0801	0531-0826	09
10	0720-0454	0658-0528	0619-0600	0630-0731	0550-0801	0531-0826	10
11	0720-0455	0657-0530	0618-0601	0628-0732	0549-0802	0531-0827	11
12	0720-0456	0656-0531	0616-0602	0627-0733	0548-0803	0531-0827	12
13	0719-0457	0655-0532	0714-0703	0625-0734	0547-0804	0531-0828	13
14	0719-0458	0653-0533	0713-0704	0624-0735	0546-0805	0531-0828	14
15	0719-0459	0652-0534	0711-0705	0622-0736	0545-0806	0531-0829	15
16	0718-0500	0651-0535	0710-0706	0621-0737	0544-0807	0531-0829	16
17	0718-0500	0650-0537	0708-0707	0619-0738	0543-0808	0531-0830	17
18	0717-0501	0648-0538	0706-0708	0618-0739	0543-0809	0531-0830	18
19	0717-0503	0647-0539	0705-0709	0617-0741	0542-0810	0531-0830	19
20	0716-0504	0646-0540	0703-0710	0615-0742	0541-0811	0532-0830	20
21	0716-0505	0644-0541	0702-0711	0614-0743	0540-0812	0532-0831	21
22	0715-0506	0643-0542	0700-0712	0612-0744	0539-0813	0532-0831	22
23	0715-0507	0641-0543	0658-0713	0611-0745	0539-0814	0532-0831	23
24	0714-0508	0640-0545	0657-0714	0610-0746	0538-0814	0532-0831	24
25	0713-0509	0639-0546	0655-0715	0608-0747	0537-0815	0533-0831	25
26	0712-0511	0637-0547	0654-0716	0607-0748	0537-0816	0533-0831	26
27	0712-0512	0636-0548	0652-0717	0605-0749	0536-0817	0533-0832	27
28	0711-0513	0634-0549	0650-0718	0604-0750	0536-0818	0534-0832	28
29	0710-0514		0649-0719	0603-0751	0535-0818	0534-0832	29
30	0709-0515		0647-0720	0602-0752	0535-0819	0535-0832	30
31	0708-0517		0646-0721		0534-0820		31



# Snowfall

## Sept 2010 to May 2011

City	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total
Aurora (Central)	0.0	0.0	3.3	3.0	8.8	10.0	2.8	1.0		28.9
Brighton	0.0	0.0	0.7	4.0	6.6	5.4	1.3	0.7		18.7
Broomfield	0.0	0.0	1.6	4.1	8.9	10.5	1.9	2.2		29.2
Castle Rock 4 NE	0.0	0.0	4.4	4.0	8.1	13.0	1.7	4.5		35.7
Colo Sprgs Airport	0.0	0.0	0.2	4.0	1.5	2.5	3.1	1.3		12.6
Denver DIA	0.0	0.0	1.5	3.3	8.0	5.3	2.5	1.2		21.8
Denver Downtown	0.0	0.0	3.1	4.2	11.0	11.9	1.1	1.1		32.4
Golden	0.0	0.0	1.7	8.1	13.8	15.5	2.6	2.9		44.6
Fort Collins	TR	0.0	5.0	4.3	6.0	6.3	TR	2.1		23.7
Highlands Ranch	0.0	0.0	1.5	5.8	11.6	14.5	2.1	4.8		40.3
Lakewood	0.0	0.0	1.1	3.5	8.7	10.6	3.0	2.3		29.2
Littleton	0.0	0.0	0.2	5.5	10.5	15.0	2.6	3.7		37.5
Parker	0.0	0.0	4.9	2.5	9.6	11.7	2.0	2.5		33.2
Sedalia - Hwy 67	0.0	0.0	5.0	4.0	9.3	12.8	2.5	3.0		36.6
Thornton	0.0	0.0	0.6	4.7	8.1	7.3	2.2	1.5		24.4
Westminster	0.0	0.0	2.0	4.6	10.9	11.2	0.2	1.5		30.4
Wheatridge	0.0	0.0	1.5	5.7	11.4	15.5	2.2	1.8		38.1

**Skyview Weather**  
2350 N Rocky View Rd  
Castle Rock, CO 80108

**Phone: (303) 688-9175**  
**Fax: (303) 380-3338**

**E-mail: [tim@SkyviewWeather.com](mailto:tim@SkyviewWeather.com)**  
**On the web at [www.SkyviewWeather.com](http://www.SkyviewWeather.com)**

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