



The Weather Wire

April 2018

Volume 25 Number 4

Contents:

- **Thunderstorm Season in Colorado**
- **Drought Monitor**
- **March Summary/Statistics**
- **April Preview**
- **Snowfall Totals**

Thunderstorm Season in Colorado

Even though snow season is not over yet in Colorado, now that we're heading into spring it's time to start thinking about thunderstorms. In fact, many areas already experienced their first claps of thunder during the second half of March this year. However, April is the typical start of thunderstorm season in Colorado, which persists through October. Let's take a look at how the average month-by-month thunderstorm season in Colorado plays out.



April: April is a transition month for weather in Colorado, and can feature just about any type of weather possible, ranging from heavy snow to warm/sunny days to thunderstorms (sometimes all in the same day!). Thunderstorms frequency in April is low, but they do occur on occasion, and are typically generated at the leading edge of spring time low pressure systems when there is warmer, unstable air in place. Anywhere in Colorado is fair game to experience active weather and occasional thunderstorms in April, even at the higher elevations where most of April's precipitation is in the form of snow! It's not unheard of for ski resorts in Colorado to have to shut down their lifts due to lightning in April.

May: May is another active month for weather across most of Colorado, and is actually the wettest month on average for many parts of Northeast Colorado (including Denver). Late spring low pressure systems are a typical trigger mechanism for thunderstorms state-wide in May. Thunderstorm activity begins to pick up noticeably in May compared to April, but is still less frequent compared to the summer months. However, the first severe thunderstorms of the season often occur in late May across Eastern Colorado. Last year, Colorado experienced its costliest hail storm on record during the month of May.

June: June is a month of contrasts across Colorado, as it is the prime season for severe thunderstorms across Eastern Colorado and the I-25 corridor. However, June is also one of the driest months of the year for the Western Slope of Colorado as well as the San Juan Mountains as the mean jet stream lifts farther of these areas. Thunderstorms do occur during June across Western Colorado, make no mistake, but they tend to be moisture-starved and also much less frequent compared to mid-summer. Some of Denver's most notable severe weather outbreaks have occurred in June, and these storms over Eastern Colorado can often produce heavy rainfall as well. In most years, there is usually a lull in thunderstorm activity during the latter half of June before monsoon season starts, but the degree of this lull varies year by year (and in some years, there is no lull).

July: July is the start of monsoon season in Colorado, when subtropical moisture creeps northward from the Mexican highlands into the Southwestern U.S., and interacts with both mid-summer heating as well as the terrain of the Four Corners states to produce almost-daily thunderstorms across the higher mountain areas, as well as the adjacent desert areas. The start of monsoon season varies every year, but usually it gets going in Colorado by the first or second week of July. The San Juan Mountains, Sangre de Christ Mountains, and Pikes Peak/Colorado Springs area tend to receive the brunt of the monsoonal influence, but just about all of Colorado is impacted by the summer monsoon.

July tends to feature the highest frequency of thunderstorms state-wide, and this is especially true over the second half of the month when the monsoon is typically at its peak. Severe weather is still a relatively common occurrence over Eastern Colorado as well. In addition, late July through early August is the climatological peak of flash flood season along the Front Range in Colorado when weakening upper level winds of mid to late summer result in slower moving thunderstorms.

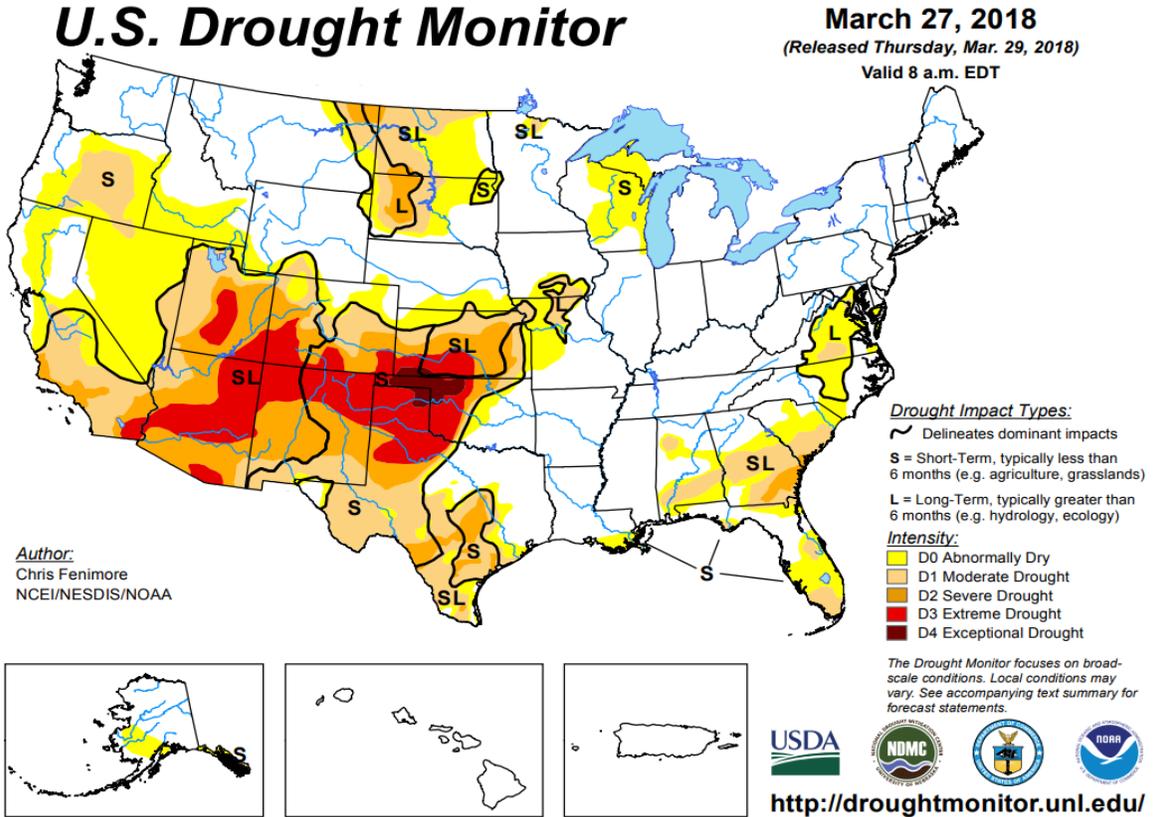
August: August is still very much monsoon season in Colorado, and the first half of the month in particular tends to see a high frequency of thunderstorms state-wide as well as higher threat of flash flooding due to weak upper level winds. During the second half of August, the monsoon typically begins to weaken, resulting in a gradual decrease in thunderstorm activity over Eastern Colorado and along the Continental Divide Region, whereas the monsoon is slower to release its grip over Western Colorado. Severe thunderstorms become much less frequent in August, but can occur on occasion.

September-October: The monsoon continues to weaken during September, resulting in a rapid decrease in thunderstorm activity across most of the state. Thunderstorms do still occur on occasion, but they are much less frequent compared to the mid summer months. In general, this can be a fine time of year to get outside without the almost-daily threat of storms. Some years, relatively frequent thunderstorms over eastern and central Colorado may persist through the first week of September, but the last three weeks of September tend to be much less active. The Western Slope and San Juan Mountains are somewhat of an exception, as these areas tend to experience more lingering effects (and as a result, more thunderstorms) from the monsoon through the first half of September.

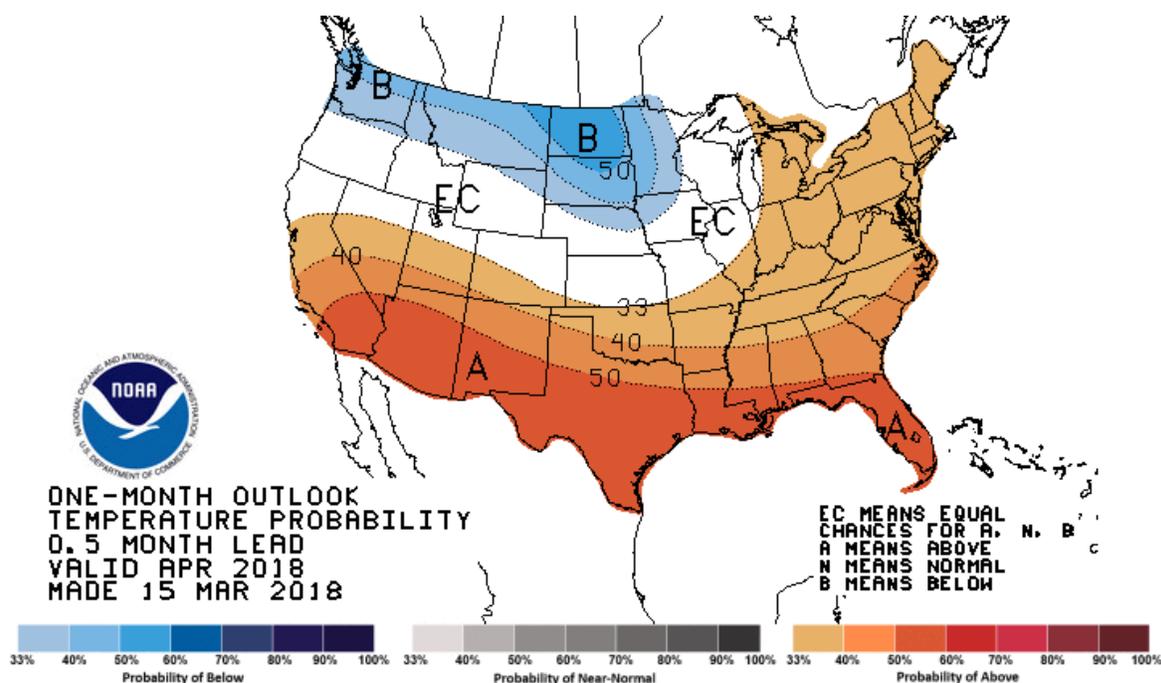
By late September and October, fall has typically set in across Colorado with the first snows of the season dusting the high country. Fall low pressure systems do occasionally produce thunderstorms state-wide through about the first half of October, but beyond mid-October, thunderstorms are more rare.

Drought Update

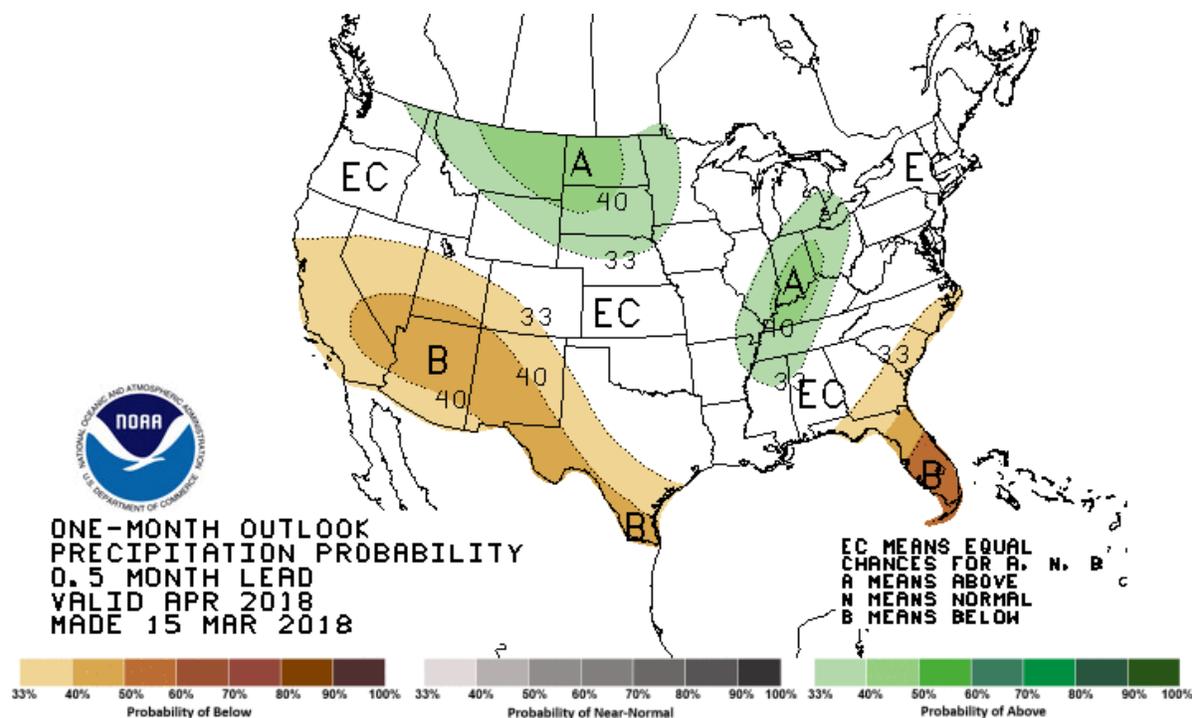
Drought severity is increasing over southern Colorado as well as Arizona, New Mexico, Utah as well as portions of Kansas, Oklahoma and Texas. The extreme to exceptional drought will likely result in a very active fire season for the SW states unless well above normal moisture is experienced over the next couple months.



The map below shows forecasted temperature deviances for April 2018. There is a slight bias toward above normal temperatures across southern Colorado with equal chances for above or below normal temperature across northern Colorado.



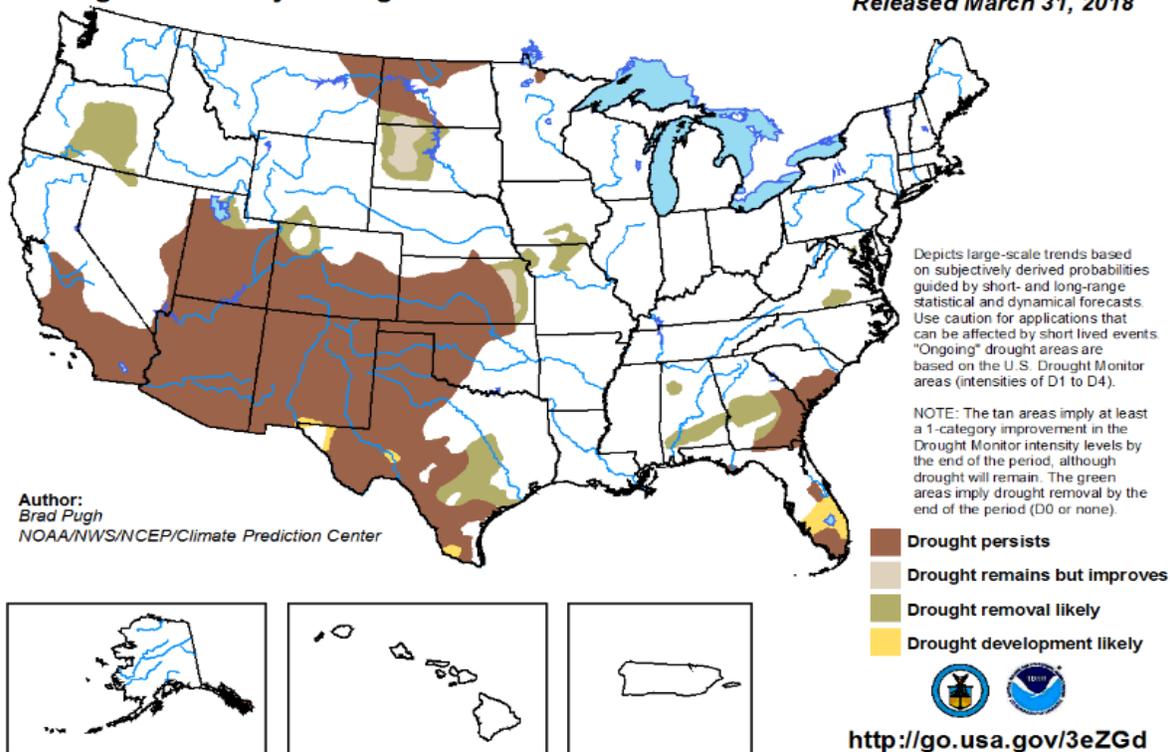
The map below shows forecasted precipitation deviances for April 2018. There are equal chances for above or below precipitation for most of Colorado with a slight bias towards below normal precipitation over SW Colorado.



Drought conditions are expected to persist across most of Colorado, while the northern/central mountains and far northeast plains should remain drought-free. Drought conditions are likely to persist across most of the Southwestern U.S and Southern Plains.

U.S. Monthly Drought Outlook Drought Tendency During the Valid Period

Valid for April 2018
Released March 31, 2018



March Summary

March 2018 was above normal in both precipitation and temperature but well below normal in snowfall at DIA. The average high at DIA for the month was 58.8 degrees which was 4.1 degrees above the normal of 54.4. The average low temperature for the month was 26.8 degrees, 0.4 degrees above the normal of 26.4. Combining the monthly high and low created a monthly mean temperature of 42.7 degrees which was 2.3 degrees above the normal of 40.4. The highest temperature during March was 73 on the 22nd with a monthly low of 13 on the 7th. Precipitation wise there was 1.02" of rain and melted snow reported at DIA which was 0.10" above the normal of 0.92". In the snowfall department there was only 4.8" of snow reported which was 5.9" below the normal of 10.7". The season snow deficit is now a whopping 21.7". Snowfall from Fort Collins to Pueblo was highly variable for the month of March with some locations coming in with above normal snow and others coming in well below normal. In the Fort Collins area only a trace to 2" was reported for the month with 1.5-9" over the lower elevations of Boulder County and 1.5-17" or more for the Denver Metro area with the highest totals over southern portions of the Metro area and SE Aurora. Over Douglas County snow totals were generally above normal with 12-18" of snow reported. Southward into El Paso County snow amounts for March ranged from 1-12" with the highest totals in the Monument and Black Forest areas. Pueblo and Canon City only reported a trace to 2.3" of snow for the month. The wide range of snow totals can be attributed to rain mixing with snow at lower elevations while areas above 5,500-6,000' experienced more precipitation in the form of snow. Most of the snow fell in 2 events with

one on the 18-19th and the other on the 26-27th. It is safe to say at this point that snowfall for the 2017-2018 season will be below normal for many areas and well below normal for isolated locations.

March Stats

TEMPERATURE (IN DEGREES F)

AVERAGE MAX	58.8	NORMAL	54.4	DEPARTURE	4.1
AVERAGE MIN	26.8	NORMAL	26.4	DEPARTURE	0.4
MONTHLY MEAN	42.7	NORMAL	40.4	DEPARTURE	2.3
HIGHEST	73 on 3/22				
LOWEST	13 on 3/7				

DAYS WITH MAX 90 OR ABOVE	0	NORMAL	0.0
DAYS WITH MAX 32 OR BELOW	0	NORMAL	1.9
DAYS WITH MIN 32 OR BELOW	27	NORMAL	23.6
DAYS WITH MIN ZERO OR BELOW	0	NORMAL	0.1

TEMPERATURE RECORDS

N/A

HEATING DEGREE DAYS

MONTHLY TOTAL	684	NORMAL	763	DEPARTURE	-79
SEASONAL TOTAL	4741	NORMAL	5202	DEPARTURE	-461

COOLING DEGREE DAYS

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

PRECIPITATION (IN INCHES)

MONTHLY TOTAL	1.02	NORMAL	0.92	DEPARTURE	0.10
YEARLY TOTAL	1.87	NORMAL	1.70	DEPARTURE	0.17
GREATEST IN 24 HOURS	0.33" on 3/18				
DAYS WITH MEASURABLE PRECIP.	6				

SNOWFALL (IN INCHES)

MONTHLY TOTAL	4.8	NORMAL 10.7	DEPARTURE	-5.9
SEASONAL TOTAL	24.2	NORMAL 45.9	DEPARTURE	-21.7
GREATEST IN 24 HOURS	2.1	3/26-3/27		
GREATEST DEPTH		1" on 3/27, 3/29		

WIND (IN MILES PER HOUR)

AVERAGE SPEED	11.5 mph
PEAK WIND GUST	64mph from the WNW on 3/23

MISCELLANEOUS WEATHER

NUMBER OF DAYS WITH THUNDERSTORM	1	NORMAL	NA
NUMBER OF DAYS WITH HEAVY FOG	2	NORMAL	NA
NUMBER OF DAYS WITH HAIL	0		
NUMBER OF SUNNY DAYS	8		
NUMBER OF PARTLY CLOUDY DAYS	22		
NUMBER OF CLOUDY DAYS	1		
AVERAGE RELATIVE HUMIDITY	46%		

April Preview

April is a transition month from winter to spring in over eastern Colorado, and as average temperatures quickly rise over the course of the month, it is also one of the wetter months on average. Periods of warm, sunny weather that give people “st. fever” are interspersed with periods of cooler and wetter, and occasionally snowy weather. April is Denver’s 5th snowiest month on average with a long-term average of 6.8”. Most of the snow accumulation that occurs in April tends to be limited primarily to grassy surfaces and melts quickly. To get meaningful pavement accumulation from April snow events, generally the timing must occur at night with temperatures in the 30s and/or snow must fall heavily at rates of 1”/hour or greater for an extended period. Under the right patterns, this can occur in April. April 2013 was one of the coldest and most snowy Aprils in recent memory, when 20.8” fell at DIA. This was the 10th snowiest April on record. In the higher elevations of the Front Range foothills, April is actually one of the snowiest months on average where colder average temperatures mean snow more so than rain. In terms of moisture, an average of 1.72” of precipitation falls in April in Denver, making it the 3rd wettest month on average behind May and June. In an average year, roughly half of April’s precipitation falls as snow and the other half as rain. Thunderstorms occasionally occur during April as well with an average of 1.5 thunderstorm days in Denver the course of the month. Temperature-wise, the high during April in Denver is 61.1 and the average low is 33.3, but as is the case much of the year, large fluctuations are common. Historically, the latest subzero

temperature on record (-2 in 1975) and the earliest 90 degree temperature on record (in 1992) both occurred in April, but in general extreme temperatures on either end of the spectrum are uncommon. On average, there are 13 days with below freezing temperatures in Denver in April. This year the pattern looks to be in line with climate history with near normal temperatures and near normal precipitation and snowfall.

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

TEMPERATURE

AVERAGE HIGH	61.1
AVERAGE LOW	33.3
MONTHLY MEAN	47.4
DAYS WITH HIGH 90 OR ABOVE	0
DAYS WITH HIGH 32 OR BELOW	0
DAYS WITH LOW 32 OR BELOW	13
DAYS WITH LOWS ZERO OR BELOW	0

PRECIPITATION

MONTHLY MEAN	1.71"
DAYS WITH MEASURABLE PRECIPITATION	9
AVERAGE SNOWFALL IN INCHES	6.8"
DAYS WITH 1.0 INCH OF SNOW OR MORE	NA

MISCELLANEOUS AVERAGES

HEATING DEGREE DAYS	529
COOLING DEGREE DAYS	1
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 in 1946, 1981
COLDEST	38.8 in 1920
WETTEST	8.42" in 1900
DRIEST	0.03" in 1963
SNOWIEST	33.8" in 1933
LEAST SNOWIEST	0.0" in 1888, 1930, 1943, 1992

Snowfall

October 2017 to May 2018

City	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total
Aurora (Central)	5.4	0.1	2.7	5.0	8.3	7.2			28.7
Boulder	8.0	4.1	10.2	8.8	16.6	6.7			54.4
Brighton	1.8	1.0	3.8	5.9	6.6	1.2			20.3
Broomfield	7.7	2.0	5.6	8.0	8.1	12.3			43.7
Castle Rock	4.0	3.2	4.0	7.8	8.5	18.1			45.6
Colo Sprgs Airport	0.9	0.7	0.9	1.7	9.0	3.1			16.3
Denver DIA	2.8	TR	4.0	6.4	6.2	4.8			24.2
Denver Downtown	4.3	0.2	2.9	5.0	9.3	4.5			24.5
Golden	8.0	0.7	5.3	10.8	14.9	14.1			53.8
Fort Collins	1.6	4.6	7.2	5.8	13.5	0.1			32.8
Highlands Ranch	4.5	0.7	3.7	7.8	7.7	14.9			39.3
Lakewood	3.7	0.5	3.7	6.1	10.1	8.8			32.9
Littleton	3.3	0.6	5.7	6.7	11.0	8.8			36.1
Parker	3.0	1.2	3.1	6.6	7.2	15.7			36.8
Sedalia - Hwy 67	5.0	2.1	7.2	7.1	8.7	14.7			44.8
Thornton	4.4	0.9	6.4	7.3	7.6	4.4			31.0
Westminster	5.3	1.0	5.2	8.0	11.2	7.1			37.8
Wheat Ridge	6.2	1.0	4.3	9.0	15.3	7.7			43.5

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

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

E-mail: Tim@SkyviewWeather.com
On the web at www.SkyviewWeather.com

Copyright 2018 Skyview Weather®