

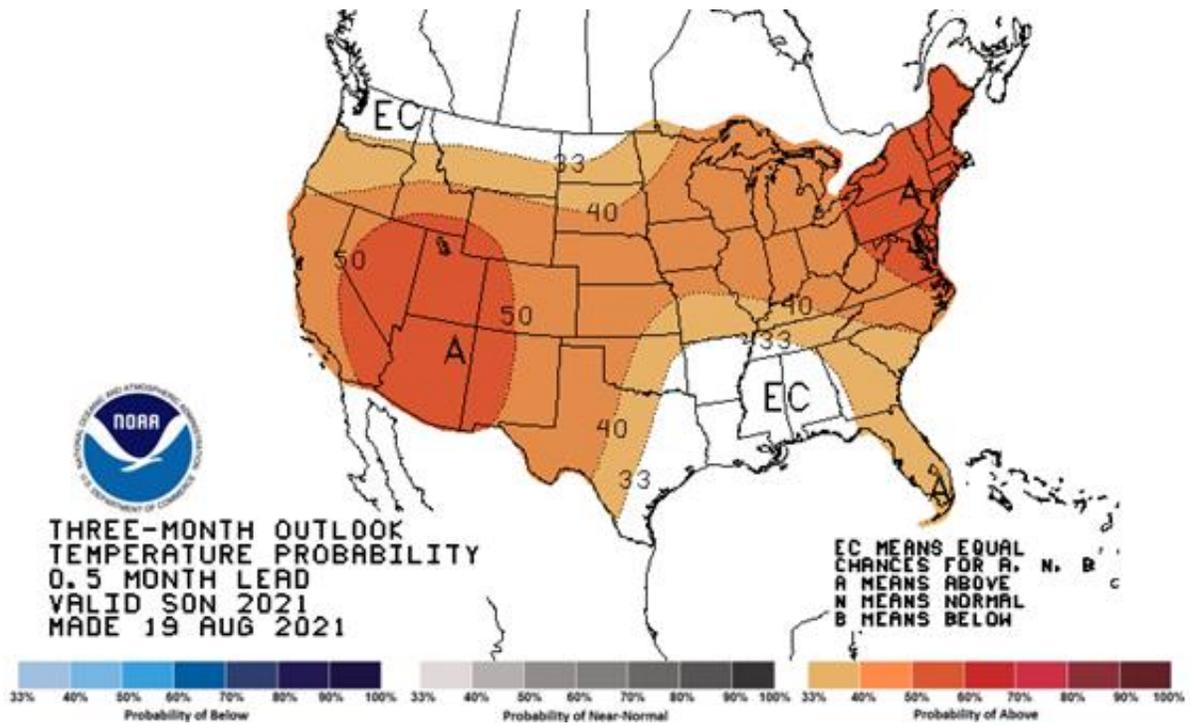


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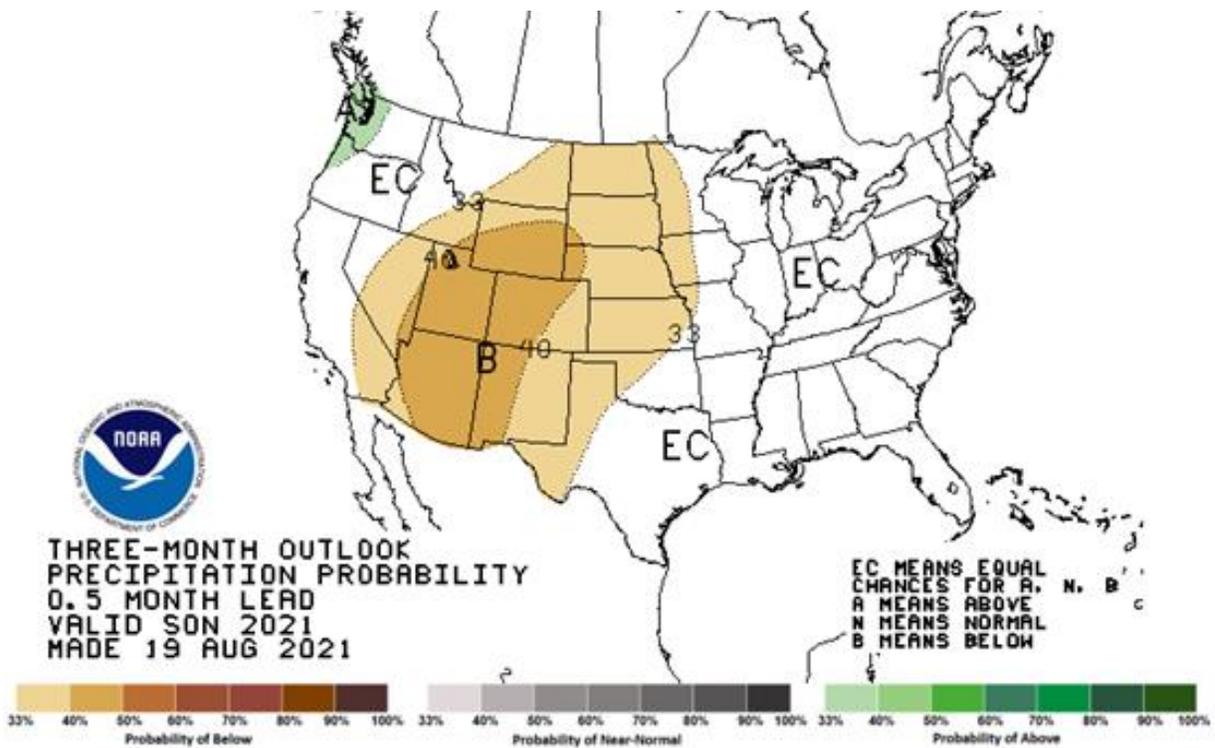
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Brief Winter Preview/Thoughts on 2021-2022 Snow Season...

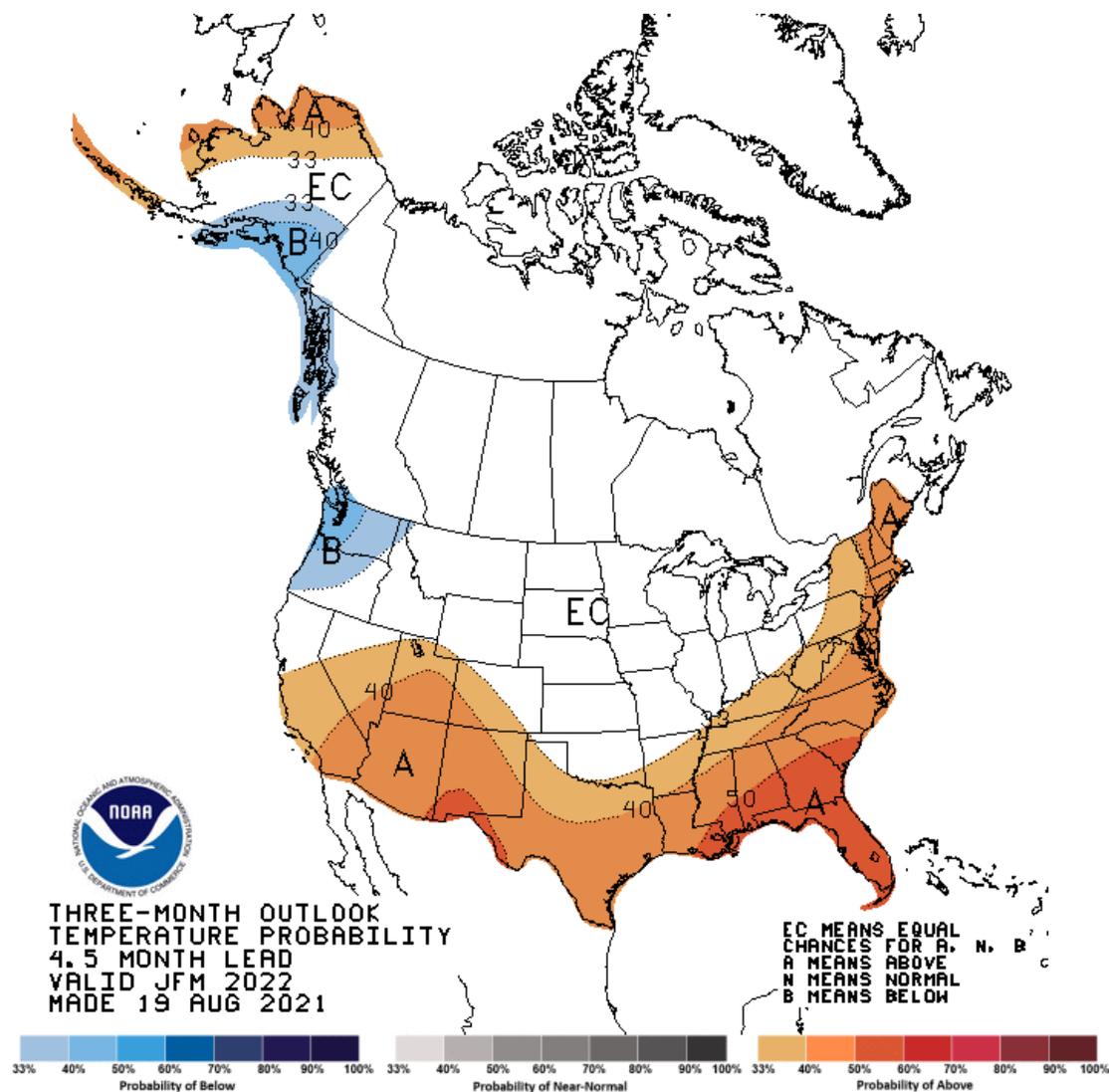
Last winter (2020-2021) featured well above normal snowfall for many areas of Colorado along the I-25 corridor from Cheyenne to Pueblo. This in part due to an early start with the first snow on September 8th of last year. Most of the snowfall fell in the late Winter and Spring with March (34" at DIA) being the typical snowiest month, followed by February (13.5") and April (12.6") coming in a close third. Overall, DIA came in with a total of 80.2", a hefty 23.5" over the normal amount of 53.7". 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 near or slightly above normal snowfall southward over the Palmer Divide including Castle Rock and Monument. Further south into Colorado Springs the airport came in above normal with 54.3, 15.7" above the all-time average of 38.6". Pueblo continues the above average trend with 37.4" in total, which is 7.8" above the all-time average. With a very good snow season in the rear-view mirror we are already getting many questions about what to expect this snow season. This summer we experienced an early and persistent monsoon season with several rainfall events in the spring and early summer which in turn helped wipe out the drought for most parts of eastern Colorado. It hasn't been until relatively recently that the Metro area has dried out over several weeks. A look ahead at the long-range forecast models will suggest below normal snowfall for the beginning of the 2021-2022 snow season along the I-25 corridor from Fort Collins to Pueblo. Below is the 3-month outlook map showing the probability of above or below normal temperatures:



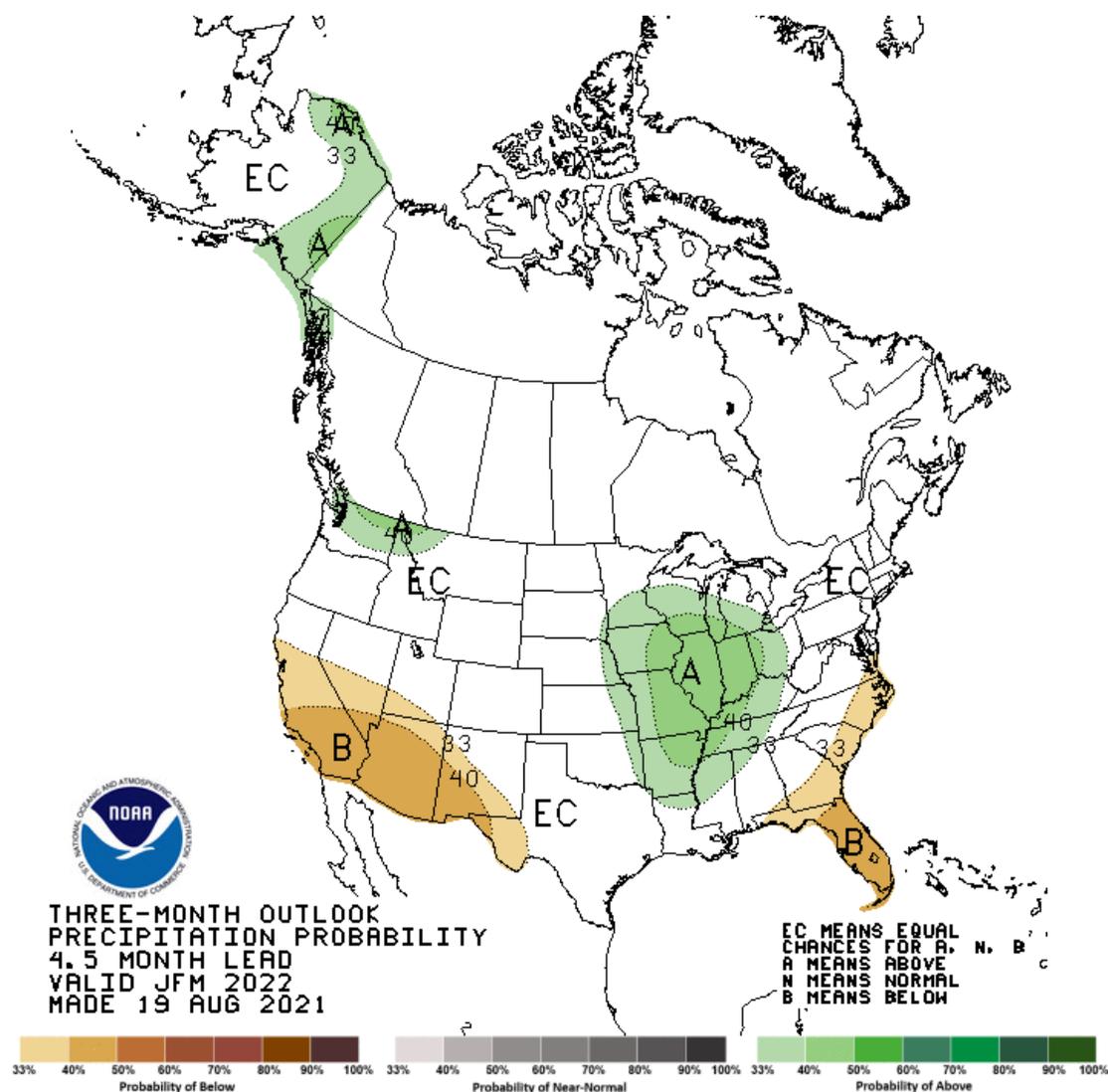
As you probably noticed, the 3-month period has a bias towards above normal temperatures. Skyview Weather believes that it is fairly safe to say that slightly above normal to well above normal temperatures are most likely for the beginning of the snow season as a whole but a week or two may very well 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 below normal precipitation statewide. The latter part of the snow season has equal chances for above or below normal precipitation across the state. As a whole, a slow start to the snow season is likely but a stronger storm cannot be ruled out (late October/November) throwing a wrench into the low early season totals. After a relatively slow start to the snow season we likely transition to a more active snowfall frequency as the winter progresses and in particular as we emerge into spring. Overall for the 2021-2022 season, the probabilities suggest that snowfall will be near normal north of Denver to Fort Collins with 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 below normal precipitation early in the winter this year will likely be less impactful than last year's early snowstorms in October. Temperatures are expected to continue to be above normal through the later part of the winter season as seen below with the January through March temperature outlook seen below:



Equal chances for above or below normal precipitation expected January through March as seen below (this period may become more active than projected currently?):



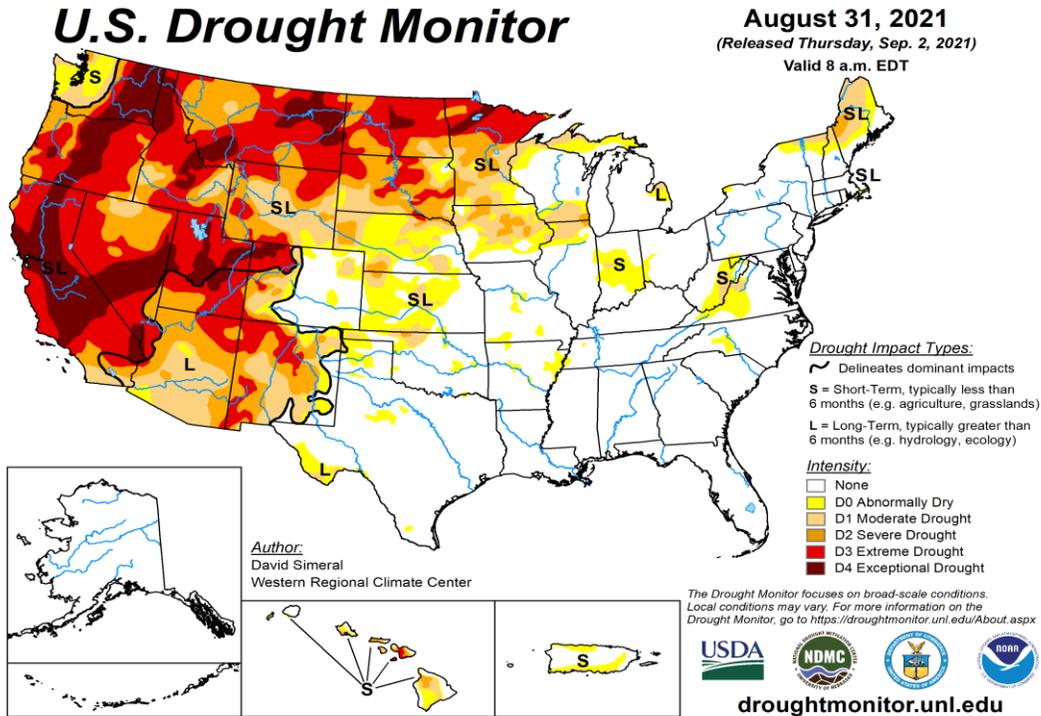
Only time will tell how this snow season will play out and as we move forward. Trends may very well change but this is Skyview Weather's initial opinion on how this winter will play out. An updated winter outlook may be issued later this month or early October if significant changes in the long-term 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:

<https://www.climate.gov/enso>

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

Drought Update

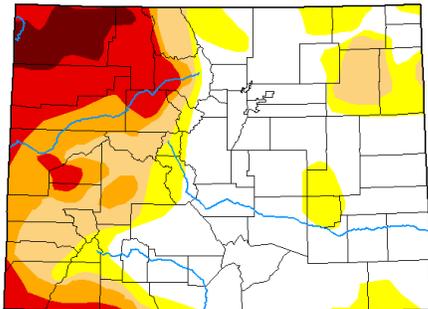
Extreme to exceptional drought conditions are expanding over much of the Western United States and towards the northern border with Canada as seen below:



Thankfully much of eastern Colorado remains drought free, although northeastern Colorado has been on the increase for worsening drought conditions over the past couple of months. Extreme to exceptional drought conditions continue to persist over northwestern areas of the state, with a few spots around the Grand Junction area and the southwest corner of the state.

U.S. Drought Monitor Colorado

August 31, 2021
 (Released Thursday, Sep. 2, 2021)
 Valid 8 a.m. EDT



Drought Conditions (Percent Area)

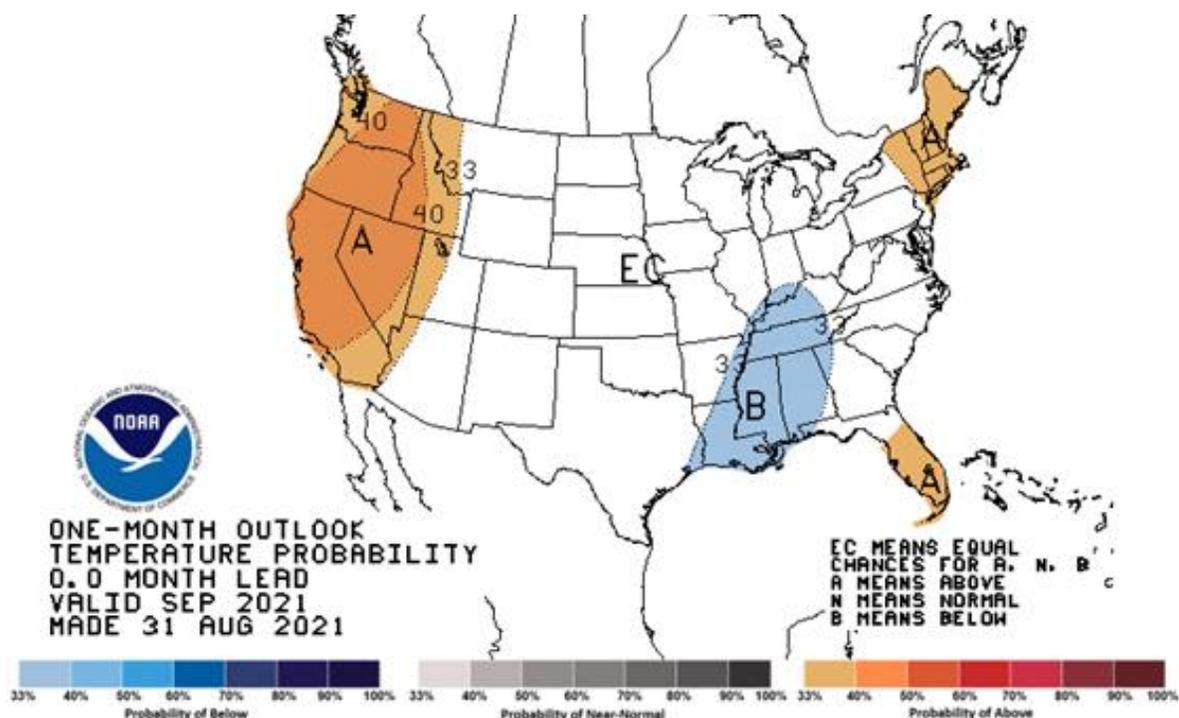
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	49.43	50.57	36.47	24.44	15.05	3.91
Last Week 08-24-2021	49.27	50.73	36.61	24.44	15.05	3.91
3 Months Ago 06-01-2021	51.10	48.90	43.36	35.53	29.15	16.39
Start of Calendar Year 12-29-2020	0.00	100.00	100.00	93.73	76.17	27.60
Start of Water Year 09-29-2020	0.00	100.00	99.29	89.35	52.88	2.64
One Year Ago 08-01-2020	0.00	100.00	88.80	91.55	36.85	0.38

Intensity:
 None
 D0 Abnormally Dry
 D1 Moderate Drought
 D2 Severe Drought
 D3 Extreme Drought
 D4 Exceptional Drought

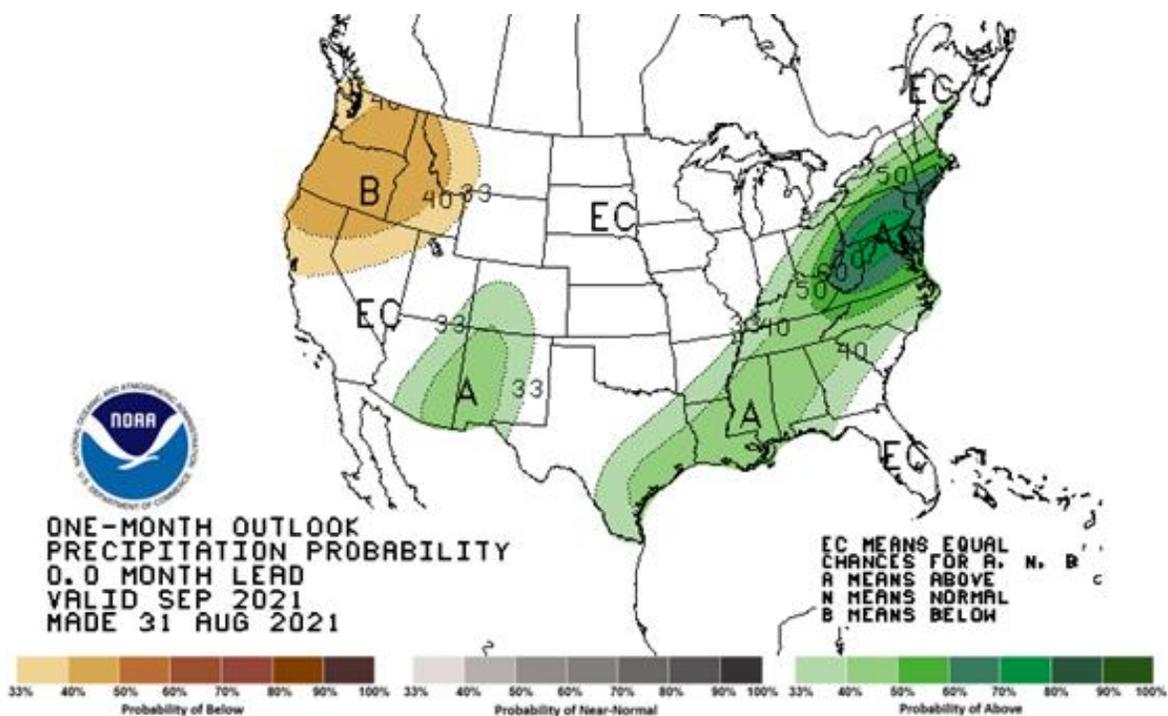
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:
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 Western Regional Climate Center

The map below shows forecasted temperature deviances for September 2021. The map shows normal temperatures for Colorado. However with above average temperatures already in the first week over most parts of Colorado, the chances have increased that this month will continue with the trend of warmer temperatures through October.



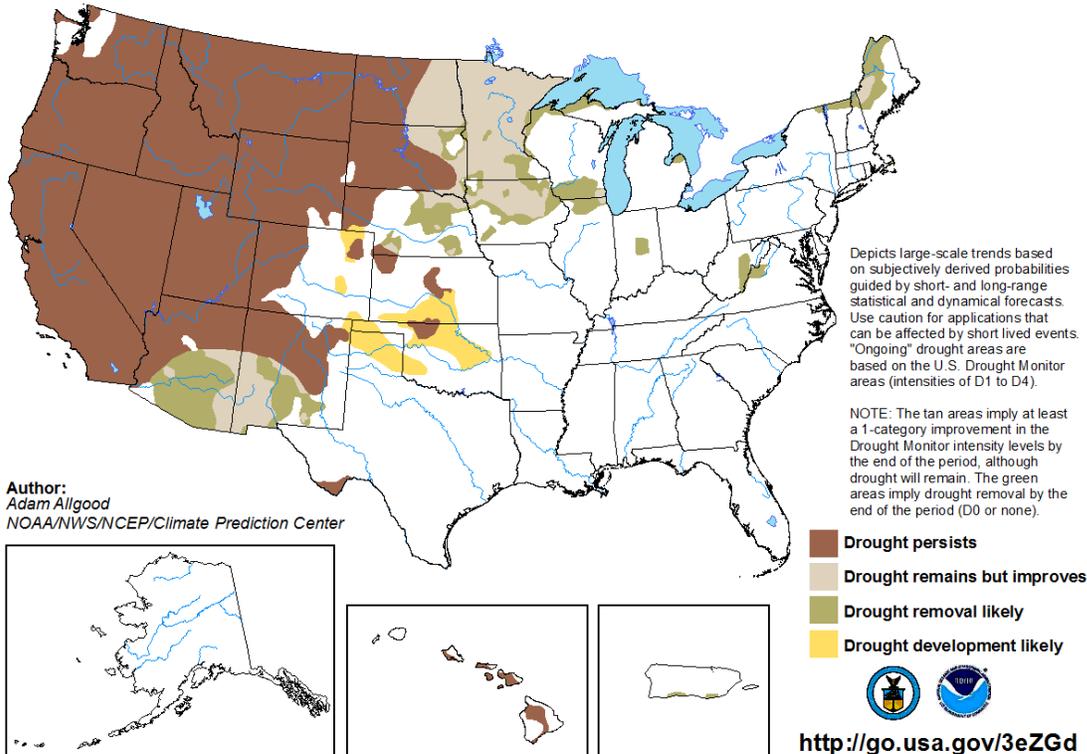
The map below shows forecasted precipitation deviances for September 2021. The map shows a chance for above normal precipitation for southwestern Colorado and into the I-70 corridor on the western slope which could continue to alleviate some drought conditions.



However, even with chance for more than average precipitation for southwest Colorado, not much is expected to change to the drought conditions for most of Colorado. With drought development likely for portions of eastern Colorado as seen below:

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

Valid for September 2021
Released August 31, 2021



August Summary

August of 2021 was another dry month with above normal temperatures. Average highs for the month were 90.6 degrees at DIA with average combined monthly mean temperature of 75.4 degrees which was 2.5 degrees above the normal of 72.9 degrees. There were 18 days during the month with a high temperature above 90 degrees. On August 9th the highest temperature of the month at DIA was 98 degrees. DIA reported a total of 0.27" of precipitation for the month of August which was a hefty 1.31" less than average of 1.58". The airport in Colorado Springs recorded a monthly mean temperature of 74.0 degrees which is 3.9 degrees above normal of 70.1 degrees. The Colorado Springs airport recorded 20 days at or above 90 degrees, only 1 less day than 2020. Colorado Spring's highest recorded temperature was on the 6th and 9th where the airport recorded 96 degrees both days. Oddly enough, the morning of the 8th, the Colorado Springs airport recorded a recorded the lowest monthly temperature of 53 degrees. The Colorado Springs airport only reported 0.20" of moisture for the month which was a staggering 2.76" below normal. Further south and into Pueblo, the airport there recorded an average monthly mean temperature of 76.4 degrees which was 1.6 degrees above the normal of 74.8 degrees. Pueblo recorded 2 days with 100-degree temperatures on the 6th and the 28th. Pueblo reported 1.23" of rainfall which was 0.88" below normal of 2.11".

Generally, a much warmer and drier month of August, especially compared to the more seasonable spring this year with increased rainfall for some areas.

August Stats

TEMPERATURE (IN DEGREES F)

AVERAGE MAX	90.6	NORMAL 87.5	DEPARTURE 3.1
AVERAGE MIN	60.2	NORMAL 58.3	DEPARTURE 1.9
MONTHLY MEAN	75.4	NORMAL 72.9	DEPARTURE 2.5
HIGHEST	98 on the 9 th		
LOWEST	53 on the 20 th		

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

None

HEATING DEGREE DAYS

MONTHLY TOTAL	1	NORMAL 10	DEPARTURE -9
SEASONAL TOTAL	1	NORMAL 10	DEPARTURE -9

COOLING DEGREE DAYS

MONTHLY TOTAL	380	NORMAL 244	DEPARTURE 136
YEARLY TOTAL	998	NORMAL 688	DEPARTURE 310

PRECIPITATION (IN INCHES)

MONTHLY TOTAL	0.27	NORMAL 1.58	DEPARTURE -1.31
YEARLY TOTAL	11.6	NORMAL 10.44	DEPARTURE 1.16
GREATEST IN 24 HOURS	0.18" on the 19 th		
DAYS WITH MEASURABLE PRECIP.	4		

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 NA

WIND (IN MILES PER HOUR)

AVERAGE SPEED ? mph
PEAK WIND GUST ? mph from the ? on ??

MISCELLANEOUS WEATHER

NUMBER OF DAYS WITH THUNDERSTORM	5	NORMAL	8
NUMBER OF DAYS WITH HEAVY FOG	0	NORMAL	1
NUMBER OF DAYS WITH HAIL	0		
NUMBER OF SUNNY DAYS	4		
NUMBER OF PARTLY CLOUDY DAYS	27		
NUMBER OF CLOUDY DAYS	0		
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 79.6 and an average monthly low of 50. Hot weather can still occur during September, typically during the first half of the month as at or above record-breaking temperatures have already occurred in the first week of this month. The earliest snowfall on record in Denver occurred on September 3rd, 1961, with last year's first snow occurring September 8th. 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 has been experiencing a September snow drought, as the last time measurable snow officially occurred in September was in 2000 with last year being the first in 20 years to receive snow in September. On average, the first freeze of the season in Denver occurs in early October, but occasionally it can happen as early as 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 had a couple of rain events over the Front Range through the first 7 days of the month, with heavy rainfall and severe weather for some areas around the Denver Metro area on the 3rd, but for the month as a whole Skyview Weather believes September 2021 will generally feature below to near normal precipitation with above normal temperatures.

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

TEMPERATURE

AVERAGE HIGH	87.2
AVERAGE LOW	57.9
MONTHLY MEAN	72.5
DAYS WITH HIGH 90 OR ABOVE	12
DAYS WITH HIGH 32 OR BELOW	0
DAYS WITH LOW 32 OR BELOW	0
DAYS WITH LOWS ZERO OR BELOW	0

PRECIPITATION

MONTHLY MEAN	1.69"
DAYS WITH MEASURABLE PRECIPITATION	9
AVERAGE SNOWFALL IN INCHES	0.0"
DAYS WITH 1.0 INCH OF SNOW OR MORE	0

MISCELLANEOUS AVERAGES

HEATING DEGREE DAYS	10
COOLING DEGREE DAYS	244
WIND SPEED (MPH)	8.0mph
WIND DIRECTION	South
DAYS WITH THUNDERSTORMS	8
DAYS WITH DENSE FOG	1
PERCENT OF SUNSHINE POSSIBLE	71%

EXTREMES

RECORD HIGH	105 on 8/18/1878
RECORD LOW	40 on multiple dates
WARMEST	77.0 in 2011
COLDEST	66.5 in 1915
WETTEST	5.85" in 1979
DRIEST	0.02" in 1924
SNOWIEST	0.0"
LEAST SNOWIEST	0.0"

Rainfall

May 2021 to September 2021

City	May	Jun	Jul	Aug	Sep	Total
Aurora (Central)	4.13"	1.97"	1.42"	0.63"		8.15"
Brighton	3.82"	0.83"	0.79"	1.26"		6.70"
Broomfield	4.69"	1.67"	4.14"	0.51"		11.01"
Castle Rock	4.06"	0.98"	2.60"	1.26"		8.90"
Colo Sprgs Airport	3.98"	2.15"	3.26"	0.20"		9.59"
Denver DIA	3.65"	0.84"	0.34"	0.27"		5.10"
Denver Downtown	3.74"	1.54"	1.77"	0.47"		7.52"
Golden	4.13"	1.46"	1.37"	0.68"		7.64"
Fort Collins	5.77"	0.43"	0.82"	0.60"		7.62"
Highlands Ranch	3.98"	2.99"	1.26"	1.46"		8.43"
Lakewood	3.50"	1.18"	1.38"	0.51"		6.57"
Littleton	3.54"	2.05"	1.02"	1.10"		7.71"
Parker	2.99"	2.56"	0.43"	0.91"		6.89"
Sedalia - Hwy 67	3.65"	1.06"	1.57"	0.67"		6.95"
Thornton	4.76"	1.00"	1.46"	0.87"		8.09"
Westminster	4.49"	0.79"	2.32"	0.35"		7.95"
Wheat Ridge	3.78"	1.61"	1.10"	0.47"		6.96"

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