

# *The Weather Wire*

**April 2011**

**Volume 18 Number 4**

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## **Winter Summary to Date**

The Front Range of Colorado has experienced a very dry winter and spring so far with drought conditions at severe levels and high fire danger. Other parts of the US have fared much better with a strong La Nina pattern bringing heavy snows to the Pacific Northwest and the Great Lakes region extending all the way to the East Coast. In Colorado the northwest flow pattern aloft and fast moving storm systems have produced a high frequency of storms that have brought above normal snowfall to the central and northern mountains of the state. However, east of the Continental Divide extending onto the plains the storms become much weaker and have typically produced more wind than rain or snow and has resulted in above normal temperatures due to the "downsloping" winds off of the mountains. So far this snow season there has only been 2 storms that have produced more than 3" of snowfall at DIA. Granted other Denver suburbs have experienced more snow than DIA but all locations along the Front Range are well below normal. Colorado Springs airport has only received 11.3" the entire season! While DIA has measured 20.6" by the end of March this is still 25.3" below normal or only 45% of normal. In tandem with the lack of snow the above normal temperatures results in the snow that falls melting rather quickly. Although April is Colorado's 3<sup>rd</sup> snowiest month there will certainly not be enough snow to make up the deficit now that we are entering the 3<sup>rd</sup> week of the month without a significant snow. I-25 corridor area locations will fall further behind in the snowfall department as the weather pattern is not expected to change and ground temperatures are warmer than most years at this time keeping snow accumulations from sticking to pavement. If we are to make up for the lost precipitation this winter it will have to come in the form of rain and likely wait for the summer thunderstorm season.

The climate along the Front Range is highly variable and snowfall totals are no different but all locations along the I-25 corridor from Colorado Springs northward to the Wyoming border share one thing in common, below normal snowfall. There have been months where snowfall was above normal but they were also typically

one of the drier winter months on average anyway. The high snowfall months of November, December and March were well below normal which accelerated the snowfall deficit. By looking at each month individually one can clearly see the lack of snowfall this winter has produced for the highly populated areas along the Front Range and I-25 corridor.

2010-2011 Location	Sep- 10 Total	Oct- 10 Total	Nov- 10 Total	Dec- 10 Total	Jan- 11 Total	Feb- 11 Total	Mar- 11 Total	Thru Apr 15th	Totals
Arvada	0.0	0.0	2.2	3.6	8.5	11.8	1.2	1.6	<b>28.9</b>
Aurora Ctrl	0.0	0.0	3.3	3.0	8.8	10.0	2.8	1.0	<b>28.9</b>
Boulder*	0.0	0.0	2.1	9.5	15.4	10.5	0.5	3.5	<b>41.5</b>
Castle Rock 3 NE	0.0	0.0	4.4	4.0	8.1	13.0	1.7	1.7	<b>32.9</b>
Denver 2 SE	0.0	0.0	3.1	4.2	11.0	11.9	1.1	1.1	<b>32.4</b>
HRanch East	0.0	0.0	1.5	5.8	11.6	14.5	2.1	3.5	<b>39.0</b>
Lakewood Cntrl	0.0	0.0	1.1	3.5	8.7	10.6	3.0	2.0	<b>28.9</b>
Littleton	0.0	0.0	0.2	5.5	10.5	15.0	2.6	2.2	<b>36.0</b>
Parker	0.0	0.0	4.9	2.5	9.6	11.7	2.0	2.0	<b>32.7</b>
Wheatridge	0.0	0.0	1.5	5.7	11.4	15.5	2.2	1.8	<b>38.1</b>

**September 2010:** With only 0.06" reported at DIA for the month, September of 2010 will go down as the **5th driest September on record**. Normal precipitation for the month is 1.14" and now puts our yearly precipitation deficit at 1.60" below normal. Temperatures were also incredibly warm with average highs of 84.8 and lows of 49.1 resulting in a monthly mean temperature of 67.0 which is 4.6 degrees above normal. 67.0 degrees is warm enough to rank 7th all time for the warmest September ever! This may not come as much of a surprise as there were 4 high temperature records broken or tied and the 96 degrees on the 19th was the warmest it has ever been this late in the season. There was no snowfall reported with Denver averaging 2.1" for the month.

**October 2010:** October of 2010 continued to produce above normal temperatures and below normal precipitation. Temperatures have actually been above average every month since May with the last two months of September and October being more than 4 degrees above the monthly mean temperature. There were only two days with a temperature below freezing compared to nearly 9 days on normal years. The warm and rather dry October resulted in **only the 15th October since 1872 without even a trace of snow reported in Denver**. Average October snowfall in 4.1". Without snowfall at all this season we are currently 6.2" below average as of the 1st of November. Total precipitation for the month was 0.54" measured at DIA compared to 0.99" on average. Currently year to date the precipitation deficit has grown to 2.2" below normal with 11.15" so far this year and 13.35" on average. There were a few windy days towards the end of the month with a peak wind gust of 51mph reported on the 25th, otherwise October of 2010 was fairly quiet without any scary weather for Halloween which really happens more years than not contrary to popular belief.

**November 2010:** November of 2010 was rather boring weather wise as there was not much snowfall for being the 2nd snowiest month of the year on average behind March and just ahead of April. Temperatures continued to be above normal with an average high of 52.6 and an average low of 24.0 compared to 51.5 and 23.5 normally. The high and low temperatures combined resulted in a monthly mean of 38.3 degrees compared to 37.5 on average. **Precipitation also continues to be below normal every month since July** with only 0.50" reported at DIA for the month compared to 0.98" on average. Much of the western and southwestern suburbs of Denver received even less precipitation in the form of rain and snow. As of December 1st the yearly precipitation total stands at 11.65" which is now 2.68" below the normal of 14.33". Snowfall for the month was only 1.5" but again western and southwestern suburbs received even less than that. The average snowfall for November is 10.7" resulting in a snowfall deficit of 9.2" for the month and 15.4" for the winter season so far!

**December 2010:** 2010 ended warm and dry with above normal temperatures and below normal precipitation. The average high for the month was 48.9 degrees, a whopping 4.8 degrees above normal. Average lows were 19.6 degrees, 3.2 degrees above normal. These two combined resulted in a monthly mean temperature of 34.3 which is 4.0 degrees above normal. Not surprising that there were 2 record highs tied or broken on the 3rd and again on the 14th with 69 and 70 degrees respectively. **December of 2010 would have gone down as the driest on record had it not been for the snow storm the last two days of the month.** Only 3.3" was measured at DIA from that storm which was the monthly total. Average December snowfall is 8.7" For the season the snow deficit now stands at 20.8" below normal with only 4.8" so far this year at DIA. **Precipitation for the full year of 2010 was 11.87" which was 3.09" below the normal of 15.96" or 74% of normal.**

**January 2011:** 2011 started out on the right foot with above normal precipitation and snowfall reported for the month of January. However, 2010 left quite a hole to fill with snowfall totals at DIA still 20.5" below normal as of the first of the month. **Total snowfall reported was 8.0" at DIA with 7.7" on average, resulting in 0.3" above normal. Not much above normal, and certainly not enough to start making up any ground on our deficit.** Most of the snow fell in one storm on the 9-10<sup>th</sup> with 6.8" and the other two storms produced less than 1" each. Total precipitation was 0.61" which was 0.10" above normal. There were 4 meaningful storms during the month and 5 days with measureable precipitation. Temperatures were about where they should be with high temperatures colder than normal but overnight lows were above normal producing a monthly mean temperature which was only 0.8 degrees above normal. There were more sunny days than cloudy days with 6 compared to 3 and the other 22 days were considered partly cloudy.

**February 2011:** February of 2011 was well below normal in temperatures and just slightly below normal in precipitation and snowfall. **The month started out very cold with a couple of arctic outbreaks which resulted in 2 record low maximum temperatures set on the 1st and 8th of the month.** Not surprising, most of the snow fell in the first half of the month with some Denver suburbs experiencing above normal snowfall but most Front Range locations continued to see near normal to below normal snow. At DIA only 5.3" of snow was recorded resulting in a 1" deficit

and now 21.5" below normal on the winter season. Total precipitation was not that far off with 0.42" compared to 0.49", a departure of 0.07". Most of the precipitation and snow fell from the 7-8th with 2.6" at DIA with much higher amounts in the suburbs western suburbs. Some of the temperature extremes were a high of 67 on the 16th and a low of -17 on the 2nd. There were 6 days with a minimum temperature below zero, about 21% of the days during the month. If you thought it was a little more windy than normal, you're right. The average wind speed was 10.6mph for the month, 8.8mph is normal. There were not any thunderstorms observed with 5 days of fog with visibility of ¼ mile or less.

**March 2011:** March of 2011 came very close to being one of the least snowiest on record were it not for some snow the last few days of the month. At DIA **only 2.5" of snow was recorded which tied 1918 for 8<sup>th</sup> place for the least snowiest March on record.** Normally March is Denver's snowiest month of the year with 11.7" on average. As far as total precipitation goes in the form of rain and snow there was 0.35" recorded compared to 1.28" on average leaving a deficit of 0.93" for the month and now 0.91" for the year so far. This is not a very good start as last year was below normal in precipitation as well. Drought conditions are currently becoming severe along the Front Range and the Fire Danger will be high this spring and early summer if significant rain or snow is not observed. March was also very warm with average highs 5 degrees above the normal of 53.7 degrees. Winds were howling again this month with an average wind speed of 11.1mph compared to 9.7mph on average.

**April: See April Preview Below.**

Summary: Well above normal temperatures and below normal precipitation has been the theme of this winter season. The last time the Front Range was this dry was back in the winter of 2005-2006 and in 2002-2003, but a late season spring storm system in March 2003 produced record snowfall of 30-40" in Denver with 70" or more in the foothills. This storm "saved" the season and turned the corner on our drought at the time. Don't expect a season saving snowstorm this year as the weather pattern through the remainder of April looks to be a continuation of drier and warmer than normal conditions. It is safe to say that this winter will go down as one of the least snowiest since Skyview began taking records. Here is how this season stack up against the last 10 years.

Location	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006
Arvada	57.5	35.2	72.2	43.5	48.2	27.0
Aurora Ctrl	68.7	37.3	62.5	33.8	44.4	33.6
Boulder*	68.9	55.5	67.2	63.3	62.9	40.7
Castle Rock3						
NE	94.3	47.9	81.6	56.3	77.9	48.8
COS Airport					30.5	17.1
Denver - 2 SE	59.7	36.4	71.1	39.8	48.5	24.8
HRanch	85.8	44.8	83.6	55.7	71.5	42.0
Lakewood						
Cntrl	70.2	39.6	80.3	53.2	61.7	29.9
Littleton	75.5	49.1	82.6	52.8	65.8	36.9
Parker	87.2	44.3	65.7	45.0	71.7	34.8
Wheatridge	88.7	46.8	88.6	56.2	58.1	35.5

Location	2006-2007	2007-2008	2008-2009	2009-2010	10-yr Avg	2010-2011 So Far
Arvada	96.1	59.7	69.7	92.8	<b>60.2</b>	27.7
Aurora Ctrl	83.5	57.6	54.1	77.2	<b>55.3</b>	28.9
Boulder*	116.1	72.8	75.0	123.1	<b>74.6</b>	38.5
Castle Rock3						
NE	141.0	71.0	76.8	107.0	<b>80.3</b>	32.7
COS Airport	30.0	33.2	17.9	31.8		11.3
Denver - 2 SE	85.0	55.0	49.8	87.2	<b>55.7</b>	32.1
HRanch	124.8	85.4	82.2	113.8	<b>79.0</b>	38.5
Lakewood						
Cntrl	84.0	48.9	59.3	82.5	<b>61.0</b>	27.9
Littleton	100.2	67.9	72.8	98.0	<b>70.2</b>	35.4
Parker	99.2	65.0	70.8	87.7	<b>67.1</b>	32.7
Wheatridge	104.3	65.6	78.8	101.8	<b>72.4</b>	37.1

Compared to the 10-year average of most locations are about half of what a “normal” winter season provides in snowfall. There will likely be some more snow to add to the totals through May but they will likely be minimal for areas below 6,000’. This report will be updated with more locations after the last snowfall of the season, typically mid May.

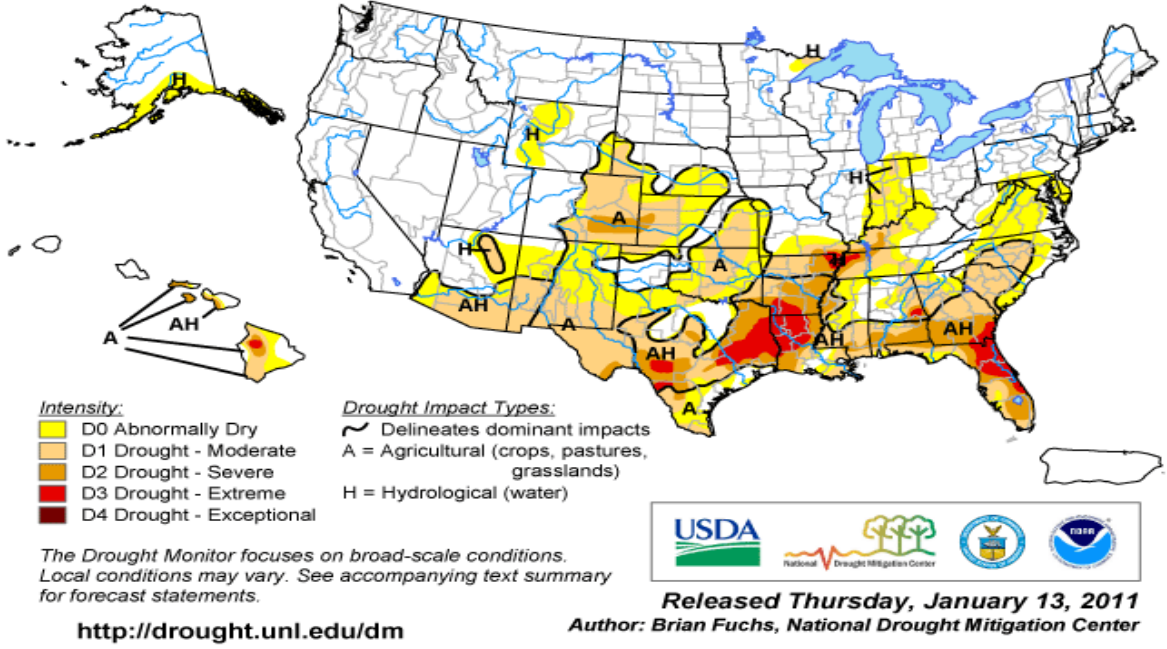
Note: Remember snow totals are taken by trained spotters and are not official data but do represent the area very well. Temperatures for each month were taken from DIA.

# Drought Update

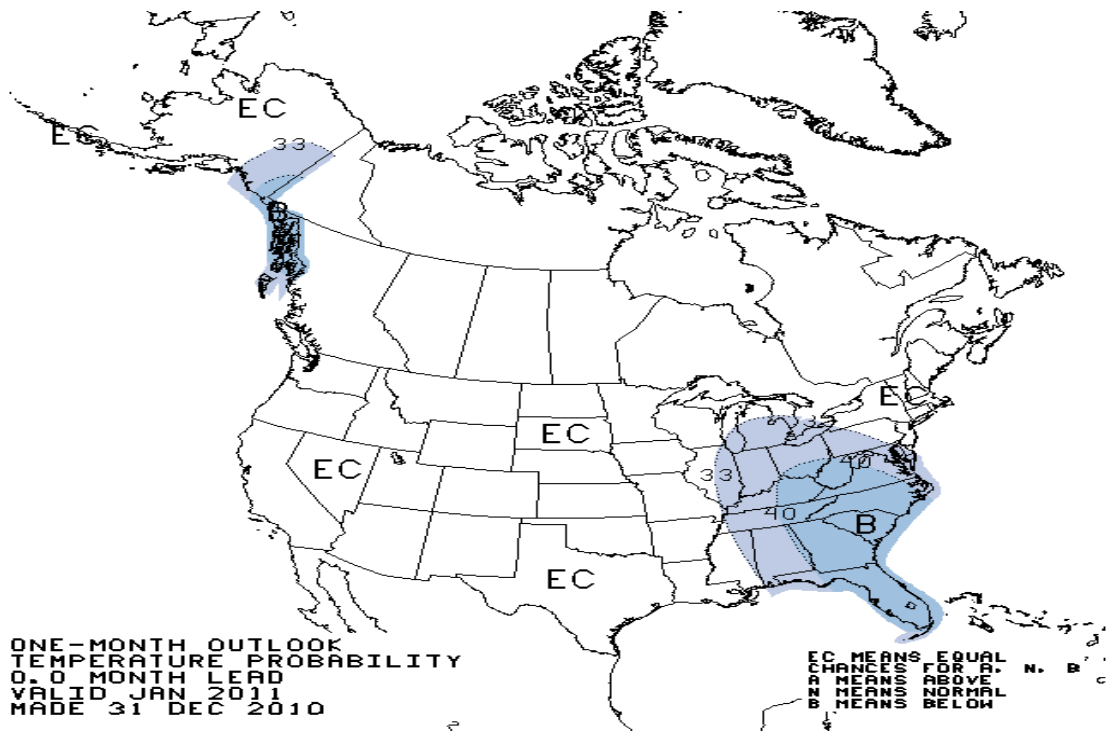
Dry conditions since mid August have brought drought conditions to eastern Colorado which is growing more severe each month.

## U.S. Drought Monitor

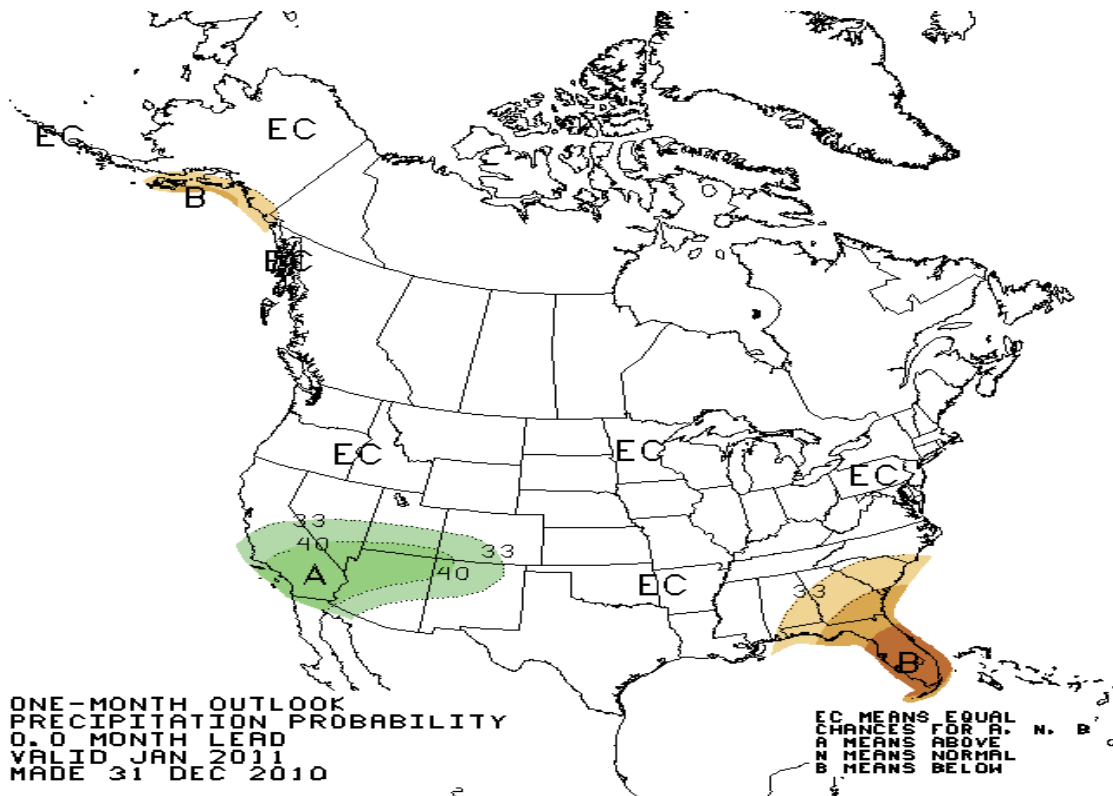
January 11, 2011  
Valid 7 a.m. EST



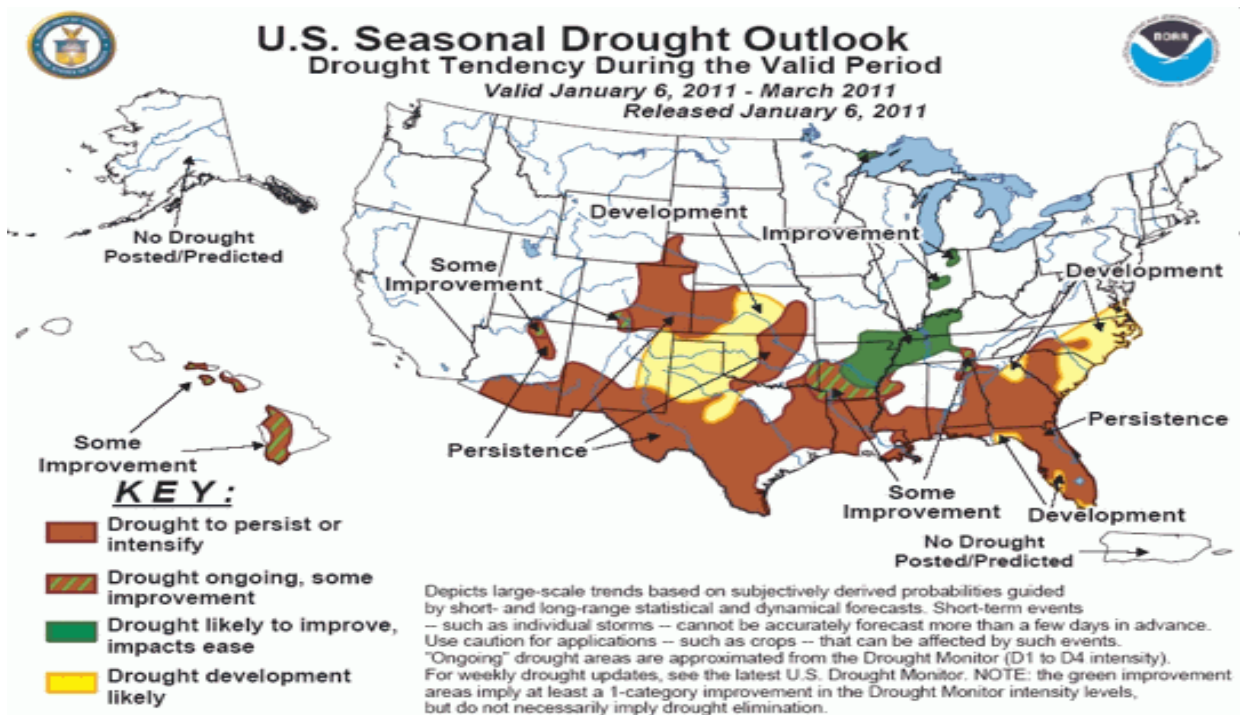
The map below shows forecasted temperature deviances for January 2011. As can be seen, normal temperatures are expected for much of Colorado for the month.



The map below shows forecasted precipitation deviances for January 2011. Normal precipitation amounts are expected across most of Colorado, with the southwestern portion of Colorado likely seeing above normal precipitation.



More widespread areas of drought are expected to persist or intensify across eastern Colorado.



## March Summary

March of 2011 came very close to being one of the least snowiest on record were it not for some snow the last few days of the month. At DIA only 2.5" of snow was recorded which tied 1918 for 8<sup>th</sup> place for the least snowiest March on record. Normally March is Denver's snowiest month of the year with 11.7" on average. As far as total precipitation goes in the form of rain and snow there was 0.35" recorded compared to 1.28" on average leaving a deficit of 0.93" for the month and now 0.91" for the year so far. This is not a very good start as last year was below normal in precipitation as well. Drought conditions are developing currently along the Front Range and the Fire Danger will be high this spring and early summer if significant rain or snow is not observed. March was also very warm with average highs 5 degrees above the normal of 53.7 degrees. Winds were howling again this month with an average wind speed of 11.1mph compared to 9.7mph on average.

## March Stats

### TEMPERATURE (IN DEGREES F)

AVERAGE MAX	58.7	NORMAL 53.7	DEPARTURE 5.0
AVERAGE MIN	27.8	NORMAL 25.4	DEPARTURE 2.4
MONTHLY MEAN	43.3	NORMAL 39.6	DEPARTURE 3.7
HIGHEST	76 on the 21 <sup>st</sup>		
LOWEST	14 on the 5 <sup>th</sup>		
DAYS WITH MAX 90 OR ABOVE	0	NORMAL	0
DAYS WITH MAX 32 OR BELOW	1	NORMAL	2.8
DAYS WITH MIN 32 OR BELOW	24	NORMAL	24.3
DAYS WITH MIN ZERO OR BELOW	0	NORMAL	0.5

### TEMPERATURE RECORDS

Temperature of 74 degrees on the 16<sup>th</sup> tied the old record set back in 1966.

### HEATING DEGREE DAYS

MONTHLY TOTAL	666	NORMAL 788	DEPARTURE -122
SEASONAL TOTAL	4817	NORMAL 5277	DEPARTURE -460

### COOLING DEGREE DAYS

MONTHLY TOTAL	0	NORMAL 0	DEPARTURE 0
YEARLY TOTAL	0	NORMAL 0	DEPARTURE 0

### PRECIPITATION (IN INCHES)



MONTHLY TOTAL	0.35	NORMAL	1.28	DEPARTURE	-0.93
YEARLY TOTAL	1.37	NORMAL	2.28	DEPARTURE	-0.91
GREATEST IN 24 HOURS	0.13" on the 28 <sup>th</sup>				
DAYS WITH MEASURABLE PRECIP.					8

**SNOWFALL (IN INCHES)**

MONTHLY TOTAL	2.5	NORMAL	11.7	DEPARTURE	-9.2
SEASONAL TOTAL	20.6	NORMAL	45.9	DEPARTURE	-25.3
GREATEST IN 24 HOURS	1.1" on the 28 <sup>th</sup> through 29 <sup>th</sup>				
GREATEST DEPTH	NA				

**WIND (IN MILES PER HOUR)**

AVERAGE SPEED	11.1mph
PEAK WIND GUST	48mph from the NW

**MISCELLANEOUS WEATHER**

NUMBER OF DAYS WITH THUNDERSTORM	0	NORMAL	<1
NUMBER OF DAYS WITH HEAVY FOG	4	NORMAL	1
NUMBER OF DAYS WITH HAIL	0		
NUMBER OF SUNNY DAYS	5		
NUMBER OF PARTLY CLOUDY DAYS	19		
NUNMER OF CLOUDY DAYS	7		
AVERAGE RELATIVE HUMIDITY	44%		

## April Preview

As the saying goes, “April showers bring May flowers” is appropriate for many areas of the Country but here in Denver one might be better off saying , “April snows bring May lawn mows”. Believe it or not April is the 3<sup>rd</sup> snowiest month of the year on average but this winter and spring so far has been far from average. Expect the trend of below normal snowfall and precipitation to continue through April for most locations as there has not been any major changes in the overall weather pattern with La Nina conditions still present. There will still be some snow this month with 4-7 possible storms but precipitation will likely fall as rain at lower elevations due to the trend of warmer than average temperatures. It may be safe to say the snow season is done, or at least on pavement anyway. Average precipitation for April is 1.93” which makes it one of the wetter months of the year. With below normal precipitation expected and nearly 1” below normal precipitation on the year drought conditions will be worsening this month. Temperatures for April can range from a record high of 90 to a record low of -2. Conditions are typically highly variable with the chance for thunderstorms and snow in the same day. There can also be warm and windy weather as we have already experienced in March and April is usually the windiest month of the year. Average highs for the month are around 60 with average lows in the mid 30s. Don’t get too excited and plant your garden too early as it can freeze almost any night of the month. Typically by mid May it is safe to plant tender vegetation outdoors.

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

#### TEMPERATURE

AVERAGE HIGH	60.9
AVERAGE LOW	34.2
MONTHLY MEAN	47.6
DAYS WITH HIGH 90 OR ABOVE	Less than 1
DAYS WITH HIGH 32 OR BELOW	Less than 1
DAYS WITH LOW 32 OR BELOW	11
DAYS WITH LOWS ZERO OR BELOW	Less than 1

#### PRECIPITATION

MONTHLY MEAN	1.93”
DAYS WITH MEASURABLE PRECIPITATION	9
AVERAGE SNOWFALL IN INCHES	9.1”
DAYS WITH 1.0 INCH OF SNOW OR MORE	3

#### MISCELLANEOUS AVERAGES

HEATING DEGREE DAYS	524
COOLING DEGREE DAYS	2
WIND SPEED (MPH)	10.0mph
WIND DIRECTION	South
DAYS WITH THUNDERSTORMS	2
DAYS WITH DENSE FOG	1

PERCENT OF SUNSHINE POSSIBLE

67%

**EXTREMES**

RECORD HIGH	90 on 4/30/1992
RECORD LOW	-2 on 4/2/1975
WARMEST	56.4 degrees in 1946 and 1981
COLDEST	38.8 degrees in 1920
WETTEST	8.24" in 1900
DRIEST	0.03" in 1963
SNOWIEST	33.8" in 1933
LEAST SNOWIEST	0.0" in 1888, 1930, 1943, 1992

**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			27.9
Brighton	0.0	0.0	0.7	4.0	6.6	5.4	1.3			18.0
Broomfield	0.0	0.0	1.6	4.1	8.9	10.5	1.9			27.0
Castle Rock 4 NE	0.0	0.0	4.4	4.0	8.1	13.0	1.7			31.2
Colo Sprgs Airport	0.0	0.0	0.2	4.0	1.5	2.5	3.1			11.3
Denver DIA	0.0	0.0	1.5	3.3	8.0	5.3	2.5			20.6
Denver Downtown	0.0	0.0	3.1	4.2	11.0	11.9	1.1			31.3
Golden	0.0	0.0	1.7	8.1	13.8	15.5	2.6			41.7
Fort Collins	TR	0.0	5.0	4.3	6.0	6.3	TR			21.6
Highlands Ranch	0.0	0.0	1.5	5.8	11.6	14.5	2.1			35.5
Lakewood	0.0	0.0	1.1	3.5	8.7	10.6	3.0			26.9
Littleton	0.0	0.0	0.2	5.5	10.5	15.0	2.6			33.8
Parker	0.0	0.0	4.9	2.5	9.6	11.7	2.0			30.7
Sedalia - Hwy 67	0.0	0.0	5.0	4.0	9.3	12.8	2.5			33.6
Thornton	0.0	0.0	0.6	4.7	8.1	7.3	2.2			22.9
Westminster	0.0	0.0	2.0	4.6	10.9	11.2	0.2			28.9
Wheatridge	0.0	0.0	1.5	5.7	11.4	15.5	2.2			36.3

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