

# *The Weather Wire*

**September 2019**

**Volume 26 Number 9**

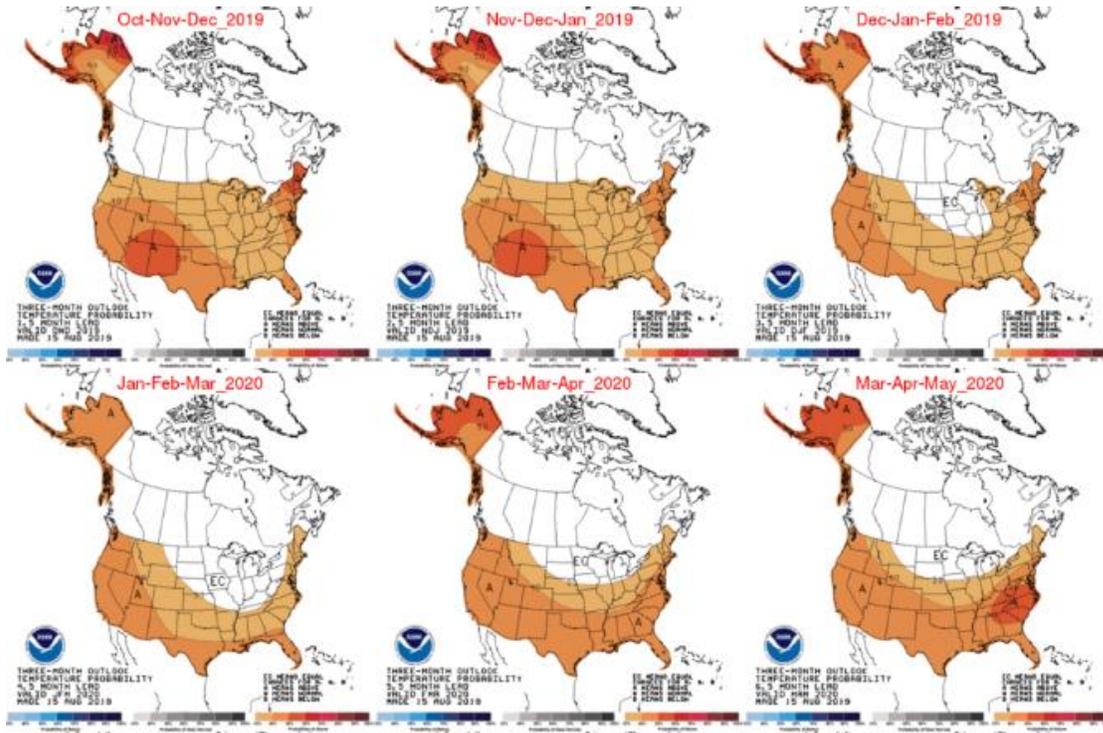
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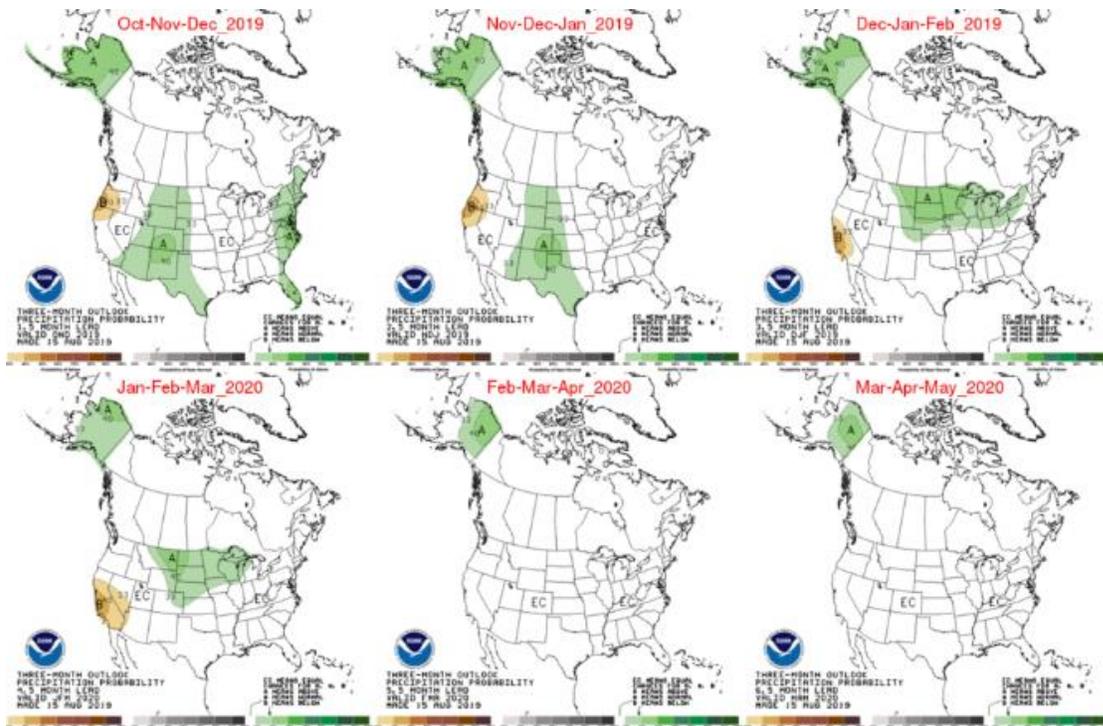
## **Preliminary Winter Preview 2019-2020**

Last winter (2018-2019) featured normal to above normal snowfall for many areas of Colorado along the I-25 corridor from Cheyenne to Pueblo. The exceptions to the near normal to above normal snowfall being the official reporting stations at DIA and Pueblo. Although snowfall came in a bit lower than average at DIA, normal to above normal snowfall was common for most areas from the City of Boulder though Denver and surrounding suburbs. Over northern Colorado near normal snowfall was observed from Fort Collins to Longmont with above normal to well above normal snowfall southward over the Palmer Divide including Castle Rock and Monument. Further south into Colorado Springs the airport came in right around normal but one didn't have to travel very far north to get into above normal snowfall in the Colorado Springs area. The one area that came in well below normal snowfall was the Pueblo area as much of the late season snow fell as rain or a mix of rain and snow. With a good snow season in the rear view mirror we are already getting many questions about what to expect this snow season.

Last winter was an El Nino winter but through the summer we have transitioned to ENSO (El Nino Southern Oscillation) neutral conditions with NOAA (National Oceanic and Atmospheric Administration) indicating that neither El Nino nor La Nina will occur this winter. Although it is still summer until the 23<sup>rd</sup> of September much can change in the coming weeks and months. The long range forecast models at this time are pointing to anywhere from above normal to below normal snowfall for the 2019-2020 snow season along the I-25 corridor from Fort Collins to Pueblo. Below are 3-month outlook maps showing the probability of above or below normal temperatures:



As you probably noticed each 3-month period has a bias towards above normal temperatures. Skyview Weather believes that it is fairly safe to say that slightly above normal to well above normal temperatures are most likely for the snow season as a whole but a month or two may very well end up with below normal temperatures. Above normal temperatures DOES NOT necessarily mean less snow or precipitation in general. Below are 3-month precipitation probability maps from NOAA:



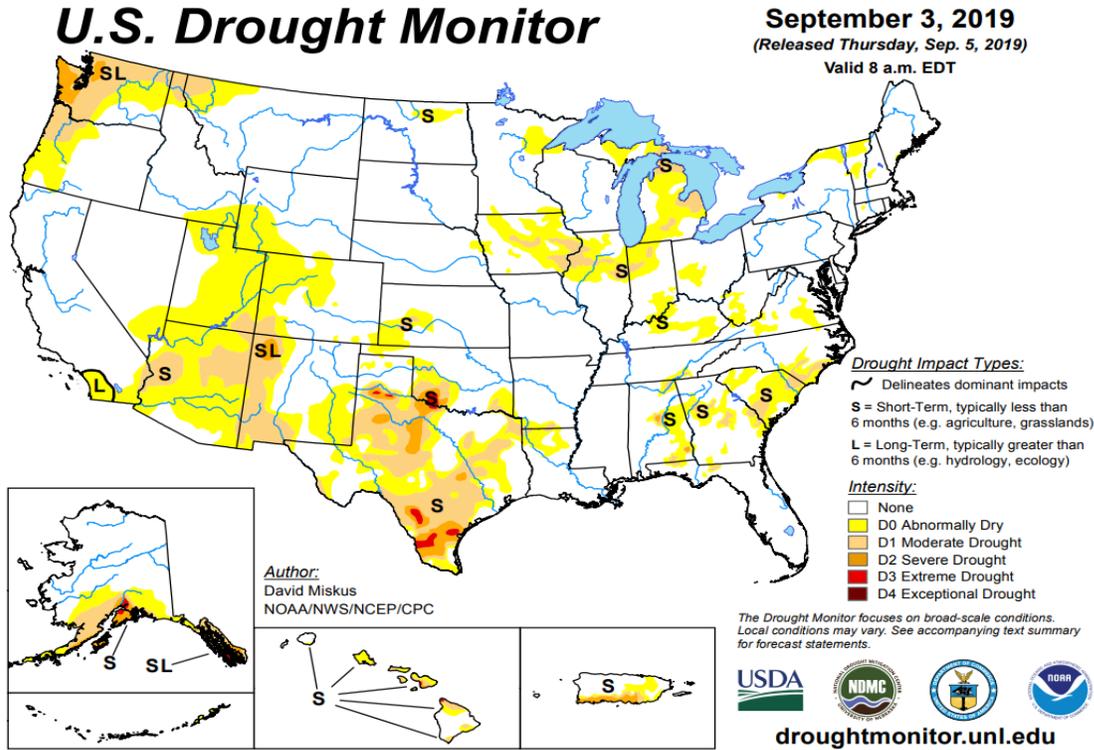
The early part of the snow season shows a bias towards above normal precipitation state wide with the mid to late winter period suggesting that the above normal precipitation shifts northward over northern Colorado. The latter part of the snow season has equal chances for above or below normal precipitation across the state. As a whole the probabilities suggest that snowfall will be near normal to above normal north of Denver to Fort Collins with near normal snowfall for portions of the Denver Metro area southward over the Palmer Divide. Near normal to potentially below normal snowfall is most likely south of the Palmer Divide into Colorado Springs and Pueblo. However, as we all know living here in Colorado all it takes is one big early or late season storm to make or break a winter in the snowfall department. With a bias towards above normal precipitation early in the winter this may be a year when we do experience a significant snow storm during the month of October or early November. It's been awhile since we had a significant snow in the month of October but it can certainly happen and this just might be the year? As always there will be plenty of nuisance events with snowfall of a trace to 1" and multiple freezing mist/drizzle set ups (usually between 3-6 freezing mist/drizzle events) which typically favor the mid winter season. Although temperatures are expected to be above normal as a whole there will be multiple arctic outbreaks with temperatures below zero favoring the December through February time frame which is typical. Frequency of storms may be a bit less than last year but the amount of snow per event may very well be higher this year. Only time will tell how this snow season will play out and as we move forward in time trends may very well change but this is Skyview Weather's initial opinion on how this winter will play out. An updated winter outlook may be issued later this month or early October if significant changes in the long term outlook occur. Here are links to some sites that can give more detailed information of what we have included above if you wish to dig deeper:

<http://droughtmonitor.unl.edu/CurrentConditionsandOutlooks/Outlooks.aspx>

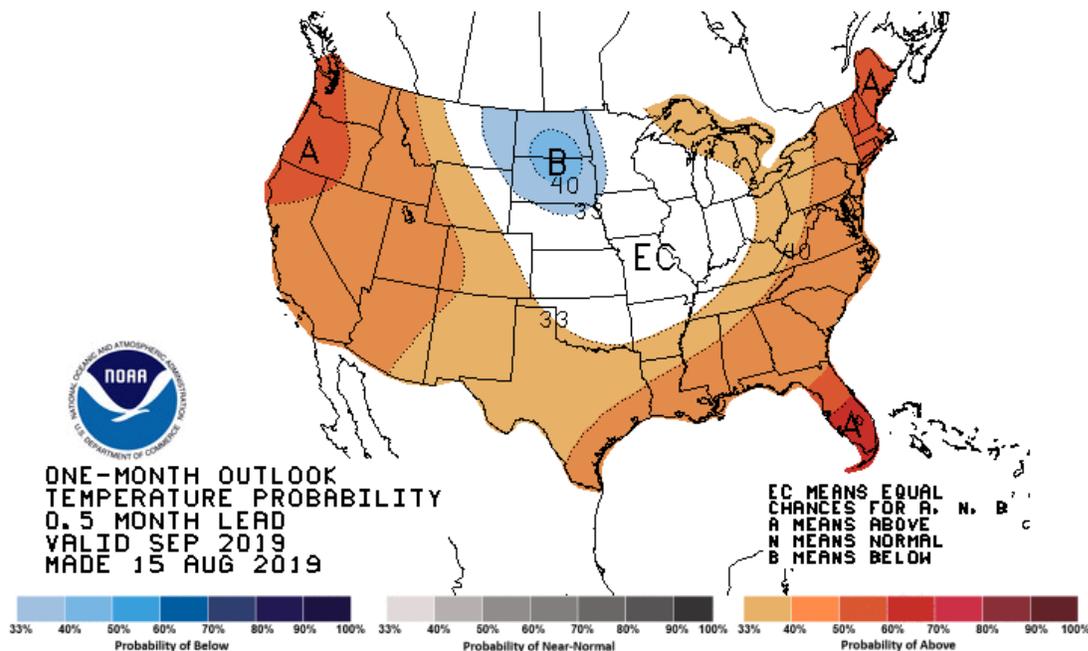
<https://www.climate.gov/enso> or <https://www.weather.gov/mhx/ensowhat>

# Drought Update

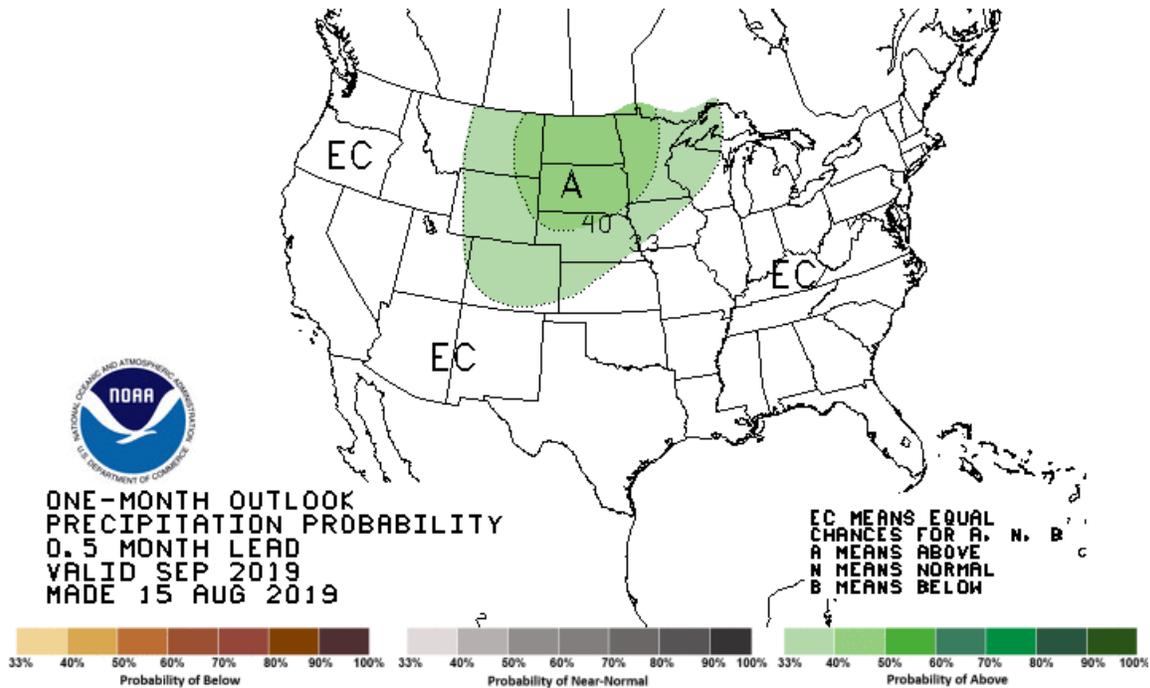
Colorado is starting to show abnormally dry conditions over the central and western portions of the state. Despite a dry August for many eastern areas the eastern half of the state remains generally drought free. Elsewhere, much of the Pacific NW is experiencing moderate to severe drought as well as parts of Texas and the desert SW.



The map below shows forecasted temperature deviances for September 2019. There is a slight bias toward above normal temperatures across most of Colorado and equal chances for above or below normal temperatures across for NE Colorado.



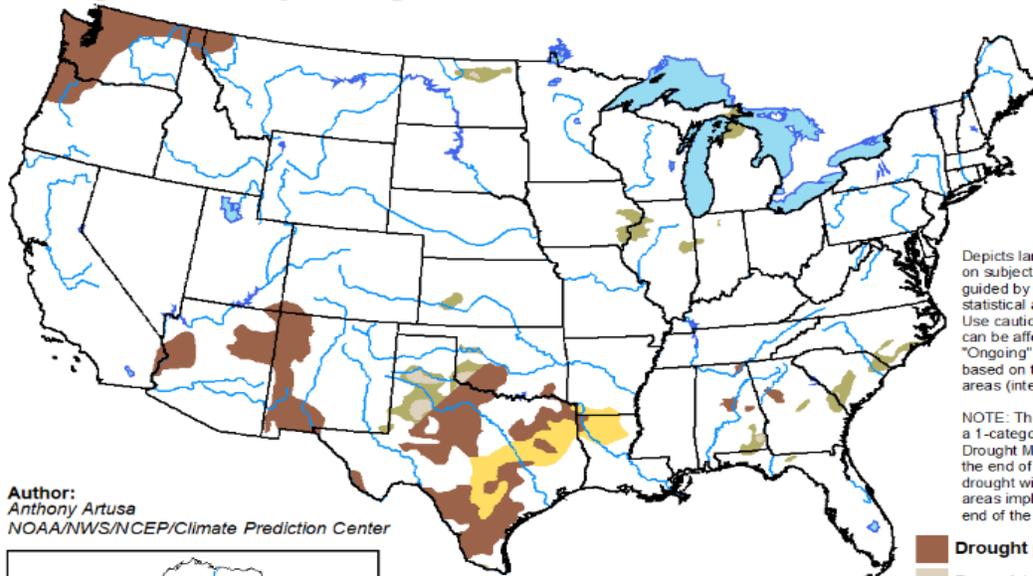
The map below shows forecasted precipitation deviances for September 2019. There is a slight bias toward above normal precipitation across much of Colorado with a lesser chance for above normal precipitation over far southern areas of the state.



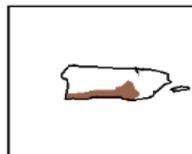
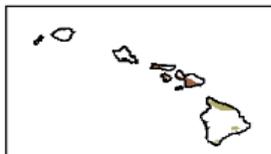
Colorado is not expected to see any worsening of the drought conditions this month, while drought is expected to persist across the Pacific NW and portions of the desert SW. Drought development is also likely this month across parts of TX and LA.

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

Valid for September 2019  
Released August 31, 2019



Author:  
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NOAA/NWS/NCEP/Climate Prediction Center



- Drought persists
- Drought remains but improves
- Drought removal likely
- Drought development likely



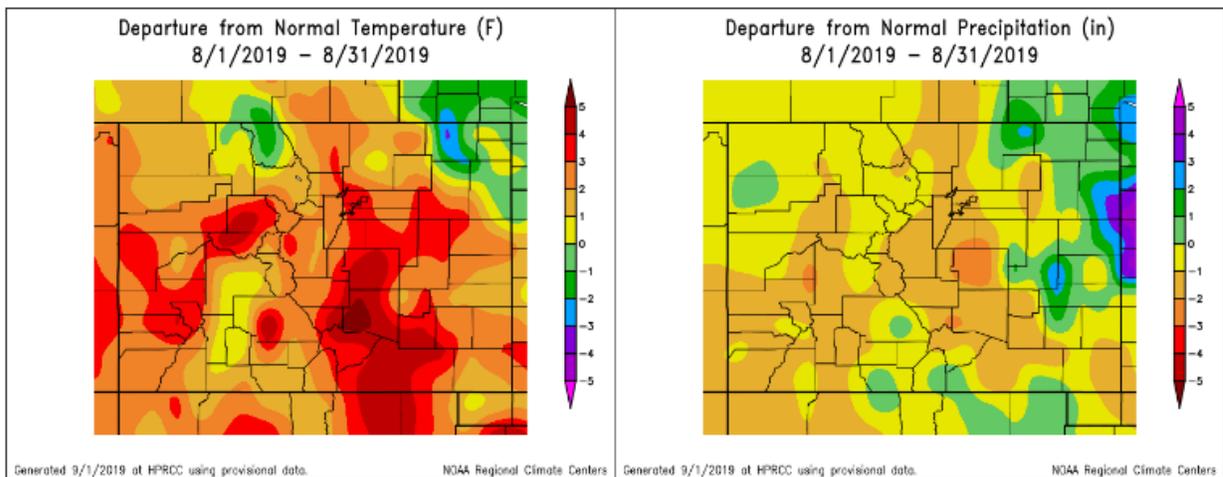
<http://go.usa.gov/3eZGd>

## August Summary

August of 2019 was well above normal in temperature and well below normal in precipitation at DIA. High temperatures for the month averaged 90.5 degrees which was 3.3 degrees above the normal of 87.2. Average low temperatures for August were 60.2 degrees which was 2.3 degrees above the normal of 57.9. Combining the average highs and average lows yielded a monthly mean temperature of 75.4 degrees which was 2.9 degrees above the normal of 72.5. The monthly mean temperature of 72.5 ranked August of 2019 in 3<sup>rd</sup> place all time for warmest Augusts on record behind 76.8 in 1937 and 77.0 in 2011. There were 18 days during the month of August where the high temperature reached or exceeded 90 degrees. Despite the warm weather there was only one new record high set on the 19<sup>th</sup> of 99 degrees. Precipitation at DIA came in at a minuscule 0.58" and 0.46" of that fell in one day on the 8<sup>th</sup>. The 0.58" was 1.11" below the normal of 1.69". Although the 0.58" of precipitation was low for Denver standards it did not make the top 10 driest Augusts on record. For the year DIA has now measured 12.58" which is 1.22" above the normal of 11.36". There were only 3 days at DIA with precipitation over a trace but there were 10 days with a thunderstorm reported in the area. With the lack of moisture one would think there was quite a bit of sunshine during the month and that was certainly the case with 9 sunny days and 21 days considered partly cloudy with only 1 cloudy day.

Southeast Colorado also experienced warmer than average temperatures in August as well as below normal precipitation. In Colorado Springs the monthly mean temperature was 73.1 degrees which was 4.4 degrees above normal and makes August of 2019 the 2<sup>nd</sup> warmest on record. Colorado Springs tallied 0.71" of moisture which was 2.63" below normal and was the 9<sup>th</sup> driest on record! Further south into Pueblo the monthly mean temperature was 78.1 degrees which was 4.7 degrees above normal and the 5<sup>th</sup> warmest August on record. The airport in Pueblo reported 1.05" of moisture which was 1.27" below normal.

Below are maps of the state showing departure from normal temperature and precipitation. Note – The map does not show microclimates such as Lakewood where above normal precipitation did occur in August as the data is smoothed out but does give a good overall picture of how the month played out.



## August Stats

### TEMPERATURE (IN DEGREES F)

AVERAGE MAX	90.5	NORMAL 87.2	DEPARTURE 3.3
AVERAGE MIN	60.2	NORMAL 57.9	DEPARTURE 2.3
MONTHLY MEAN	75.4	NORMAL 72.5	DEPARTURE 2.9
HIGHEST	99 on 8/19		
LOWEST	51 on 8/28		

DAYS WITH MAX 90 OR ABOVE	18	NORMAL	11.5
DAYS WITH MAX 32 OR BELOW	0	NORMAL	0.0
DAYS WITH MIN 32 OR BELOW	0	NORMAL	0.0
DAYS WITH MIN ZERO OR BELOW	0	NORMAL	0.0

### TEMPERATURE RECORDS

Record high of 99 on 19th

### HEATING DEGREE DAYS

MONTHLY TOTAL	0	NORMAL 10	DEPARTURE -10
SEASONAL TOTAL	0	NORMAL 16	DEPARTURE -16

### COOLING DEGREE DAYS

MONTHLY TOTAL	326	NORMAL 244	DEPARTURE 82
YEARLY TOTAL	757	NORMAL 688	DEPARTURE 69

### PRECIPITATION (IN INCHES)

MONTHLY TOTAL	0.58	NORMAL 1.69	DEPARTURE -1.11
YEARLY TOTAL	12.58	NORMAL 11.36	DEPARTURE 1.22
GREATEST IN 24 HOURS	0.46" on 8/8		
DAYS WITH MEASURABLE PRECIP.	3		

### 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	NA		
GREATEST DEPTH	0		

## WIND (IN MILES PER HOUR)

AVERAGE SPEED	9.3 mph
PEAK WIND GUST	56 mph from the N on 8/20

## MISCELLANEOUS WEATHER

NUMBER OF DAYS WITH THUNDERSTORM	10	NORMAL	8
NUMBER OF DAYS WITH HEAVY FOG	2	NORMAL	1
NUMBER OF DAYS WITH HAIL	0		
NUMBER OF SUNNY DAYS	9		
NUMBER OF PARTLY CLOUDY DAYS	21		
NUMBER OF CLOUDY DAYS	1		
AVERAGE RELATIVE HUMIDITY	50%		

## September Preview

September is the first month of meteorological autumn and a season of transition across the Denver metro area and Colorado. Temperatures start to cool off noticeably over the course of the month with an average monthly high of 78.5 and an average monthly low of 48.3. Hot weather can still occur during September, typically during the first half of the month, with an average of 3.4 days reaching or exceeding 90 degrees. Prior to this year the temperature has never reached 100 degrees in September, with an all-time record high of 97, but on the 2<sup>nd</sup> we not only broke the daily temperature record but set the all time monthly record of 100 degrees at DIA. The 100 degree temperature smashed the latest 100 degree day of the season on record which was previously August 16<sup>th</sup>. Although not common, Denver can occasionally see early season tastes of winter in September. The earliest snowfall on record in Denver occurred on September 3<sup>rd</sup>, 1961. More often than not, Septembers end up snowless in Denver, but it does happen on occasion with a long-term average of 1.3" of snow during the month. There have even been some years in which heavy snow occurred in September, most notably in 1971 when a monthly record of 17.2" fell. The heaviest single-storm snowfall in September occurred in 1936 when 16.5" was recorded, which actually ranks as one of Denver's top 25 snowfalls of all-time. The Denver area is actually experiencing a September snow drought, as the last time measurable snow officially occurred in September was in 2000. On average, the first freeze of the season in Denver occurs in early October, but it occasionally happens in September. The earliest freeze on record occurred on September 8, 1962. September is typically one of Denver's drier and more pleasant months with an average monthly precipitation of only 0.96". However, there are exceptions such as during the historic flood event of 2013, which resulted in a monthly record of 5.61". Typically, however, thunderstorm season quickly winds down in early September with an average of just 4 thunderstorm days over the course of the month. Sunny days are more common through September, but the first early season wet system of the fall often occurs during the month, bringing a day or two of cooler temperatures and

steady light rain to the metro area, as well as the first meaningful snows of the season to the higher elevations of the Front Range. We have already had a couple good rain events over the Front Range through the first 9 days of the month but for the month as a whole Skyview Weather believes September 2019 will generally feature near normal to above normal precipitation and above normal temperatures.

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

**TEMPERATURE**

AVERAGE HIGH	78.5
AVERAGE LOW	48.3
MONTHLY MEAN	63.4
DAYS WITH HIGH 90 OR ABOVE	3.4
DAYS WITH HIGH 32 OR BELOW	0
DAYS WITH LOW 32 OR BELOW	0.8
DAYS WITH LOWS ZERO OR BELOW	0

**PRECIPITATION**

MONTHLY MEAN	0.96"
DAYS WITH MEASURABLE PRECIPITATION	6.5
AVERAGE SNOWFALL IN INCHES	1.3"
DAYS WITH 1.0 INCH OF SNOW OR MORE	NA

**MISCELLANEOUS AVERAGES**

HEATING DEGREE DAYS	125
COOLING DEGREE DAYS	76
WIND SPEED (MPH)	8.0mph
WIND DIRECTION	South
DAYS WITH THUNDERSTORMS	4
DAYS WITH DENSE FOG	1
PERCENT OF SUNSHINE POSSIBLE	74%

**EXTREMES**

RECORD HIGH	100 on 9/2/2019
RECORD LOW	17 on 9/29/1985
WARMEST	69.4 in 2015
COLDEST	54.7 in 1912
WETTEST	5.61" in 2013
DRIEST	Trace in 1892, 1924
SNOWIEST	17.2" in 1971
LEAST SNOWIEST	0.0" in many years

**Rainfall**

## May 2019 to October 2019

City	May	Jun	Jul	Aug	Sep	Oct	Total
Aurora (Central)	2.71	2.87	1.78	0.81			8.17
Boulder	3.46	2.62	2.43	0.10			8.61
Brighton	3.26	1.64	1.56	0.04			6.50
Broomfield	2.46	2.48	3.43	0.26			8.63
Castle Rock	2.19	1.68	2.72	0.91			7.50
Colo Sprgs Airport	2.49	1.97	1.40	0.85			6.71
Denver DIA	3.23	2.24	2.42	0.58			8.47
Denver Downtown	3.56	1.31	2.03	1.01			7.91
Golden	3.01	2.32	2.38	0.67			8.38
Fort Collins	2.93	2.27	0.79	0.72			6.71
Highlands Ranch	2.44	1.79	1.74	0.77			6.74
Lakewood	3.60	1.35	1.60	0.68			7.23
Littleton	2.68	1.91	1.54	0.75			6.88
Monument	2.60	1.27	4.23	1.73			9.83
Parker	2.50	2.19	2.44	0.61			7.74
Sedalia - Hwy 67	2.02	1.42	1.84	1.04			6.32
Thornton	2.53	2.21	2.27	0.23			7.24
Westminster	2.70	1.81	2.11	0.22			6.84
Wheat Ridge	2.27	1.43	3.32	0.41			7.43

**Skyview Weather ©**  
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