

The Weather Wire

October 2014

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Colorado Springs Climate Discussion

Our primary focus in the monthly newsletter is the Denver Metro area but we do have many clients from Colorado Springs. For a little change let's take a look at some climate data in Colorado Springs to learn more about our neighbors to the south. Those of us who do not live in Colorado Springs may think that the City receives more snow than Denver since it is closer to the mountains (Pikes Peak 14,115') and is quite a bit higher in elevation than Denver at 6,035' officially but much of the population of Colorado Springs is actually above 6,500'. Despite the higher elevation and proximity to the mountains Colorado Springs actually receives less snow on average than Denver. Quite a bit less actually with only around 38" on average at the airport with is right around 20" less than Denver. Much like Denver and DIA the airport in Colorado Springs does not necessarily represent the City climate as a whole. The northern and western suburbs of Colorado Springs do indeed average more snow than the airport much like the southern and western suburbs of Denver average more snow than DIA. Why is there such a discrepancy in snowfall between Denver and Colorado Springs? The answer lies in the Palmer Divide as this west to east oriented range acts as a snow blocker for Colorado Springs. When we think of "upslope" in Denver it is from N/NE winds. As these N/NE winds travel up and over the Palmer Divide (greater than 7,500') moisture is wrung out on the northern side of the Palmer Divide usually spilling over to about the Gleneagle area then drying of the air mass occurs into Colorado Springs with lighter snows or no snow at all. The "upslope" direction for Colorado Springs is from the SE and the opposite phenomenon occurs as winds travel over the Palmer Divide. The S/SE winds cool and condense the air on the south side of the Divide depositing moisture and spilling over to about Larkspur with continued drying into the Denver Metro area. This is the main reason why storms that have a large impact on Denver usually have minor impacts on Colorado Springs and vice versa. The Palmer Divide is not considered much of a mountain here in Colorado due to our many peaks that break tree line but there is a significant elevation gain from Denver to Monument at roughly 2,250-2,500'. The Palmer Divide may not be large in stature but has a high impact on our weather in Denver and Colorado Springs as well as all the

communities in between. Below is a table showing Colorado Springs monthly and annual climate data and can be found on the NWS Pueblo website at:

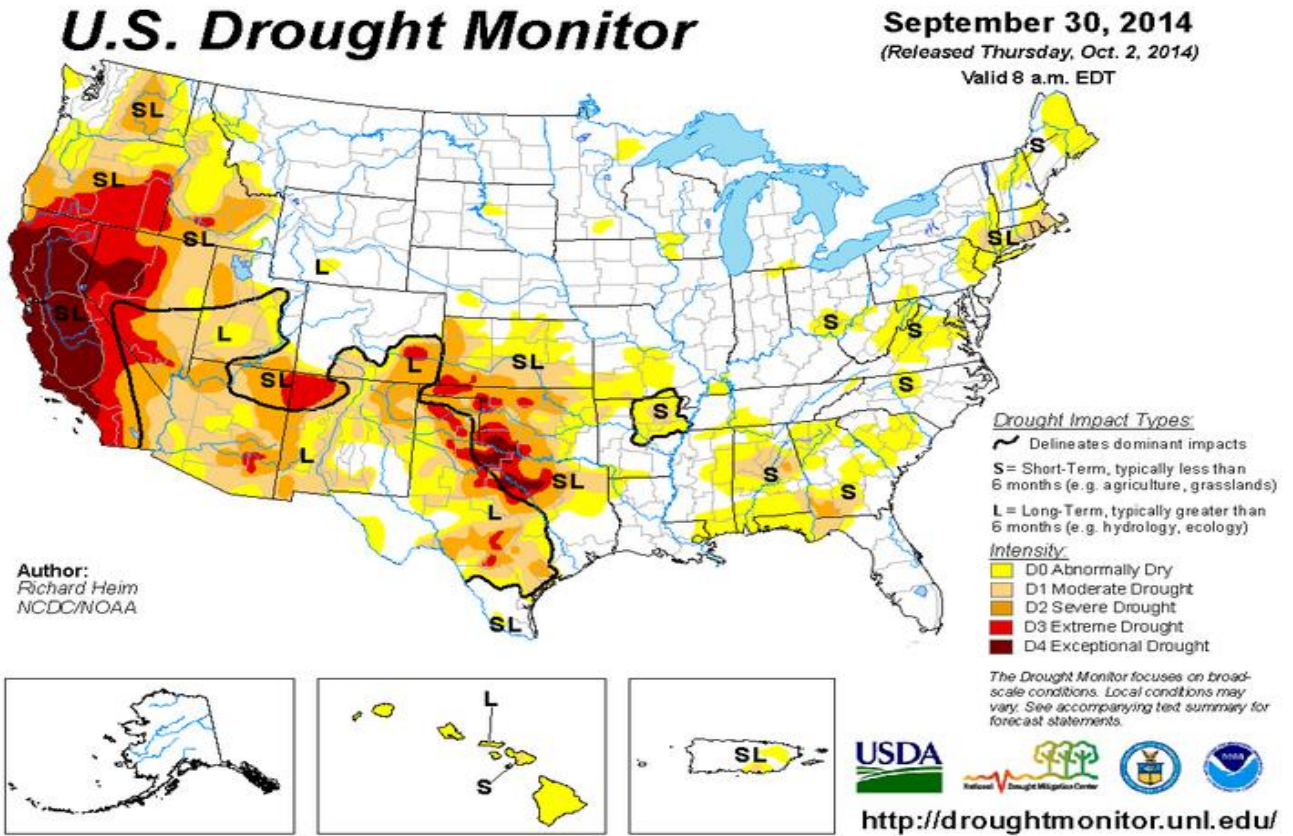
<http://www.crh.noaa.gov/pub/?n=/climate/cli/coloradosprings.php>.

Month	Temperature Normals (deg F)			Precipitation Normals (inches)	Snowfall (inches)	Mean # of Days with	
	High	Low	Average			Thunderstorms	Heavy Fog
January	43.2	17.7	30.5	0.32	5.6	0.0	2.6
February	44.8	19.5	32.1	0.34	4.9	0.1	3.5
March	52.1	26.0	39.1	1.00	8.1	0.7	3.7
April	59.8	33.3	46.5	1.42	4.9	2.1	2.8
May	69.1	42.7	55.9	2.03	0.7	7.4	1.7
June	79.0	51.3	65.1	2.50	0	10.2	0.9
July	84.8	56.9	70.9	2.84	0	12.6	0.9
August	81.6	55.7	68.7	3.34	0	12.8	1.5
September	74.5	47.3	60.9	1.19	0.2	4.2	1.4
October	63.0	35.8	49.4	0.82	2.9	0.7	2.2
November	51.0	25.2	38.1	0.40	4.7	0.1	3.0
December	42.1	17.5	29.8	0.34	5.7	0.0	2.7
ANNUAL	62.2	35.8	49.0	16.54	37.7	50.9	26.9

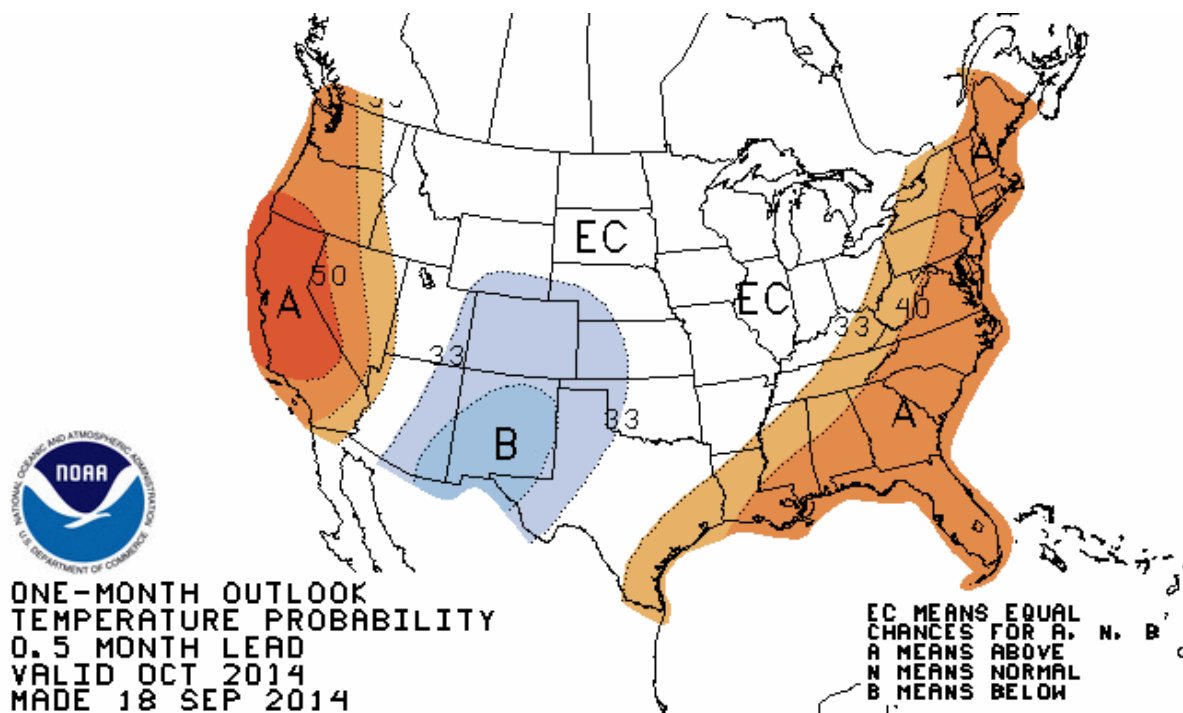
Normal precipitation on an annual basis for Colorado Springs is higher than Denver at 16.54" due to more thunderstorm activity in the summer months. This is when being close to Pikes Peak favors Colorado Springs for more moisture, during the summer monsoon season. Temperatures in Colorado Springs are usually a little cooler in the summer for daytime highs and lows than Denver but in the winter temperatures can be quite variable with one area warmer or colder than the other due to temperature inversions. The record low for Colorado Springs is -27 degrees. The record low for Denver is -29. The record high for Colorado Springs is 101. The record high for Denver is 105. Notice the average precipitation for October in Colorado Springs at 0.82"... On 10/9 Colorado Springs not only broke a daily rainfall record at 0.59" but blew through their monthly total by over 2" with officially 2.83" of moisture! Since Jan 1st 16.49" of moisture has been measured at the airport in Colorado Springs and there will be no problem adding another 0.06" to reach normal by the end of the year. Good news for us all in the state as the abundant moisture this spring and summer helped to keep the wild fire season relatively inactive for a change.

Drought Update

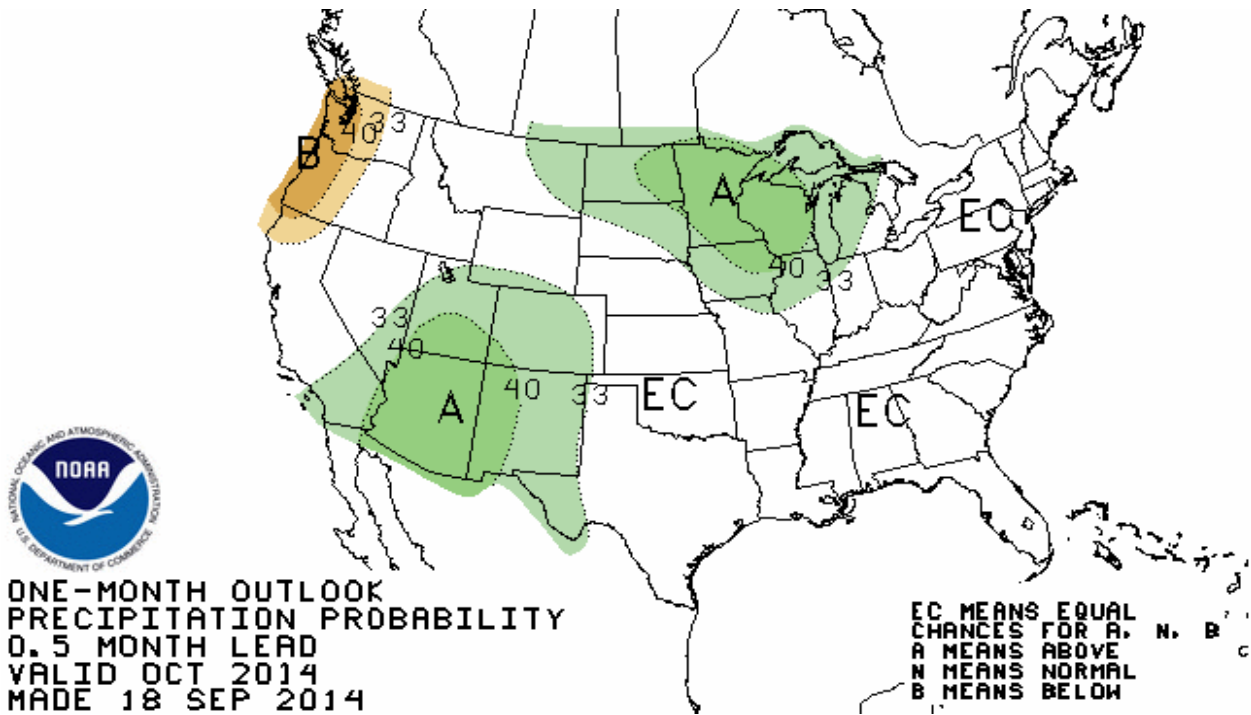
Drought persists over the majority of the SW states especially over portions of CA, NV, and TX with generally drought free conditions over the northern states and the eastern 1/2 of the US.



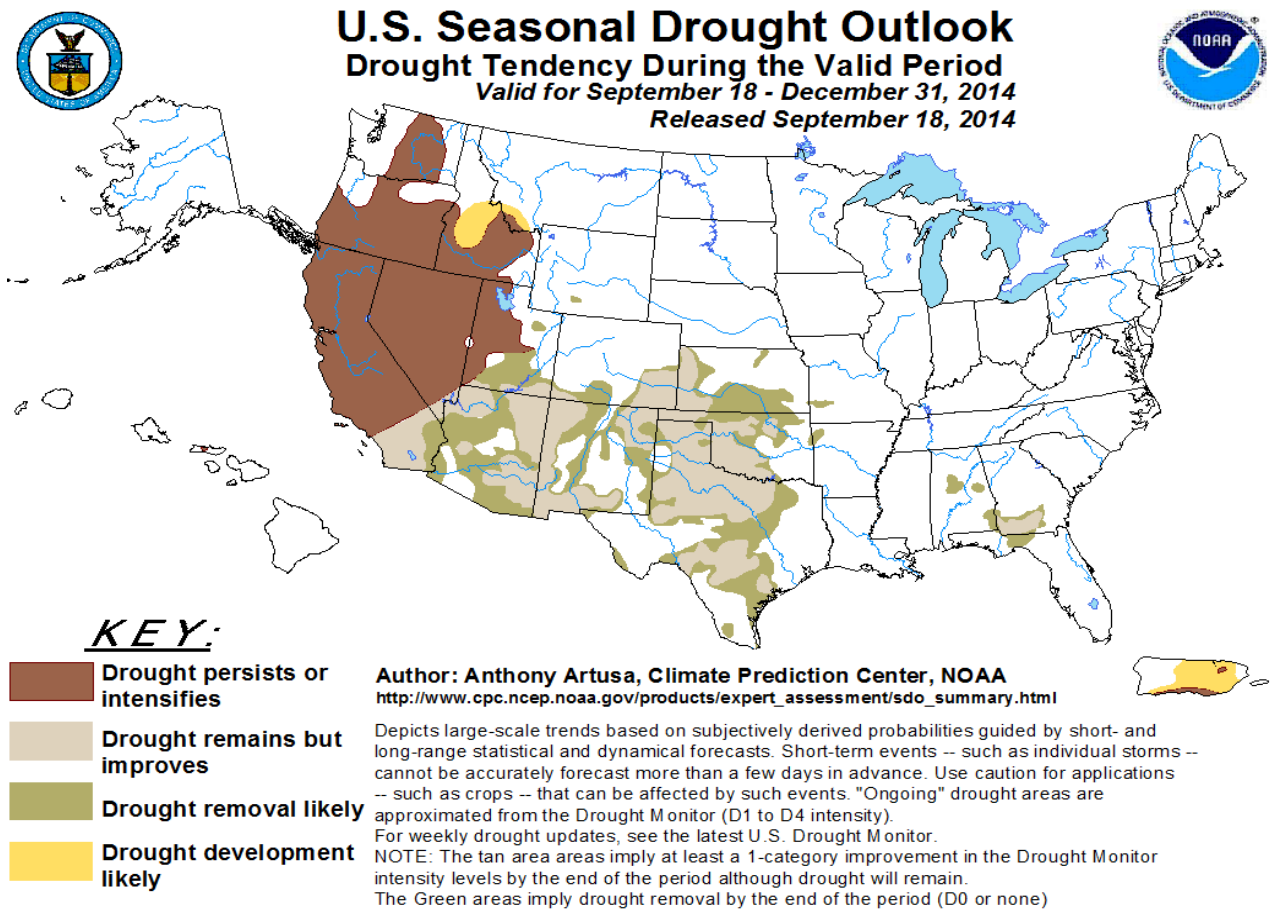
The map below shows forecasted temperature deviances for October 2014. There is a slight bias towards the probability of below normal temperatures over Colorado.



The map below shows forecasted precipitation deviances for October 2014. There is a higher probability of above normal precipitation over most of Colorado, favoring the SW.



Drought conditions are forecast to continue to improve over southeast CO and much of AZ, KS, TX and NM with drought persisting or intensifying over the far West including most of CA, NV, UT, ID and OR.



September Summary

September of 2014 was slightly above normal in temperature and above normal in precipitation. Average high temperatures for the month were 78.9 degrees which was just slightly above the normal of 78.5 degrees. Average low temperatures were 50.6 degrees which was 2.3 degrees above the normal of 48.3. The high and low temperatures combined for a monthly mean temperature of 64.8 degrees which was 1.4 degrees above the normal of 63.4. An unseasonably cold storm system moved into eastern Colorado from the 11-13th with 3 consecutive nights with temperatures ranging from 33-35 degrees and a daytime high on the 12th of only 48 degrees. There was not an official freeze reported at DIA but many areas of the Front Range did indeed experience temperatures at or below freezing. The last few days of the month produced the most precipitation with 1.01" falling on the 29th. Were it not for that storm we would have finished the month below normal in precipitation. Total monthly precipitation at DIA was 1.79" which is 0.83" above the normal of 0.96". For the year DIA is now 4.58" above normal! There were only 3 thunderstorm days reported at DIA but other areas experienced between 5-10 thunderstorm days for the month of September.

September Stats

TEMPERATURE (IN DEGREES F)

AVERAGE MAX	78.9	NORMAL 78.5	DEPARTURE 0.4
AVERAGE MIN	50.6	NORMAL 48.3	DEPARTURE 2.3
MONTHLY MEAN	64.8	NORMAL 63.4	DEPARTURE 1.4
HIGHEST	94	on 9/3	
LOWEST	33	on 9/12	

DAYS WITH MAX 90 OR ABOVE	2	NORMAL	3
DAYS WITH MAX 32 OR BELOW	0	NORMAL	0
DAYS WITH MIN 32 OR BELOW	0	NORMAL	1
DAYS WITH MIN ZERO OR BELOW	0	NORMAL	0

TEMPERATURE RECORDS

None

HEATING DEGREE DAYS

MONTHLY TOTAL	91	NORMAL 125	DEPARTURE -34
SEASONAL TOTAL	98	NORMAL 141	DEPARTURE -43

COOLING DEGREE DAYS

MONTHLY TOTAL	88	NORMAL 76	DEPARTURE 12
YEARLY TOTAL	701	NORMAL 764	DEPARTURE -63

PRECIPITATION (IN INCHES)

MONTHLY TOTAL	1.79	NORMAL 0.96	DEPARTURE 0.83
YEARLY TOTAL	16.90	NORMAL 12.32	DEPARTURE 4.58
GREATEST IN 24 HOURS	1.01" On 9/29		
DAYS WITH MEASURABLE PRECIP.	9		

SNOWFALL (IN INCHES)

MONTHLY TOTAL	TR	NORMAL 1.3	DEPARTURE -1.3
SEASONAL TOTAL	TR	NORMAL 1.3	DEPARTURE -1.3
GREATEST IN 24 HOURS	TR		
GREATEST DEPTH	0.0		

WIND (IN MILES PER HOUR)

AVERAGE SPEED	9.4mph
PEAK WIND GUST	40mph from the N on 9/9

MISCELLANEOUS WEATHER

NUMBER OF DAYS WITH THUNDERSTORM	3	NORMAL	8
NUMBER OF DAYS WITH HEAVY FOG	1	NORMAL	1
NUMBER OF DAYS WITH HAIL	0		
NUMBER OF SUNNY DAYS	13		
NUMBER OF PARTLY CLOUDY DAYS	11		
NUMBER OF CLOUDY DAYS	6		
AVERAGE RELATIVE HUMIDITY	55%		

October Preview

October of 2014 is expected to produce normal to slightly above normal temperatures and normal to above normal precipitation in the Denver Metro area. The storm on the 9th into 10th produced anywhere from 0.25-1" or more but DIA reported on the low end at 0.25". Although Denver averages 1.3" of snow in September it is typically October when the first significant snowfall occurs for many areas especially below 6,500'. The earliest snowfall in Denver history occurred on 9/3/1961. The latest snow in Denver history occurred on 11/21/1934. The average date of the first snowfall is 10/19. Average monthly snowfall for October is 4.0". If we do not receive any measureable snow over the upcoming weekend (Sunday night into Monday am) then we will likely be waiting until the last week or two of the month for a meaningful snow. Below is the first measureable snow for the last 10 years:

10/18/2013
10/5/2012
10/25/2011
11/15/2010
10/21/2009
11/14/2008
10/22/2007
10/18/2006
10/10/2005
11/1/2004

Average high temperatures to start the month of October are in the low 70s and by month's end high temperatures average 59 degrees. Average low temperatures start off at 42 degrees and end the month at 31 degrees. Precipitation in October is typically similar to September at 1.02" which some areas have already experienced. There are on average 5 days during the month with measureable moisture and 1 day with thunderstorms.

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

TEMPERATURE

AVERAGE HIGH	65.3
AVERAGE LOW	36.6
MONTHLY MEAN	50.9
DAYS WITH HIGH 90 OR ABOVE	0
DAYS WITH HIGH 32 OR BELOW	0
DAYS WITH LOW 32 OR BELOW	9
DAYS WITH LOWS ZERO OR BELOW	0

PRECIPITATION

MONTHLY MEAN	1.02"
DAYS WITH MEASURABLE PRECIPITATION	5

AVERAGE SNOWFALL IN INCHES	4.0"
DAYS WITH 1.0 INCH OF SNOW OR MORE	1

MISCELLANEOUS AVERAGES

HEATING DEGREE DAYS	440
COOLING DEGREE DAYS	5
WIND SPEED (MPH)	7.8mph
WIND DIRECTION	South
DAYS WITH THUNDERSTORMS	1
DAYS WITH DENSE FOG	1
PERCENT OF SUNSHINE POSSIBLE	72%

EXTREMES

RECORD HIGH	90 on 10/1/1892
RECORD LOW	-2 on 10/29/1917
WARMEST	59.9 in 1950
COLDEST	39.0 in 1969
WETTEST	4.17" in 1969
DRIEST	TR in 1934
SNOWIEST	31.2" in 1969
LEAST SNOWIEST	0.0" in numerous years

Sunrise/Sunset (July - December Denver area)

	JUL	AUG	SEP	OCT	NOV	DEC	
	SR - SS	SR - SS	SR - SS	SR - SS	SR - SS	SR - SS	
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	4.09	2.83	2.95	15.86
Brighton	3.15	1.34	3.66	2.72	2.09	12.96
Broomfield	2.24	0.63	2.68	0.59	2.01	8.15
Castle Rock	3.11	1.42	6.65	0.83	3.31	15.32
Colo Sprgs Airport	2.56	1.29	4.63	2.34	0.61	11.43
Denver DIA	3.51	1.82	3.85	2.73	1.79	13.70
Denver Downtown	3.62	1.02	4.53	1.38	1.69	12.24
Golden	3.78	0.79	3.70	2.01	1.77	12.05
Fort Collins	4.49	3.20	3.66	1.28	1.41	14.04
Highlands Ranch	3.04	1.46	3.72	1.30	4.61	14.13
Lakewood	4.92	0.83	4.06	1.57	1.61	12.99
Littleton	3.19	1.38	2.13	1.97	1.50	10.17
Parker	1.77	2.64	3.11	2.40	2.24	12.16
Sedalia - Hwy 67	3.03	1.48	5.34	1.20	2.16	13.21
Thornton	2.56	0.51	3.50	0.79	1.46	8.82
Westminster	3.86	0.94	3.54	1.26	1.77	11.37
Wheat Ridge	4.44	1.07	3.83	1.86	1.75	12.95

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

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