



The Weather Wire

October 2019

Volume 26 Number 10

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NWS Boulder Watch, Warning and Advisory Review

This list has the watch, warning, and advisory criteria for Colorado along and east of the Continental Divide. Heavy snow criteria for eastern and central Colorado are representative values applied over a large geographic area...

Mountains - 8 inches of snow in 12 hours, 12 or more inches in 24 hours

Lower elevations - 6 inches of snow in 12 hours, 8 or more inches in 24 hours

Winter watches and warnings

A winter storm watch is issued when winter storm conditions are possible within the next 3 days, but the timing, intensity, or occurrence may still be uncertain.

A winter storm warning is issued when heavy snow is occurring or will develop in the next 36 hours. The heavy snow may be accompanied by wind greater than 15 mph and blowing snow.

A blizzard watch is issued when blizzard conditions are possible in the next 12 to 36 hours.

A blizzard warning is issued in lower elevations when the following conditions are expected for at least 3 hours...

- sustained winds of 35 mph or greater.
- considerable falling and or drifting snow lowering
- visibilities less than 1/4 mile.

A blizzard warning is issued in the mountains and foothills for the conditions above, but with winds in excess of 50 mph at the higher elevations.

A wind chill watch is issued when wind chill warning criteria are possible in the next 12 to 36 hours.

A wind chill warning is issued for wind chills of at least minus 25 degrees on the plains, and minus 35 degrees in the mountains and foothills.

A freeze watch is issued when freeze conditions are possible in the next 12 to 36 hours.

A freeze warning is issued during the growing season when widespread temperatures are expected to drop to below 32 degrees.

A high wind watch is issued when high wind conditions are expected to develop in the next 12 to 36 hours. Sometimes it will be issued late in the first forecast period...6 to 12 hours...if the potential for high wind exists...but there is some uncertainty.

A high wind warning is issued for the following conditions...

Mountains, Foothills and nearby adjacent plains including Fort Collins, Boulder, and western Denver suburbs - sustained winds of 50 mph for at least 1 hour or gusts to 75 mph for any duration in the mountains and foothills

Lower Elevations away from the foothills - sustained winds of 40 mph for at least 1 hour...or gusts to 58 mph for any duration at lower elevations away from the foothills.

Advisories

A winter weather advisory is issued...

When general snow accumulations are expected between 4 and 8 inches in 12 hours in the mountains and foothills, and between 3 and 6 inches in 12 hours at lower elevations.

When falling snow is accompanied by blowing snow to cause travel problems due to lower visibilities.

When wind-blown snow will occasionally reduce visibilities and create a hazard for travelers.

For freezing drizzle or a mix of precipitation types, such as snow and sleet, that will impact travel conditions.

A dense fog advisory is issued when fog will reduce visibilities to 1/4 mile or less.

A wind chill advisory is issued on the plains when wind and temperature combine to produce wind chill values of minus 18 degrees to minus 25 degrees.

A wind chill advisory is issued for the mountains and foothills when wind and temperature combine to produce wind chill values of minus 25 degrees.

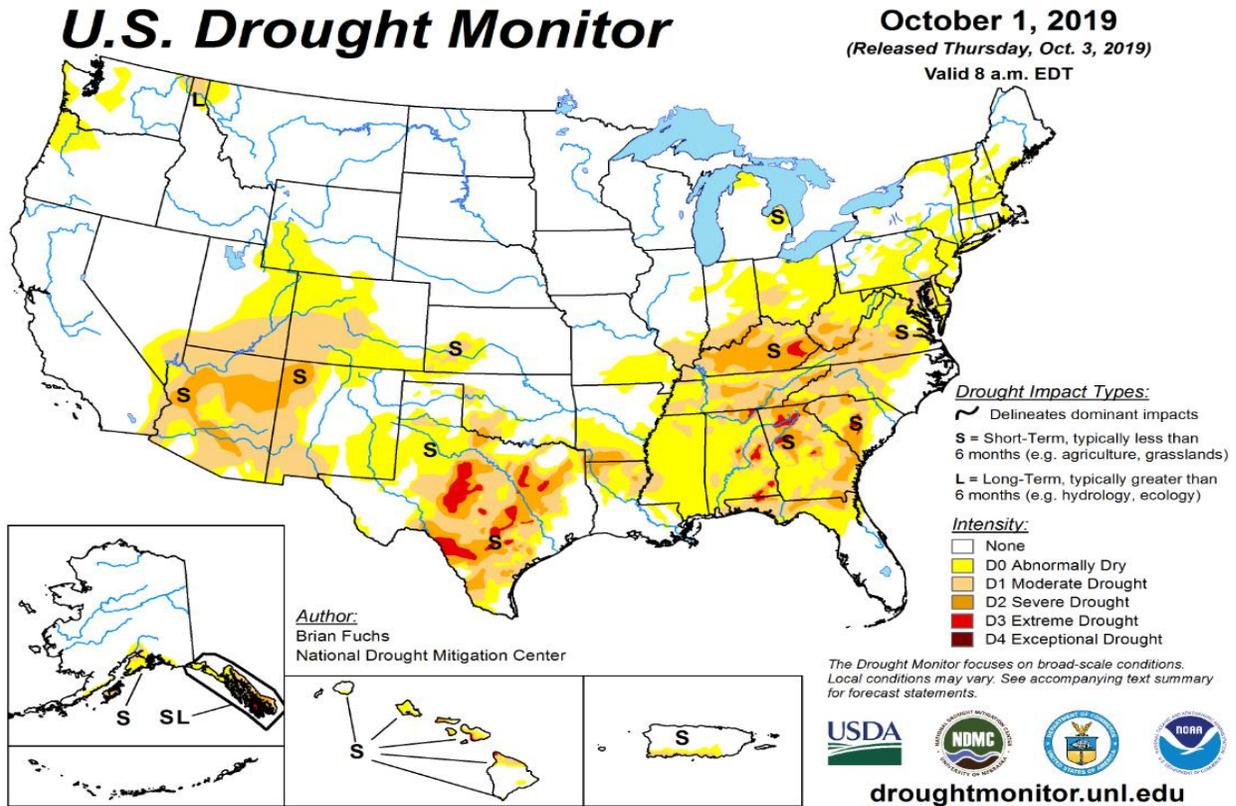
A frost advisory is issued during the growing season when temperatures are expected to drop to between 32 and 35 degrees on clear calm nights.

A blowing dust advisory is issued when blowing dust reduces visibilities to between a quarter of a mile and a mile.

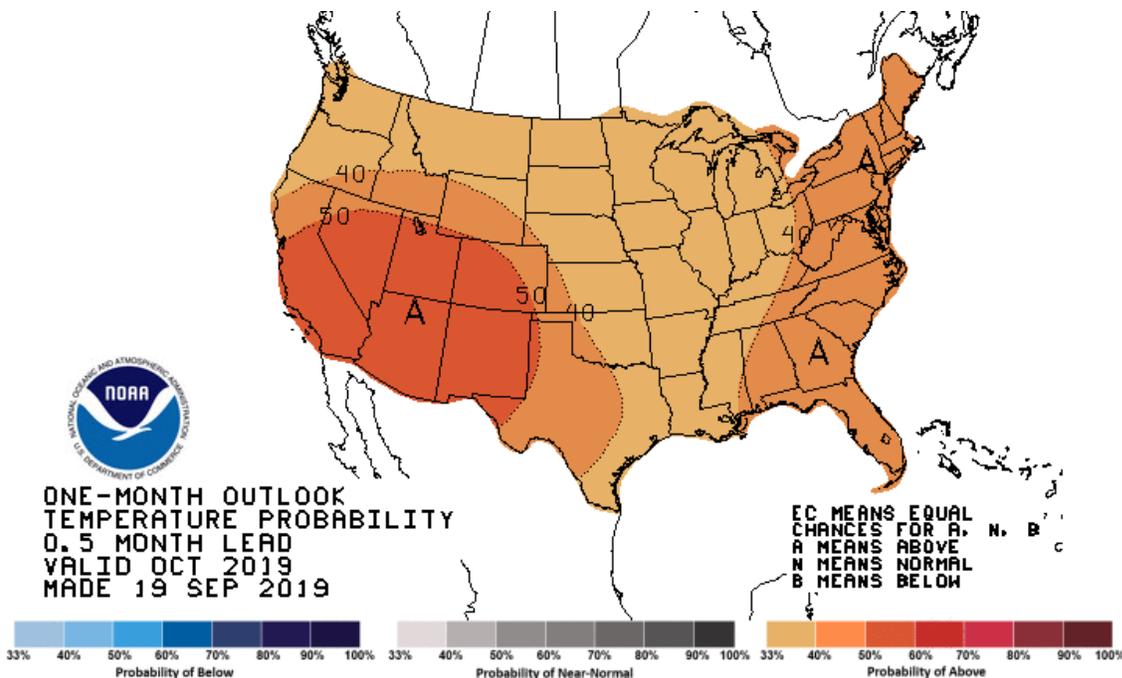
<https://www.weather.gov/bou/watchwarningadvisoryexplained>

Drought Update

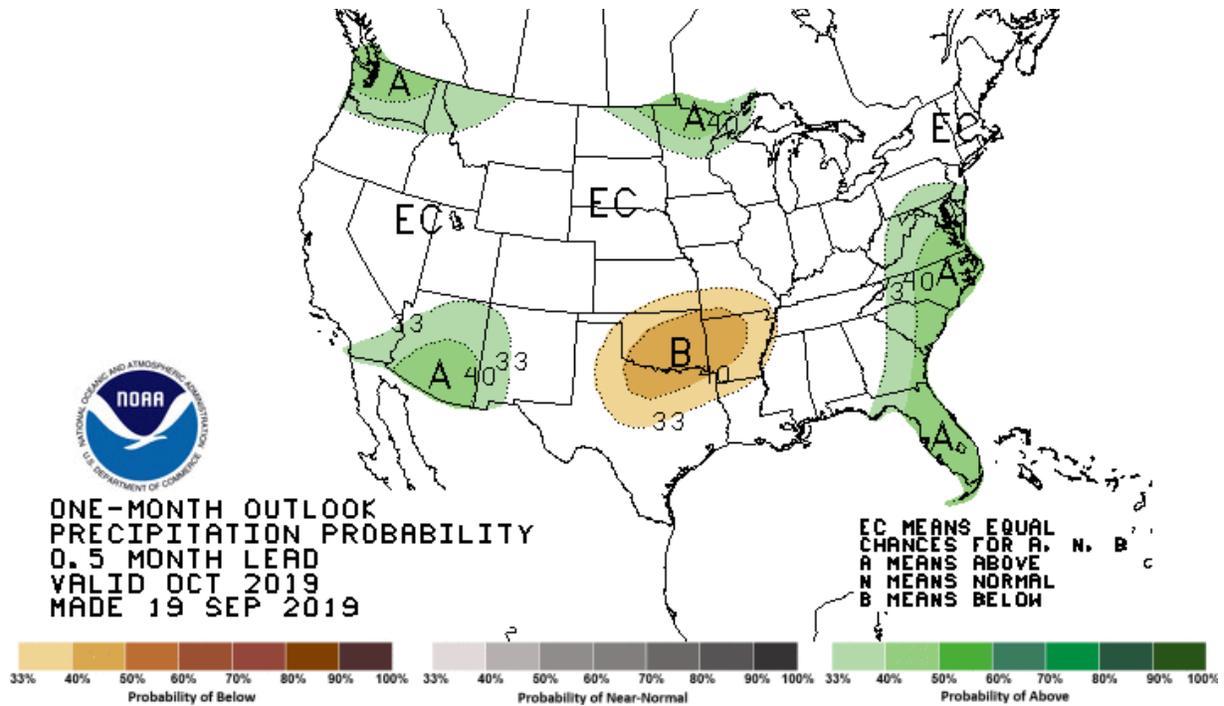
Colorado is starting to show abnormally dry conditions to moderate drought due to the lack of moisture this summer over the central and western portions of the state. Despite a dry September the NE portion of the state remains generally drought free. Elsewhere, much of TX, the desert SW and the SE US is experiencing some type of drought.



The map below shows forecasted temperature deviances for October 2019. There is a strong bias toward above normal temperatures across Colorado.



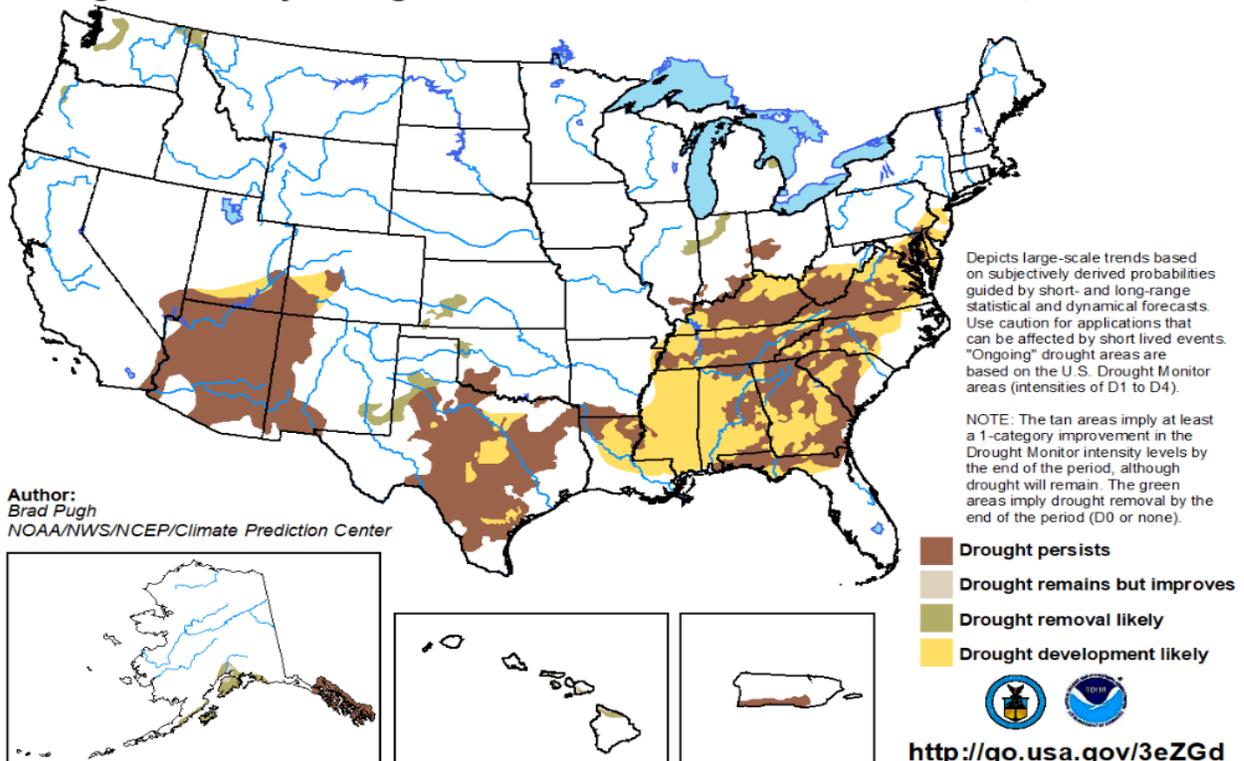
The map below shows forecasted precipitation deviances for October 2019. There are equal chances for above or below normal precipitation for the month.



Colorado is not expected to see any worsening of the drought conditions this month but areas of drought will persist over the SW portions of the state. Drought development is expected to increase in coverage over the SE US and TX.

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

Valid for October 2019
Released September 30, 2019



September Summary

September of 2019 was well above normal in temperature and below normal in precipitation as high pressure dominated the weather pattern. The average high for Denver at DIA was 85.5 degrees which was 7 degrees warmer than the normal of 78.5 degrees. The average low for the month was 53.2 degrees which was 4.9 degrees above the normal of 48.3 degrees. Combining the monthly highs and lows resulted in an average mean temperature of 69.3 degrees which was 5.9 degrees above the normal of 63.4 degrees and the 2nd warmest September in Denver history behind 2015 at 69.4 degrees. There were multiple daily record highs set with highs of 98 degrees on the 1st and 5th of the month. On the 2nd of September the official high at DIA reached 100 degrees which was the latest 100 degree day in Denver history by a large margin. The previous latest 100 degree day was August 16th in 2002! There were 5 days during the month when the temperature reached or exceeded 90 degrees. Precipitation was minimal through the month and most of it occurred in just a few days. At DIA 0.41" of moisture was observed which was 0.55" below the normal of 0.96". For the year DIA has reported 12.99" of moisture which is 0.67" above the normal of 12.32". There were 5 thunderstorm days reported at DIA but only 3 days produced measureable rain greater than a trace. With all the warm and dry weather there was abundant sunshine during the month with 14 days considered sunny to mostly sunny and 15 days considered partly cloudy and only 1 cloudy day.

Southeast Colorado also experienced warmer than average temperatures and below normal precipitation in September. Colorado Springs reported average highs for the month of 84 degrees and average lows of 53.3 degrees. The combination resulted in a monthly mean temperature of 68.7 degrees which was 7.8 degrees above normal. The airport in Colorado Springs reported only 0.32" of moisture which was .87" below the normal of 1.19". Further south into Pueblo average highs for the month of September were 90.3 degrees with average lows of 55.2 degrees producing a monthly mean temperature of 72.8 degrees which was a whopping 8.1 degrees above normal! Precipitation in Pueblo was 0.51" for the month which was 0.26" below the normal of 0.77".

September Stats

TEMPERATURE (IN DEGREES F)

AVERAGE MAX	85.5	NORMAL 78.5	DEPARTURE 7.0
AVERAGE MIN	53.2	NORMAL 48.3	DEPARTURE 4.9
MONTHLY MEAN	69.3	NORMAL 63.4	DEPARTURE 5.9
HIGHEST	100 on the 2 nd		
LOWEST	40 on the 22 nd		

DAYS WITH MAX 90 OR ABOVE	5	NORMAL	3.4
DAYS WITH MAX 32 OR BELOW	0	NORMAL	0.0
DAYS WITH MIN 32 OR BELOW	0	NORMAL	0.8
DAYS WITH MIN ZERO OR BELOW	0	NORMAL	0.0

TEMPERATURE RECORDS

Record highs of 98 on the 1st and 5th

Record high of 100 on the 2nd (Latest 100 degree day in Denver history!)

HEATING DEGREE DAYS

MONTHLY TOTAL	22	NORMAL	125	DEPARTURE	-103
SEASONAL TOTAL	22	NORMAL	125	DEPARTURE	-119

COOLING DEGREE DAYS

MONTHLY TOTAL	158	NORMAL	76	DEPARTURE	82
YEARLY TOTAL	915	NORMAL	764	DEPARTURE	151

PRECIPITATION (IN INCHES)

MONTHLY TOTAL	0.41	NORMAL	0.96	DEPARTURE	-0.55
YEARLY TOTAL	12.99	NORMAL	12.32	DEPARTURE	0.67
GREATEST IN 24 HOURS	0.26" on 9/8				
DAYS WITH MEASURABLE PRECIP.	3				

SNOWFALL (IN INCHES)

MONTHLY TOTAL	0.0	NORMAL	1.3	DEPARTURE	-1.3
SEASONAL TOTAL	0.0	NORMAL	1.3	DEPARTURE	-1.3
GREATEST IN 24 HOURS	0.0				
GREATEST DEPTH	0				

WIND (IN MILES PER HOUR)

AVERAGE SPEED	10.3 mph				
PEAK WIND GUST	56 mph from the W on 9/8				

MISCELLANEOUS WEATHER

NUMBER OF DAYS WITH THUNDERSTORM	6	NORMAL	4
NUMBER OF DAYS WITH HEAVY FOG	1	NORMAL	1
NUMBER OF DAYS WITH HAIL	0		
NUMBER OF SUNNY DAYS	14		
NUMBER OF PARTLY CLOUDY DAYS	15		
NUMBER OF CLOUDY DAYS	1		

October Preview

October is one of Denver's drier months on average, but it also is the month when typically the first taste of winter occurs. The average date of Denver's first freeze of the season is on October 7th and the average date of the first measurable snow of the season is on October 18th. The average high for the month of October is 65.3 and the average low for the month is 36.6, with an average of 8.5 days of below freezing temperatures. October is also the month in which Denver's latest 90 degree day and earliest subzero day have occurred, although it's been about 100 years or more since either of these instances. The hottest temperature on record in October is 90, which happened in 1892, and the coldest temperature on record in October is -2, which happened in 1917. Typically, 1-3 cool, wet systems will occur during the month, most of which produce light to moderate precipitation with an average monthly precipitation of 1.02" and an average monthly snowfall of 4.0". Most of the snowfall events that occur during October are "wet" in nature and have less impacts on pavement compared to other months due to typical warmer surface temperatures. However, heavy snowfall events can occasionally occur during October, which can significantly impact roadways, especially when snowfall rates exceed 1"/hour. The biggest snow event on record in October occurred in 1906 when 22.7" fell, but the second heaviest October snow event of 21.9" occurred more recently in 1997. The snowiest October on record occurred in 1969 with a monthly total of 31.2". October 1969 was also the coldest and wettest October on record. The most notable "cold and snowy" October in recent years occurred in 2009, which was the second coldest and fifth snowiest October on record. For October 2019 we expect many areas of NE Colorado to experience the first snow and hard freeze of the season on Thursday into Friday but overall temperatures are anticipated to be near normal to above normal once again with near normal precipitation. Snowfall is expected to be near normal with some areas possibly above normal by month's end.

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	0.4
DAYS WITH LOW 32 OR BELOW	8.5
DAYS WITH LOWS ZERO OR BELOW	0

PRECIPITATION

MONTHLY MEAN	1.02"
DAYS WITH MEASURABLE PRECIPITATION	5.3

AVERAGE SNOWFALL IN INCHES 4.0"
 DAYS WITH 1.0 INCH OF SNOW OR MORE 1.7

MISCELLANEOUS AVERAGES

HEATING DEGREE DAYS 440
 COOLING DEGREE DAYS 5
 WIND SPEED (MPH) 8.8mph
 WIND DIRECTION South
 DAYS WITH THUNDERSTORMS 1
 DAYS WITH DENSE FOG 1
 PERCENT OF SUNSHINE POSSIBLE 72%

EXTREMES

RECORD HIGH 90 on 10/1/1982
 RECORD LOW -2 on 10/29/1917
 WARMEST 59.0 in 1950
 COLDEST 38.9 in 1969
 WETTEST 4.17" in 1969
 DRIEST Trace in 1934
 SNOWIEST 31.2" in 1969
 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	1.46		9.63
Boulder	3.46	2.62	2.43	0.10	1.15		9.76
Brighton	3.26	1.64	1.56	0.04	0.32		6.82
Broomfield	2.46	2.48	3.43	0.26	0.72		9.35
Castle Rock	2.19	1.68	2.72	0.91	1.62		9.12
Colo Sprgs Airport	2.49	1.97	1.40	0.85	0.32		7.03
Denver DIA	3.23	2.24	2.42	0.58	0.41		8.88
Denver Downtown	3.56	1.31	2.03	1.01	0.68		8.59
Golden	3.01	2.32	2.38	0.67	0.63		9.01
Fort Collins	2.93	2.27	0.79	0.72	0.82		7.53
Highlands Ranch	2.44	1.79	1.74	0.77	1.00		7.74
Lakewood	3.60	1.35	1.60	0.68	0.87		8.10
Littleton	2.68	1.91	1.54	0.75	1.09		7.97
Monument	2.60	1.27	4.23	1.73	1.88		11.71
Parker	2.50	2.19	2.44	0.61	1.05		8.79
Sedalia - Hwy 67	2.02	1.42	1.84	1.04	0.88		7.20
Thornton	2.53	2.21	2.27	0.23	0.75		7.99
Westminster	2.70	1.81	2.11	0.22	0.40		7.24
Wheat Ridge	2.27	1.43	3.32	0.41	0.57		8.00

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