

# The Weather Wire

July 2014

Volume 21 Number 07

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## Lightning Day Count from April-June 2014

The weather this spring has been quite active in and around the Denver Metro area, but how active has it been compared to recent years? One way to measure storm activity is the presence of lightning. There are some days that there is not lightning but there is rainfall but those are few and far between during the spring months of April through June. Skyview Weather has been compiling lightning data for areas in and around Denver since 2010. Below is the lightning count for 2014 from March through April concentrating on the months of May and June:

Thunderstorm Days March 1 - June 30										
	Adams	Arap	Bldr	Broom	Denvr	Dglas	Jeffer	Metro	CSprgs	# of Days
March	0	0	0	0	0	3	1	0	1	3
April	2	2	3	0	2	3	3	2	4	8
May	12	10	14	10	12	13	12	11	11	18
June	15	16	16	9	14	17	16	16	13	18
May/June:	27	26	30	19	26	30	28	27	24	36
Total:	29	28	33	19	28	36	32	29	29	47
% Days May/June:	44%	43%	49%	31%	43%	49%	46%	44%	39%	59%

So far the greatest number of thunderstorm days has been over Douglas, Boulder and Jefferson Counties which should not be surprising as these Counties contain higher elevations where storms are more frequent. The lowest amount of

thunderstorm activity has been over Broomfield County but this is due to the smaller size of Broomfield County compared to other larger counties. Lightning was logged for strikes that occurred over the western half of Adams and Arapahoe Counties with any storms east of about Bennett not being logged as the population is sparse to the east. Metro Denver was considered from roughly Brighton through Highlands Ranch and west into Golden and east to include Aurora. The “Metro Area” is where most of the population resides and includes the surrounding Denver suburbs so it is a rather large area. The total # of days represents a day where one or more areas experienced lightning. From May 1<sup>st</sup> through June 30<sup>th</sup> 59% of the days have had a thunderstorm somewhere along the Front Range from Boulder County to Colorado Springs. That is a lot of days with thunderstorms considering the monsoon season has not even started as of the first of July!

Last year was also very active with thunderstorms and the season went late with the flooding rains of September. Below is the lightning count from 2013 March 1<sup>st</sup> to October 31<sup>st</sup> concentrating on the dates from April 15<sup>th</sup> to September 15<sup>th</sup>.

<b>2013</b>	<b>Adams</b>	<b>Arap</b>	<b>Bldr</b>	<b>Broom</b>	<b>Denvr</b>	<b>Dglas</b>	<b>Jeffer</b>	<b>Metro</b>	<b>CSprgs</b>	<b># of Days</b>
<b>Apr 15-Sep 15</b>	51	47	76	38	48	73	78	60	67	103
<b>Mar 1-Oct 31</b>	57	51	82	39	50	79	84	63	70	116
<b>% Days Apr 15-Sept 15</b>	33%	31%	50%	25%	31%	48%	51%	39%	44%	

Some of the season total lightning counts were very high for 2013 with over 80 thunderstorm days reported in Boulder and Jefferson Counties and 79 days for Douglas County. Nearly 50% of the days from April 15<sup>th</sup> through September 15<sup>th</sup> contained storm activity over the foothills. Lightning counts were lower over the plains but still very active with 50 or more lightning days most areas. Below are the lightning counts for 2010-2012 in which the data is available from April 15 to Sept 15 each year. 2012 was a low year for lightning while 2011 was somewhat active and 2010 was another low lightning year. As we move forward in time and are able to gather more information on lightning over the Denver Metro area this information may become useful for long term planning for outdoor events and other activities that may be impacted by lightning but for now our sample size is rather small and is more intriguing than useful to find averages for lightning for Denver and surrounding areas.

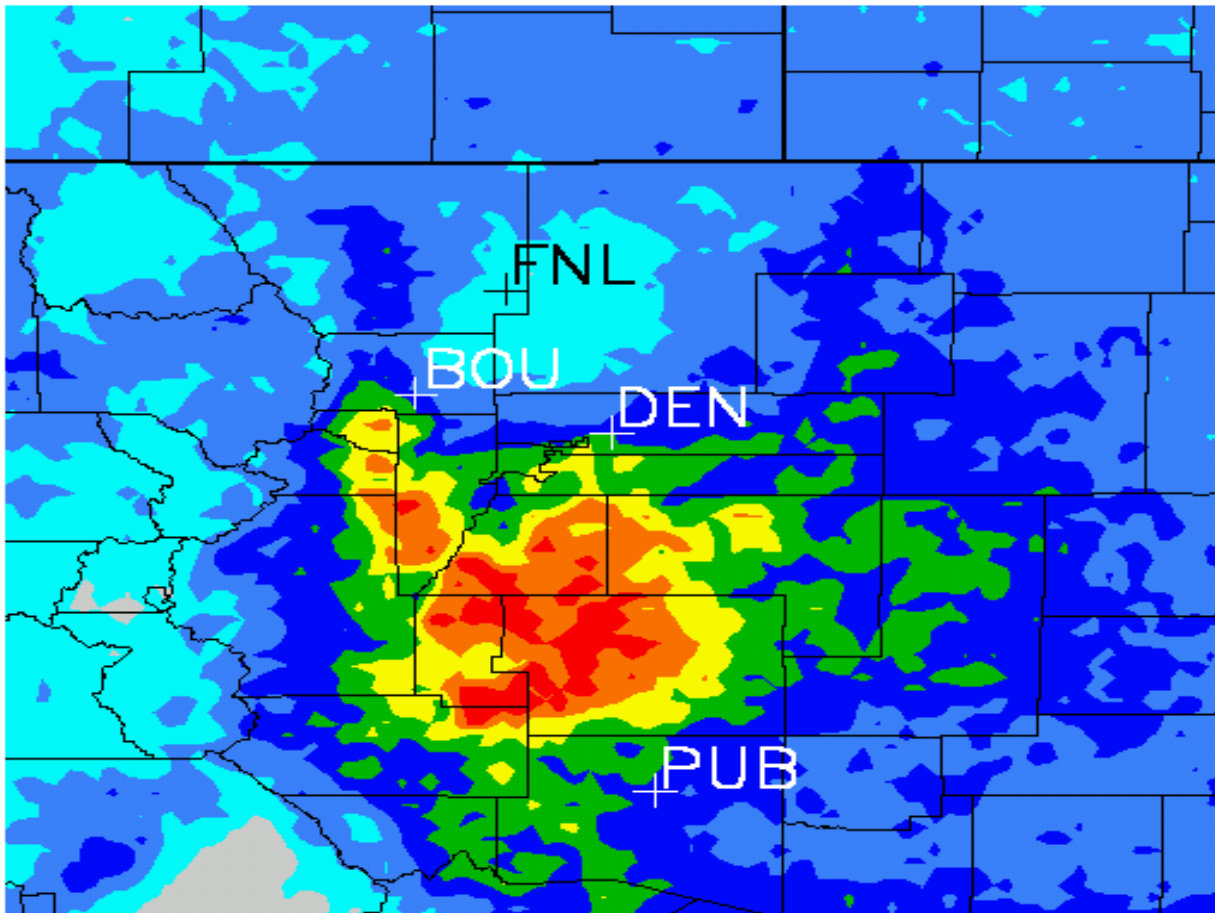
<b>2012</b>	<b>Adams</b>	<b>Arap</b>	<b>Bldr</b>	<b>Broom</b>	<b>Denvr</b>	<b>Dglas</b>	<b>Jeffer</b>	<b>Metro</b>	<b>CSprgs</b>
<b>Apr 15-Sep 15</b>	32	30	57	29	28	54	57	34	52
<b>% of Days Apr 15-Sep 15</b>	21%	20%	37%	19%	18%	35%	37%	22%	34%

2011	Adams	Arap	Bldr	Broom	Denvr	Dglas	Jeffer	Metro	CSprgs
Apr 15-Sep 15	54	55	64	39	44	71	73	38	69
% Days Apr 15-Sep 15	35%	36%	42%	26%	29%	46%	48%	25%	45%

2010	Adams	Arap	Bldr	Broom	Denvr	Dglas	Jeffer	Metro	CSprgs
Apr 15-Sep 15	40	44	43	31	40	51	58	48	52
% Days Apr 15-Sep 15	26%	29%	28%	20%	26%	33%	38%	31%	34%

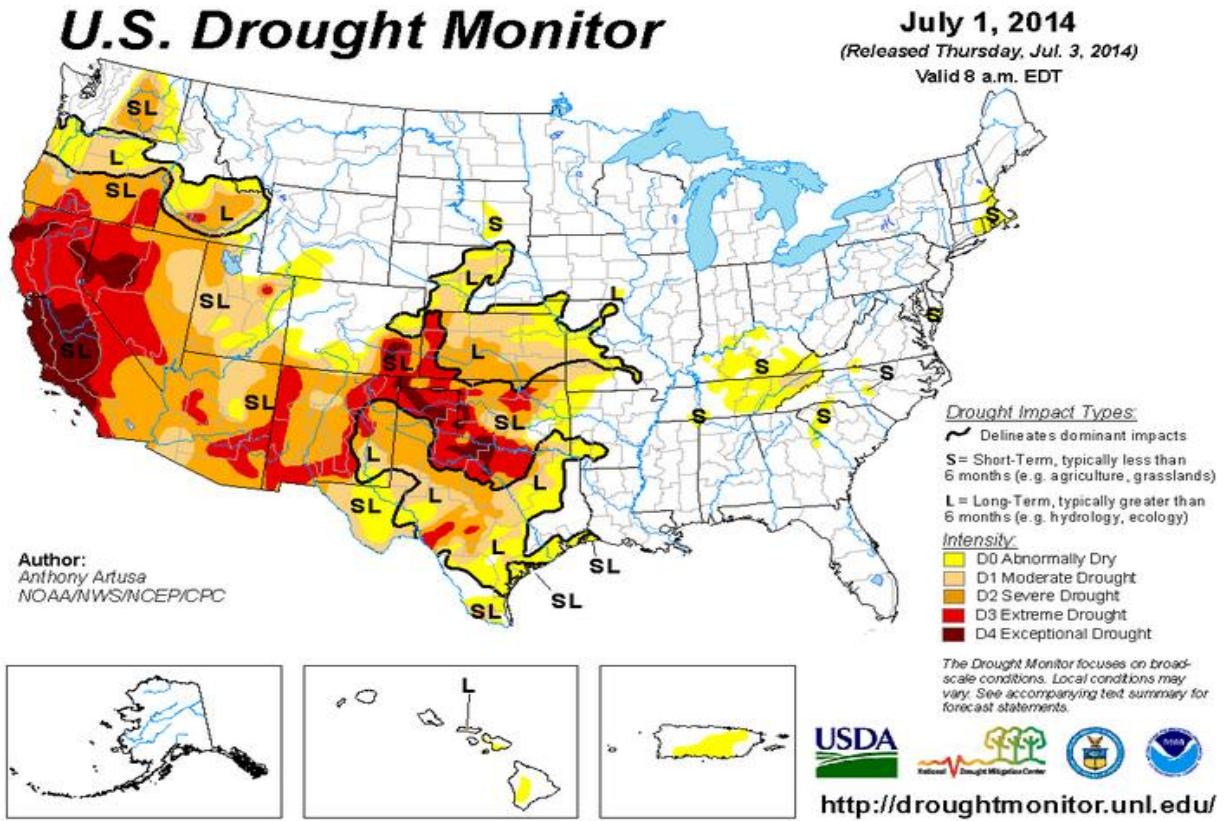
If you have any questions or comments about lightning please feel free to give us an email and we may have information available to you. Below is an old lightning density map from 1989 to 2000 showing where the lightning strikes are most common. Notice how the Palmer Divide is a high lightning activity area even compared to most of the mountainous areas of the state.

**1989 - 2000 Mean Annual Flash Density (Flashes km<sup>-2</sup> yr<sup>-1</sup>)**

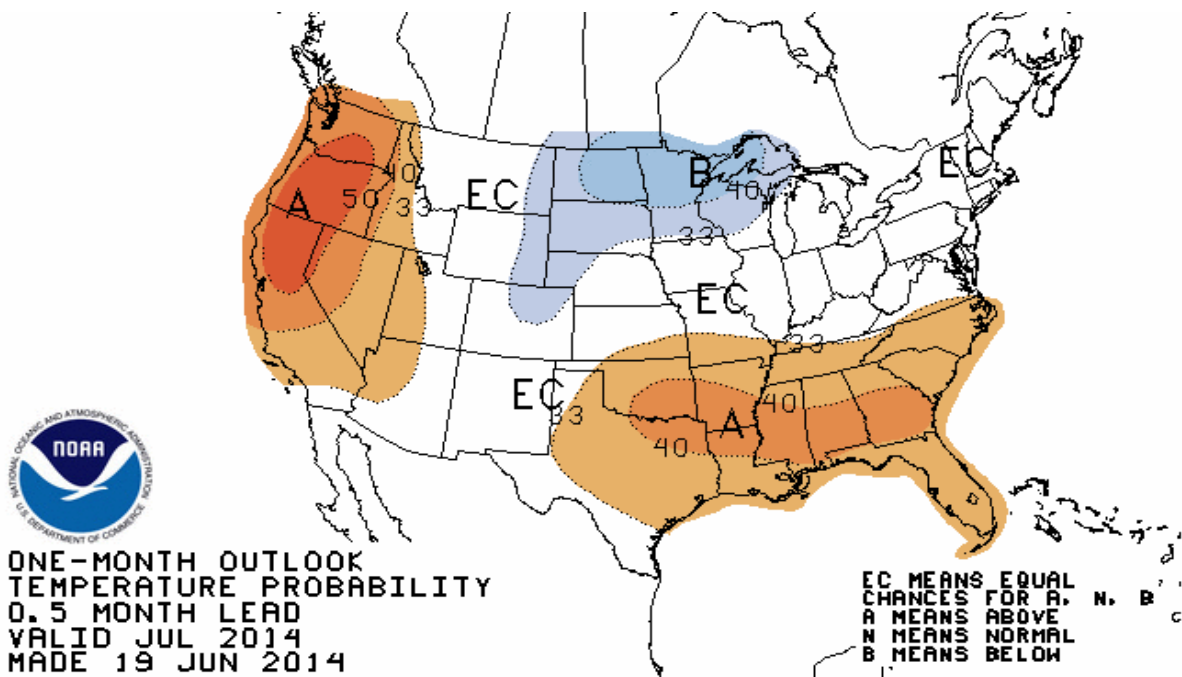


# Drought Update

Drought persists over the majority of the SW states especially over portions of CA, NV, NM, OK, SE Colorado and the TX panhandle with generally drought free conditions over the northern tier of states and the eastern 1/2 of the US.

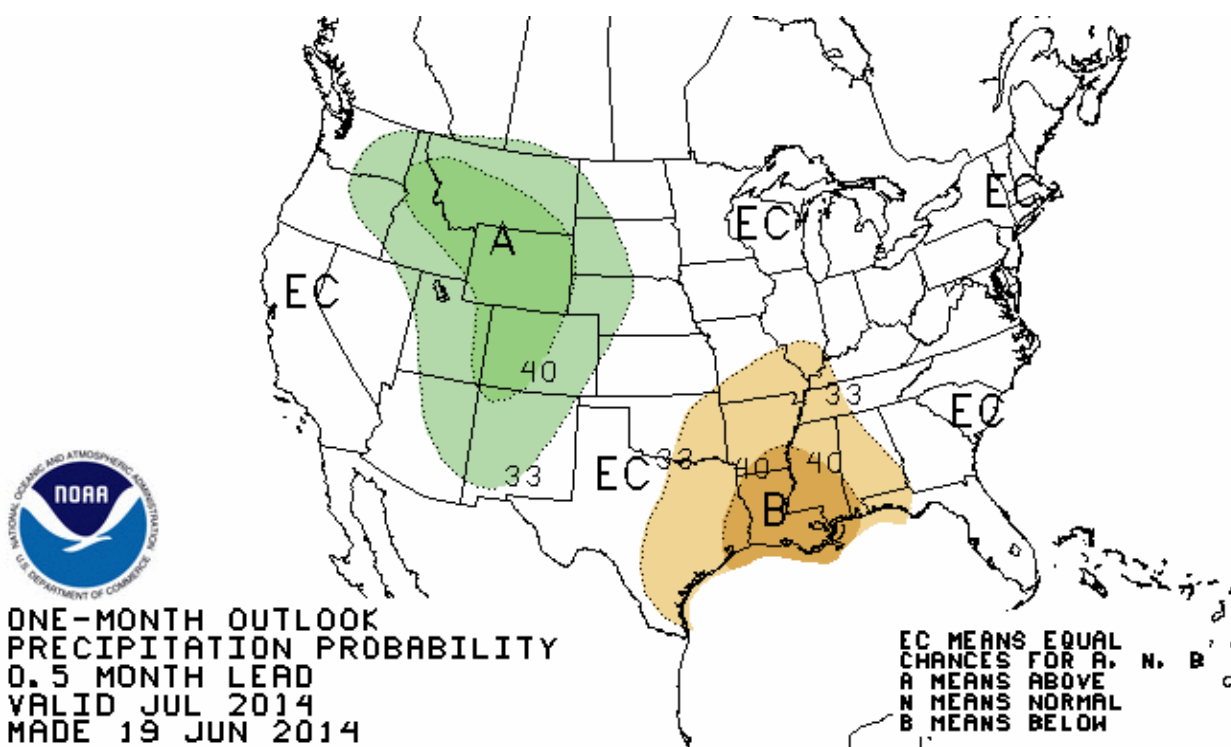


The map below shows forecasted temperature deviances for July 2014. There is a high probability of near normal temperatures over most of the state with below normal temperatures possible for NE Colorado.

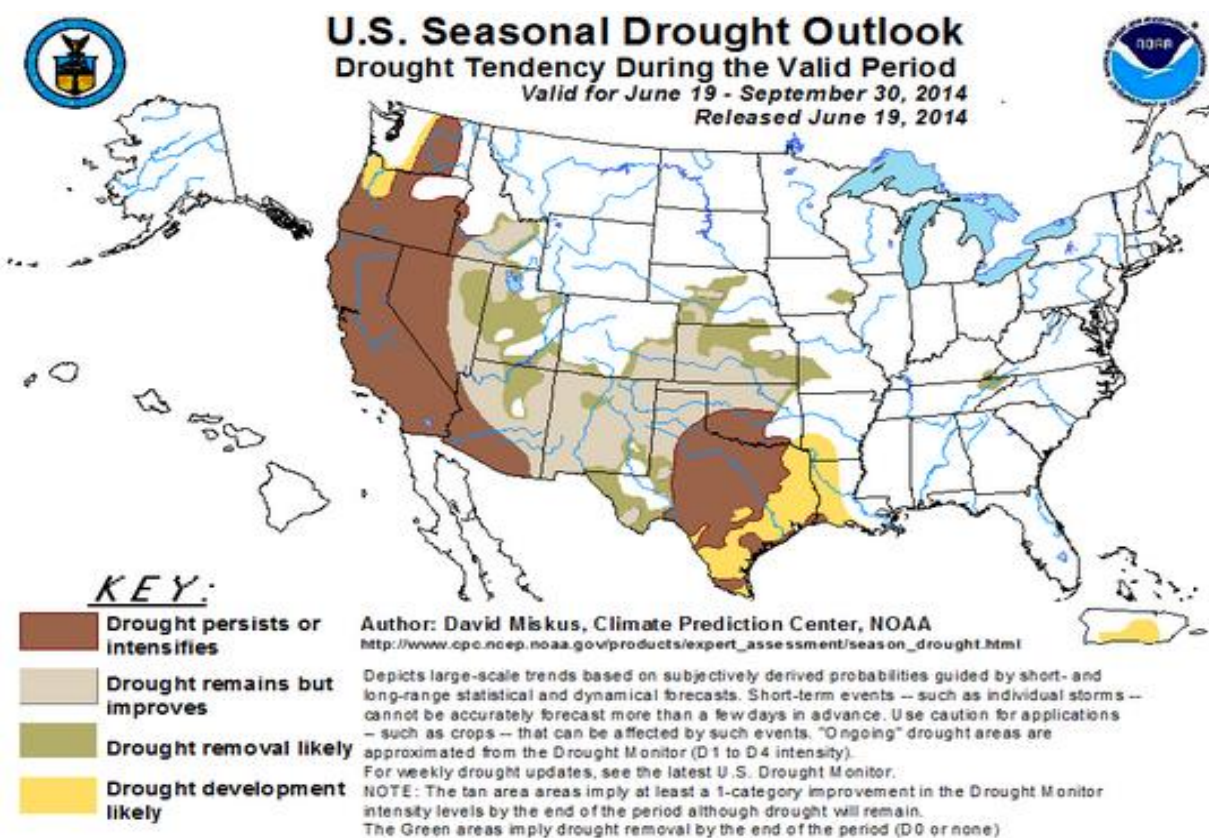




The map below shows forecasted precipitation deviances for July 2014. Above normal precipitation is forecast for the state of Colorado with possibly well above normal precipitation for some areas of the state.



Drought conditions are forecast to improve over southeast Colorado with generally drought free conditions over the remainder of the state.



## June Summary

June was fairly active weather wise with 11 days that spawned severe weather in and around the Denver Metro area. There were multiple fronts that moved through during the month keeping temperatures in line with average. Average high temperatures were about 1 degree above normal at 83.4 and low temperatures were about 1 degree cooler than normal at 51.2. The monthly mean was 67.3 degrees and 0.1 degree below normal but this is about as close as we ever get to a normal temperature month around here. There were not any temperature records tied or broken. Despite all of the thunderstorm activity precipitation came in just below normal at DIA with 1.82" measured which was 0.16" below the normal of 1.98". For the year now we are right around 1" above normal precipitation. There were 9 days during June with measureable precipitation with the most falling on the 27<sup>th</sup> where 0.51" was measured setting a new daily precipitation record. Total thunderstorm days for DIA was 15 which was well above the normal of 8. Relative humidity averaged 53% which is indicative of a relatively moist air mass in place for this time of year which has reduced the wild land fire threat up to this point as vegetation has remained green.

## June Stats

### TEMPERATURE (IN DEGREES F)

AVERAGE MAX	83.4	NORMAL 82.4	DEPARTURE 1.0
AVERAGE MIN	51.2	NORMAL 52.3	DEPARTURE -1.1
MONTHLY MEAN	67.3	NORMAL 67.4	DEPARTURE -0.1
HIGHEST	94	on the 26 <sup>th</sup>	
LOWEST	42	on the 15 <sup>th</sup>	

DAYS WITH MAX 90 OR ABOVE	6	NORMAL	8
DAYS WITH MAX 32 OR BELOW	0	NORMAL	0
DAYS WITH MIN 32 OR BELOW	0	NORMAL	0
DAYS WITH MIN ZERO OR BELOW	0	NORMAL	0

### TEMPERATURE RECORDS

No temperature records tied or broken

### HEATING DEGREE DAYS

MONTHLY TOTAL	30	NORMAL 62	DEPARTURE -32
SEASONAL TOTAL	6004	NORMAL 6058	DEPARTURE -54

### COOLING DEGREE DAYS

MONTHLY TOTAL	106	NORMAL 133	DEPARTURE -27
YEARLY TOTAL	127	NORMAL 155	DEPARTURE -28

### PRECIPITATION (IN INCHES)

MONTHLY TOTAL	1.82	NORMAL 1.98	DEPARTURE -0.16
YEARLY TOTAL	8.53	NORMAL 7.51	DEPARTURE 1.02
GREATEST IN 24 HOURS	0.51" On the 27 <sup>th</sup>		
DAYS WITH MEASURABLE PRECIP.	9		

### SNOWFALL (IN INCHES)

MONTHLY TOTAL	0.0	NORMAL 0.0	DEPARTURE 0.0
SEASONAL TOTAL	0.0	NORMAL 0.0	DEPARTURE 0.0
GREATEST IN 24 HOURS	0.0		
GREATEST DEPTH	0.0		

### WIND (IN MILES PER HOUR)

AVERAGE SPEED	10.5mph
PEAK WIND GUST	55mph from the SW on 6/18

### MISCELLANEOUS WEATHER

NUMBER OF DAYS WITH THUNDERSTORM	15	NORMAL	8
NUMBER OF DAYS WITH HEAVY FOG	4	NORMAL	1
NUMBER OF DAYS WITH HAIL	3		
NUMBER OF SUNNY DAYS	8		
NUMBER OF PARTLY CLOUDY DAYS	21		
NUMBER OF CLOUDY DAYS	1		
AVERAGE RELATIVE HUMIDITY	53%		

## July Preview

July is usually the warmest month of the year for Denver and surrounding areas with average high temperatures in the upper 80s to around 90. Average high temperatures to start the month are 87 degrees and 90 at month's end. The record high for July is 105 degrees set back in 2005 and is the warmest temperature in Denver history. The record low for July is 42 degrees set back in 1873 and again in 1903. The big story for July is the onset of the North American monsoon which usually begins in the first or second week of the month and is currently on track to do so. The threat for severe weather lowers from June but many storms can still contain gusty winds, large hail and isolated tornadoes. Storms begin to produce heavy rains versus severe weather as moisture from the Gulf of Mexico and the Gulf of California work its way into the state. Storms to start the month are relatively fast movers but by month's end the jet stream usually lifts northwards with slower storm speeds which in turn increases the threat for flash flooding, especially over burn scars. Average monthly precipitation is higher than June at 2.16". There are usually 8 days with measureable precipitation and 11 days with thunderstorms. For July of 2014 normal to below normal temperatures are expected with normal precipitation to above normal precipitation.

### DENVER'S JULY CLIMATOLOGICALLY NORMAL (NORMAL PERIOD 1981-2010 DIA Data)

#### TEMPERATURE

AVERAGE HIGH	89.4
AVERAGE LOW	58.9
MONTHLY MEAN	74.2
DAYS WITH HIGH 90 OR ABOVE	16
DAYS WITH HIGH 32 OR BELOW	0
DAYS WITH LOW 32 OR BELOW	0
DAYS WITH LOWS ZERO OR BELOW	0

#### PRECIPITATION

MONTHLY MEAN	2.16"
DAYS WITH MEASURABLE PRECIPITATION	8
AVERAGE SNOWFALL IN INCHES	0.0"
DAYS WITH 1.0 INCH OF SNOW OR MORE	0

#### MISCELLANEOUS AVERAGES

HEATING DEGREE DAYS	6
COOLING DEGREE DAYS	289
WIND SPEED (MPH)	8.3mph
WIND DIRECTION	South
DAYS WITH THUNDERSTORMS	11
DAYS WITH DENSE FOG	Less than 1
PERCENT OF SUNSHINE POSSIBLE	71%

#### EXTREMES

RECORD HIGH	105 on 7/20/2005
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RECORD LOW	42 on 7/4/1903
WARMEST	78.9 in 2012
COLDEST	67.4 in 1895
WETTEST	6.41" in 1965
DRIEST	0.01" in 1901
SNOWIEST	0.0"
LEAST SNOWIEST	0.0"

## Sunrise/Sunset (July - December Denver area)

	JUL	AUG	SEP	OCT	NOV	DEC	
	<b>SR - SS</b>	<b>SR - SS</b>	<b>SR - SS</b>	<b>SR - SS</b>	<b>SR - SS</b>	<b>SR - SS</b>	
01	0534-0831	0558-0812	0627-0731	0655-0642	0728-0556	0701-0435	01
02	0535-0831	0559-0811	0628-0729	0656-0641	0729-0555	0702-0434	02
03	0535-0831	0600-0810	0629-0728	0657-0639	0630-0454	0703-0434	03
04	0536-0830	0600-0809	0630-0726	0658-0637	0631-0453	0704-0434	04
05	0536-0830	0601-0808	0631-0725	0659-0636	0632-0452	0705-0434	05
06	0537-0830	0602-0807	0631-0723	0700-0634	0634-0451	0706-0434	06
07	0538-0830	0603-0806	0632-0721	0701-0633	0635-0450	0707-0434	07
08	0538-0829	0604-0805	0633-0720	0702-0631	0636-0449	0708-0434	08
09	0539-0829	0605-0803	0634-0718	0703-0629	0637-0448	0708-0434	09
10	0540-0829	0606-0802	0635-0717	0704-0628	0638-0447	0709-0434	10
11	0540-0828	0607-0801	0636-0715	0705-0626	0639-0446	0710-0434	11
12	0541-0828	0608-0800	0637-0713	0706-0625	0640-0445	0711-0434	12
13	0542-0827	0609-0758	0638-0712	0707-0623	0642-0444	0712-0435	13
14	0542-0827	0610-0757	0639-0710	0708-0622	0643-0443	0712-0435	14
15	0543-0826	0611-0756	0640-0708	0709-0620	0644-0443	0713-0435	15
16	0544-0826	0612-0754	0641-0707	0710-0619	0645-0442	0714-0435	16
17	0545-0825	0613-0753	0642-0705	0711-0617	0646-0441	0714-0436	17
18	0546-0824	0614-0752	0643-0703	0712-0616	0647-0440	0715-0436	18
19	0546-0824	0615-0750	0644-0702	0714-0614	0648-0440	0715-0437	19
20	0547-0823	0616-0749	0645-0700	0715-0613	0649-0439	0716-0437	20
21	0548-0822	0616-0747	0646-0658	0716-0612	0651-0439	0717-0437	21
22	0549-0822	0617-0746	0646-0657	0717-0610	0652-0438	0717-0438	22
23	0550-0821	0618-0745	0647-0655	0718-0609	0653-0437	0717-0439	23
24	0551-0820	0619-0743	0648-0654	0719-0608	0654-0437	0718-0439	24
25	0551-0819	0620-0742	0649-0652	0720-0606	0655-0437	0718-0440	25
26	0552-0818	0621-0740	0650-0650	0721-0605	0656-0436	0719-0440	26
27	0553-0817	0622-0739	0651-0649	0722-0604	0657-0436	0719-0441	27
28	0554-0816	0623-0737	0652-0647	0723-0602	0658-0435	0719-0442	28
29	0555-0815	0624-0736	0653-0645	0724-0600	0659-0435	0719-0442	29
30	0556-0815	0625-0734	0654-0644	0726-0559	0700-0435	0720-0443	30
31	0557-0814	0626-0732		0727-0557		0720-0444	31

# Rainfall

## May 2014 to September 2014

City	May	June	July	Aug	Sept	Total
Aurora (Central)	4.02	1.97				5.99
Brighton	3.15	1.34				4.49
Broomfield	2.24	0.63				2.87
Castle Rock	3.11	1.42				4.53
Colo Sprgs Airport	2.56	1.29				3.85
Denver DIA	3.51	1.82				5.33
Denver Downtown	3.62	1.02				4.64
Golden	3.78	<i>0.79</i>				4.57
Fort Collins	4.49	3.20				7.69
Highlands Ranch	3.04	1.46				4.50
Lakewood	4.92	0.83				5.75
Littleton	3.19	1.38				4.57
Parker	1.77	2.64				4.41
Sedalia - Hwy 67	3.03	1.48				4.51
Thornton	2.56	0.51				3.07
Westminster	3.86	0.94				4.80
Wheat Ridge	4.44	1.07				5.51

*Italics = Golden spotter not reporting/used Lena Gulch at US hwy 6*

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