



The Weather Wire

October 2021

Volume 28 Number 10

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NWS 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.

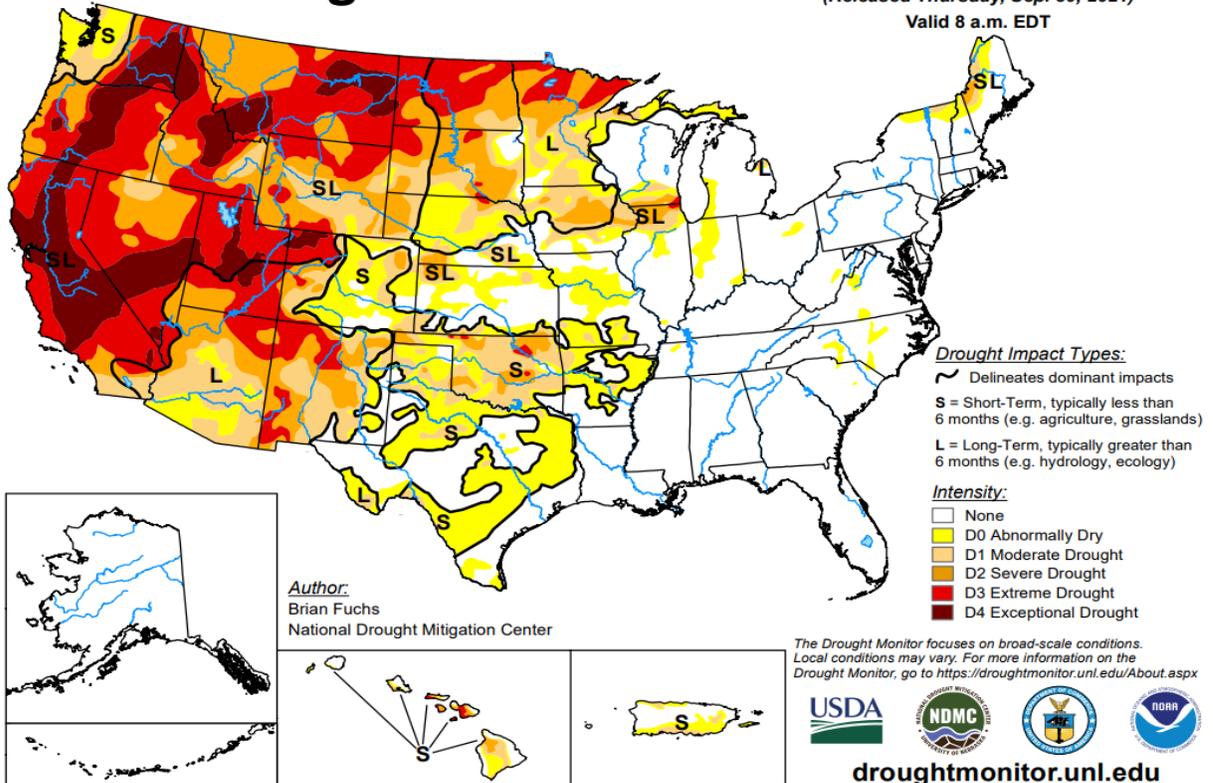
<https://www.weather.gov/bou/watchwarningadvisoryexplained>

Drought Update

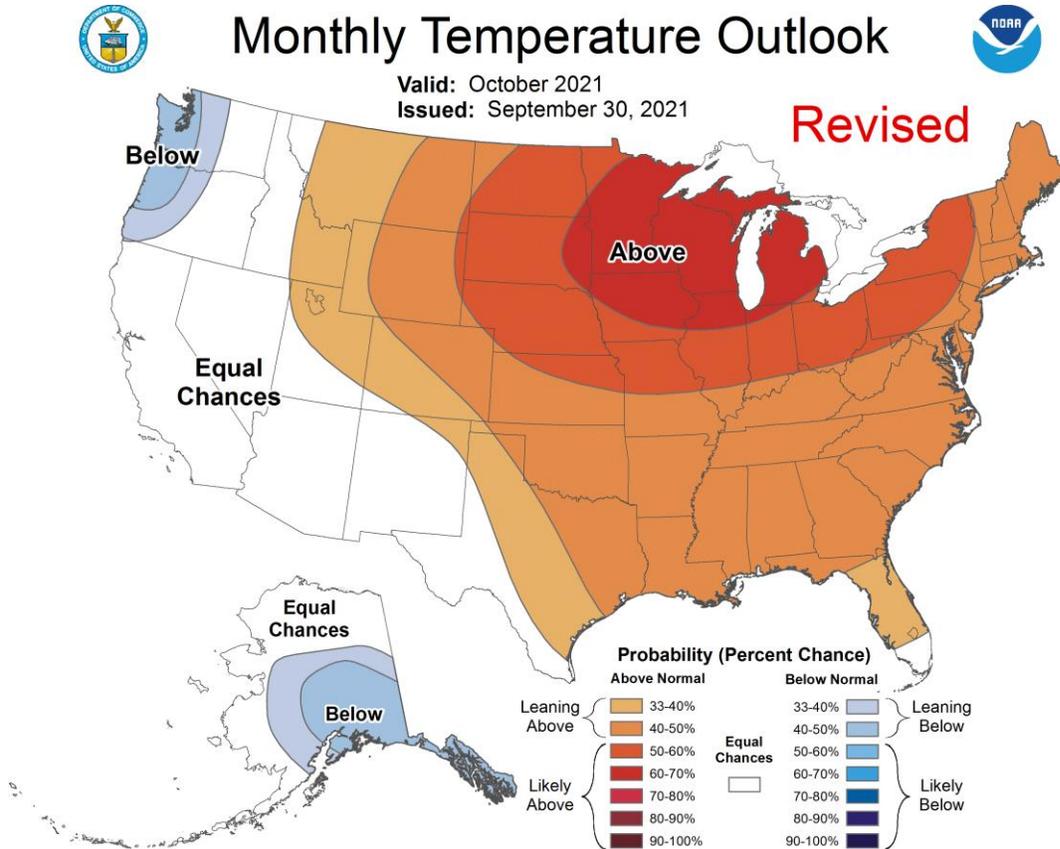
Colorado has had abnormally dry conditions with drought conditions quickly worsening due to the lack of moisture during the end of summer and early fall over most of the state. Currently, Colorado has very isolated areas of no drought, mainly over southern and eastern portions of the state. Most areas are abnormally dry to severe drought, with northwest Colorado experiencing an extreme to exceptional drought scenario as seen below:

U.S. Drought Monitor

September 28, 2021
(Released Thursday, Sep. 30, 2021)
Valid 8 a.m. EDT



The map below shows forecasted temperature deviances for October 2021. There is a strong bias toward above normal temperatures across all of Colorado.



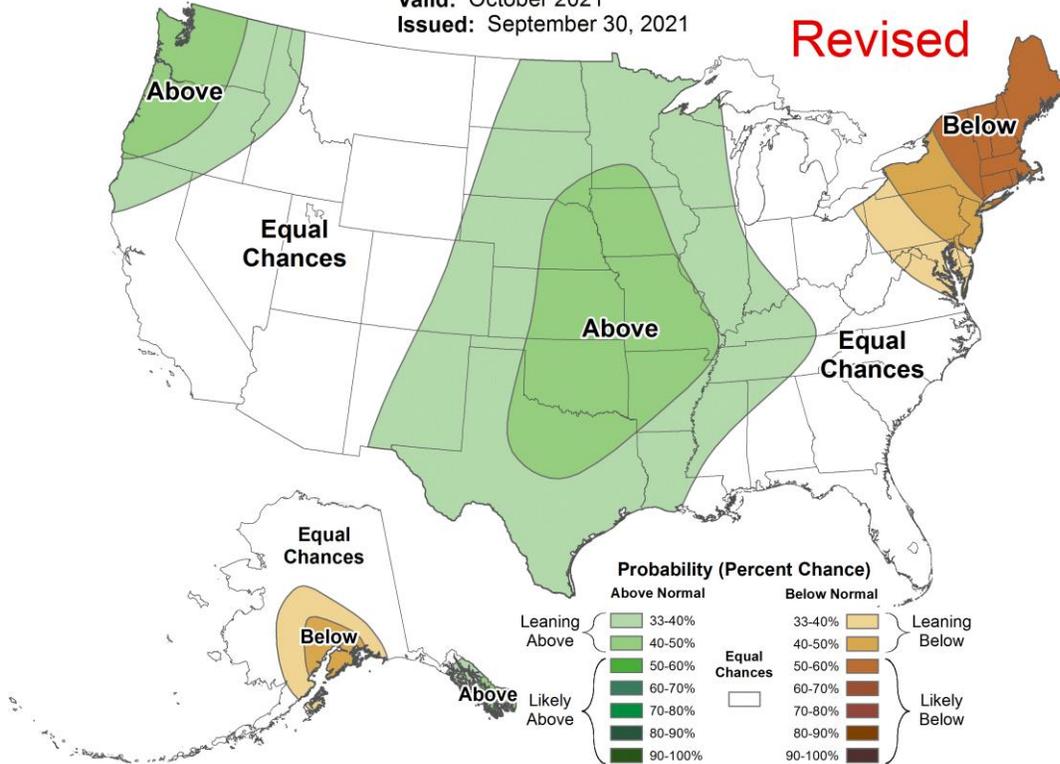
The map below shows forecasted precipitation deviances for October 2021. Per NOAA, Colorado is leaning above normal precipitation for eastern portions of the state with at or around normal precipitation for western Colorado. However, so far this month very little precipitation has fallen, and Colorado is already below average heading into the rest of October. At this time, a more active October looks likely with storm chances picking up next week with a slight chance Colorado could see its first winter weather system which could help drought conditions throughout the state.



Monthly Precipitation Outlook



Valid: October 2021
Issued: September 30, 2021

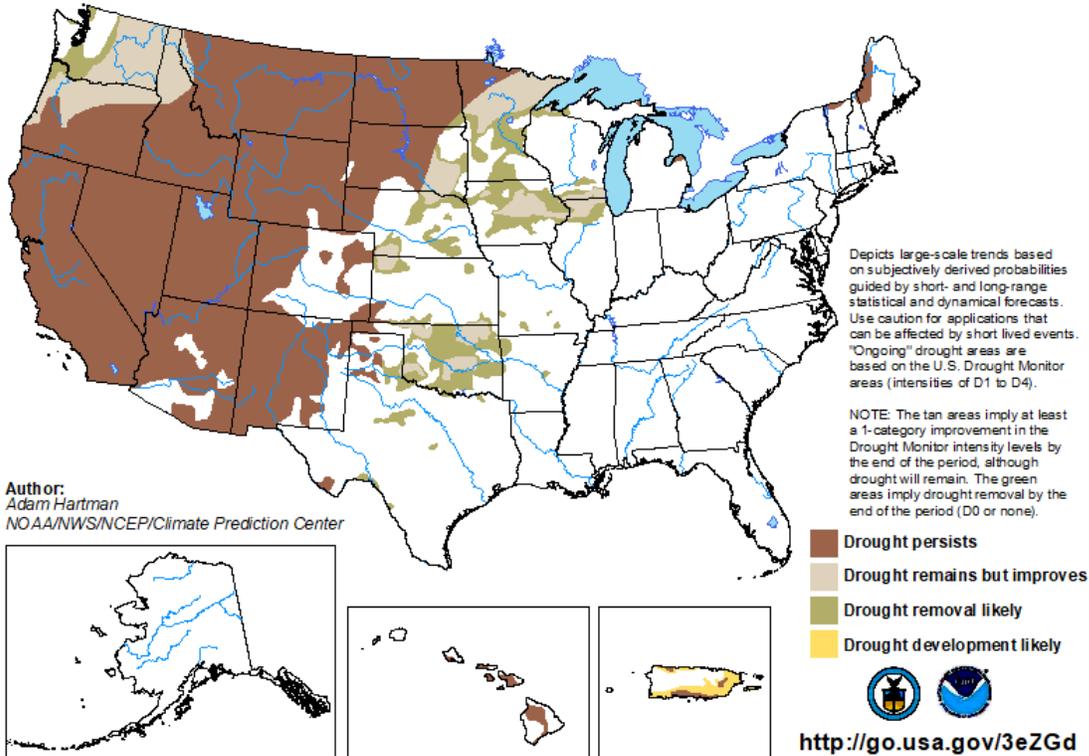


With precipitation leaning above average on the eastern slope, drought development is expected to decrease in coverage over eastern portions of the state, whereas western portions of the state will have persistent drought conditions throughout the month of October as seen in the image below:

U.S. Monthly Drought Outlook

Drought Tendency During the Valid Period

Valid for October 2021
Released September 30, 2021



September Summary

September of 2021 was above normal in temperature and well below normal in precipitation as high pressure dominated the weather pattern. The average high for Denver at DIA was 83.9 degrees which was 4.3 degrees warmer than the normal of 79.6 degrees. The average low for the month was 53.6 degrees which was 3.6 degrees above the normal of 50.0 degrees. Combining the monthly highs and lows resulted in an average mean temperature of 68.8 degrees which was 4.0 degrees above the normal of 64.8 degrees. There were a few daily record highs set with highs of 96 degrees on September 9th, 99 degrees set on September 10th and 97 degrees set on September 11th. The record high was tied on September 18th with 93 degrees which was held since 1895! That makes 4 days with record breaking heat for September 2021. There were 7 days during the month when the temperature reached or exceeded 90 degrees with only one day temperatures reached below 40 degrees at DIA which was on the 21st with a low of 39 degrees. Precipitation was minimal through the month and most of it occurred in just a few days. At DIA only 0.28" of moisture was observed which was a stunning 1.07" below the normal of 1.35" for the month of September. There were only 5 days which produced any measurable rain greater than a trace with the 13th receiving the most in a single day with only 0.12" of precipitation.

Southeast Colorado also experienced warmer than average temperatures and below normal precipitation in September 2021. Colorado Springs reported average highs for the month of 83.2 degrees and average lows of 52.7 degrees. The combination resulted in a monthly mean temperature of 68.0 degrees which was 5.0 degrees above normal. The airport in Colorado Springs reported 0.95" of moisture which was 0.40" below the normal of 1.35". Further south into Pueblo average highs for the month of September were 88.2 degrees with average lows of 52.2 degrees producing a monthly mean temperature of 70.2

degrees which was 3.6 degrees above normal. Precipitation in Pueblo was 0.94" for the month which was 0.0.29" above the normal of 0.65".

September Stats

TEMPERATURE (IN DEGREES F)

AVERAGE MAX	83.9	NORMAL 79.6	DEPARTURE 4.3
AVERAGE MIN	53.6	NORMAL 50.0	DEPARTURE 3.6
MONTHLY MEAN	68.8	NORMAL 64.8	DEPARTURE 4.0
HIGHEST	99 on the 10 th		
LOWEST	39 on the 21 st		

DAYS WITH MAX 90 OR ABOVE	7	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 96 on the 9th, 99 on the 10th, 97 on the 11th, tied 93 on the 18th

HEATING DEGREE DAYS

MONTHLY TOTAL	59	NORMAL 105	DEPARTURE -46
SEASONAL TOTAL	60	NORMAL 125	DEPARTURE -65

COOLING DEGREE DAYS

MONTHLY TOTAL	178	NORMAL 99	DEPARTURE 79
YEARLY TOTAL	1176	NORMAL 1097	DEPARTURE 79

PRECIPITATION (IN INCHES)

MONTHLY TOTAL	0.28	NORMAL 1.35	DEPARTURE -1.07
YEARLY TOTAL	11.88	NORMAL 11.79	DEPARTURE 0.09
GREATEST IN 24 HOURS	0.12" on 9/13		
DAYS WITH MEASURABLE PRECIP.	5		

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	0.0

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 like in 2019 where record breaking snowfall occurred during the month of October for areas around Boulder. The biggest snow event on record in October for the Denver area 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. For October 2021 we expect many areas of NE Colorado to experience less than average snowfall with above average temperatures throughout most of the month. So far, October has been well above average in temperatures with upper 70's to mid-80's with high-pressure dominating over the region. The first impactful storm is expected in the second week of October, although with above average temperatures going into the second week, not much snowfall will be expected below 6k feet and any snowfall that does occur should have no issues melting on contact. High-pressure will build back over the region through most of the rest of October, although a few days with precipitation cannot be completely ruled out as October typically has at least 5 days on average, with almost 2 days with above 1" of snow for DIA.

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 2021 to September 2021

City	May	Jun	Jul	Aug	Sep	Total
Aurora (Central)	4.13"	1.97"	1.42"	0.63"	0.35"	8.50"
Brighton	3.82"	0.83"	0.79"	1.26"	0.21"	6.91"
Broomfield	4.69"	1.67"	4.14"	0.51"	0.16"	11.17"
Castle Rock	4.06"	0.98"	2.60"	1.26"	0.59"	9.49"
Colo Sprgs Airport	3.98"	2.15"	3.26"	0.20"	0.95"	10.54"
Denver DIA	3.65"	0.84"	0.34"	0.27"	0.28"	5.38"
Denver Downtown	3.74"	1.54"	1.77"	0.47"	0.31"	7.83"

Golden	4.13"	1.46"	1.37"	0.68"	0.51"	8.15"
Fort Collins	5.77"	0.43"	0.82"	0.60"	0.56"	8.18"
Highlands Ranch	3.98"	2.99"	1.26"	1.46"	0.52"	10.21"
Lakewood	3.50"	1.18"	1.38"	0.51"	0.67"	7.24"
Littleton	3.54"	2.05"	1.02"	1.10"	0.44"	8.15"
Parker	2.99"	2.56"	0.43"	0.91"	0.16"	7.05"
Sedalia - Hwy 67	3.65"	1.06"	1.57"	0.67"	0.35"	7.30"
Thornton	4.76"	1.00"	1.46"	0.87"	0.41"	8.50"
Westminster	4.49"	0.79"	2.32"	0.35"	0.43"	8.38"
Wheat Ridge	3.78"	1.61"	1.10"	0.47"	0.63"	7.59"

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