

## September 2024 Summary

This month was the hottest September on record for Arizona. Gila, Maricopa, Navajo, Pinal, and Yavapai counties also experienced their hottest September, and La Paz County tied with 2022 for their hottest September. With an anomaly of 0.92 inches below the 1895-2024 mean, the state ranked as the 14th driest on record. For Water Year 2024 (October 2023-September 2024), Arizona received a statewide average of 10.56 inches of precipitation, ranking as the 32nd driest on record. The 1896-2024 mean state precipitation for the Water Year was 12.25 inches, resulting in an anomaly of -1.69 inches.

On September 1, Williams received 0.31 inches of precipitation, Robson Ranch received 0.07 inches of precipitation, and Picacho received 0.05 inches of precipitation. Blowing dust was observed at Buckeye Municipal Airport, leading to a visibility of half of a mile.

A strong ridge of high pressure over the southwest led to warmer temperatures and drier conditions from September 2-5. However, stray showers still occurred at Coronado National Memorial (0.10 inches of precipitation on the 2nd), San Simon (trace of precipitation on the 3rd), and Bellemont (trace of precipitation on the 4th). New high temperature records were set on the 5th at Phoenix Sky Harbor (116°F, previous record 115°F in 2020) and Nogales Airport (102°F, previous record 101°F in 2020).

The area of high pressure started moving toward the Four Corners on September 6, bringing more moisture to the state along with increasing storm chances each day. In addition, a new record for Tucson's all-time warmest September low temperature was set that morning (86°F, previous record 84°F on 9/6/2020 and 9/1/2011).

On September 7, Prescott and Walnut Creek received 0.27 inches of precipitation, Payson received 0.22 inches of precipitation, and Flagstaff received 0.07 inches of precipitation. Nickel-sized hail (0.88 inches in diameter) was estimated northwest of Happy Jack, dime-sized hail (0.70 inches in diameter) was measured near Downtown Flagstaff, and marble-sized hail (0.50 inches in diameter) was measured northeast of Payson. A USGS gauge in Granite Creek at Prescott recorded over a 6.5 foot rise.

On September 8, Payson received 0.14 inches of precipitation, Bellemont received 0.10 inches of precipitation, Natural Bridge State Park received 0.08 inches of precipitation, and Kingman received 0.01 inches of precipitation. On September 9, Window Rock received 0.04 inches of precipitation, and on September 10, Heber received 0.03 inches of precipitation.

Moisture from remnants of Tropical Storm Ileana began to stream into the state on the evening of the 13th. This moisture, combined with an approaching low pressure system, triggered showers and thunderstorms in some locations from September 15-17, including Springerville (0.39 inches) and San Manuel (0.86 inches). Uprooted trees were reported west of Benson and southeast of Tucson on the 15th.

Dr. Erinanne Saffell, Arizona State Climatologist Juliana Likourinou, Author <u>http://azclimate.asu.edu</u> © 2024 Arizona State Climate Office





On September 17, Tucson reached an average dewpoint temperature of 54°F for the last time this summer, which marked their legacy end date for this year's monsoon season. The coldest low temperatures of the month occurred in a few northern locations on September 18, including Bellemont (27°F), the Grand Canyon (28°F), and Bright Angel (29°F).

A low pressure system passed through Arizona on the evening of the 20th through the 21st. Precipitation was measured in a few locations, including Saint Johns (0.22 inches), Flagstaff (0.19 inches), Apache Junction (0.07 inches), and Kingman (0.02 inches). Quarter-sized hail (1.00 inches in diameter) was measured north of Flagstaff Airport.

On September 24, a strong ridge of high pressure over the western United States led to anomalously warm temperatures that lasted through the end of the month and into October. New high temperature records were set in a few locations, including Nogales (101°F on the 25th, previous record 98°F set in 2023 and 2020), Winslow (96°F on the 26th, previous record 93°F set in 2020), Tucson (108°F on the 27th, previous record 103°F set in 2023), Phoenix (117°F on the 28th, previous record 108°F set in 1992, which sets a new record for their all-time warmest September high temperature (previous record 116°F set on 9/1/1950) and marks their latest 115°F+ day on record (previous record 9/5/2024 and 9/5/2020)), Tuzigoot National Monument (102°F on the 29th, previous record 99°F set in 2020), and Phantom Ranch (106°F on the 30th, previous record 103°F set in 2010). Additionally, lingering moisture brought precipitation to Bellemont, Flagstaff, and Williams, which each recorded 0.01 inches on September 30.

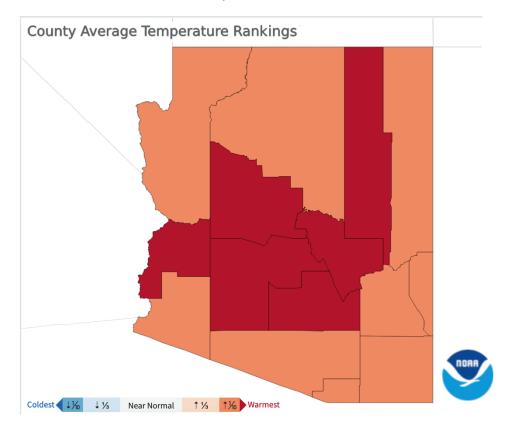
**Data are preliminary** and are from NOAA/NCEI, the Northeast Regional Climate Center, the Southeast Regional Climate Center, and the National Weather Service Forecast Offices in Flagstaff, Phoenix, Tucson, and Las Vegas.

<u>Note</u>: Weather stations across the state have different reporting times. Official daily temperature and precipitation values are recorded at the airports from midnight to midnight, while statewide observations are taken at varying times throughout the day.

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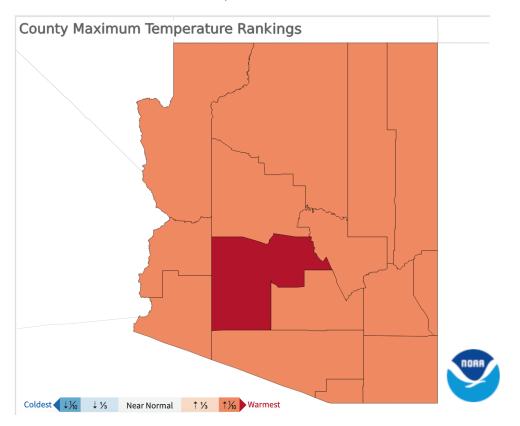


The average state temperature for September was 76.3°F, ranking as the hottest September within the period of record. The 1895-2024 mean average state temperature for September was 72.4°F, resulting in an anomaly of +3.9°F.

County Average Temperature Anomaly Rank (130 Years) From the 1895-2024 mean 5<sup>th</sup> warmest Apache 65.6°F +3.0°F 2<sup>nd</sup> warmest Cochise 75.2°F +3.3°F 3<sup>rd</sup> warmest Coconino +3.9°F 68.8°F Gila 75.5°F Warmest +4.2°F 2<sup>nd</sup> warmest Graham 75.7°F +3.2°F 9<sup>th</sup> warmest Greenlee 70.4°F +2.7°F La Paz 88.6°F Warmest +4.5°F (tied with 2022) Maricopa 88.0°F Warmest +5.2°F 2<sup>nd</sup> warmest Mohave 79.2°F +4.4°F Warmest 68.3°F +3.7°F Navajo Pima 82.8°F 3<sup>rd</sup> warmest +3.5°F Pinal 85.7°F Warmest +4.8°F Santa Cruz 3<sup>rd</sup> warmest 74.3°F +3.0°F 75.1°F Warmest Yavapai +4.1°F 7<sup>th</sup> warmest Yuma 88.7°F +4.0°F

Period of record: 1895-2024

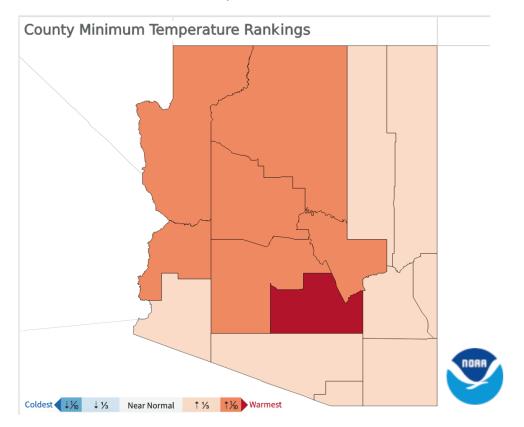
Data are from the National Centers for Environmental Information and are preliminary.



The average maximum state temperature for September was 91.8°F, ranking as the 2<sup>nd</sup> warmest September within the period of record. The 1895-2024 mean maximum state temperature for September was 86.8°F, resulting in an anomaly of +5.0°F.

County	Maximum Temperature	Rank (130 Years)	Anomaly From the 1895-2024 mean
Apache	82.2°F	3 <sup>rd</sup> warmest	+4.8°F
Cochise	90.5°F	4 <sup>th</sup> warmest	+4.6°F
Coconino	85.2°F	4 <sup>th</sup> warmest	+5.2°F
Gila	90.5°F	3 <sup>rd</sup> warmest	+5.3°F
Graham	89.7°F	4 <sup>th</sup> warmest	+4.0°F
Greenlee	84.9°F	8 <sup>th</sup> warmest	+3.9°F
La Paz	102.8°F	6 <sup>th</sup> warmest	+4.6°F
Maricopa	102.6°F	Warmest	+5.7°F
Mohave	93.1°F	6 <sup>th</sup> warmest	+4.6°F
Navajo	84.9°F	3 <sup>rd</sup> warmest	+5.3°F
Pima	98.4°F	3 <sup>rd</sup> warmest	+4.9°F
Pinal	100.0°F	2 <sup>nd</sup> warmest	+5.4°F
Santa Cruz	89.2°F	6 <sup>th</sup> warmest	+4.1°F
Yavapai	90.9°F	5 <sup>th</sup> warmest	+5.1°F
Yuma	104.9°F	2 <sup>nd</sup> warmest	+5.7°F

Period of record: 1895-2024

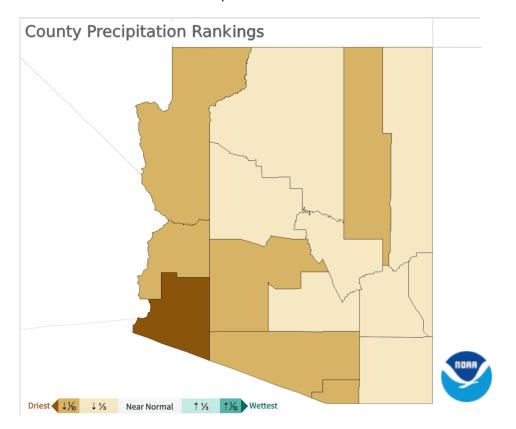


The average minimum state temperature for September was 60.9°F, ranking as the 7<sup>th</sup> warmest September within the period of record. The 1895-2024 mean minimum state temperature for September was 58.0°F, resulting in an anomaly of +2.9°F.

County	Minimum Temperature	Rank (130 Years)	Anomaly From the 1895-2024 mean
Apache	49.1°F	40 <sup>th</sup> warmest	+1.2°F
Cochise	59.7°F	16 <sup>th</sup> warmest	+1.8°F
Coconino	52.5°F	10 <sup>th</sup> warmest	+2.8°F
Gila	60.4°F	6 <sup>th</sup> warmest	+3.1°F
Graham	61.8°F	14 <sup>th</sup> warmest	+2.4°F
Greenlee	56.0°F	29 <sup>th</sup> warmest	+1.6°F
La Paz	74.3°F	4 <sup>th</sup> warmest	+4.4°F
Maricopa	73.4°F	3 <sup>rd</sup> warmest	+4.7°F
Mohave	65.2°F	4 <sup>th</sup> warmest	+4.2°F
Navajo	51.7°F	18 <sup>th</sup> warmest	+2.1°F
Pima	67.1°F	17 <sup>th</sup> warmest	+2.0°F
Pinal	71.4°F	Warmest (tied with 2022, 1997, 1983)	+4.1°F
Santa Cruz	59.5°F	16 <sup>th</sup> warmest	+2.0°F
Yavapai	59.2°F	8 <sup>th</sup> warmest	+3.1°F
Yuma	72.5°F	27 <sup>th</sup> warmest	+2.3°F

Period of record: 1895-2024

Data are from the National Centers for Environmental Information and are preliminary.



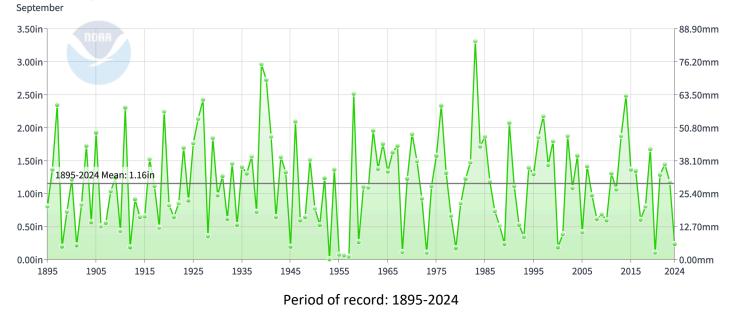
The average state precipitation for September was 0.24 inches, ranking as the 14<sup>th</sup> driest September within the period of record. The 1895-2024 mean state precipitation for September was 1.16 inches, resulting in an anomaly of -0.92 inches.

County	Precipitation	Rank (130 Years)	Anomaly
			From the 1895-2024 mean
Apache	0.40''	17 <sup>th</sup> driest	-0.93''
Cochise	0.42"	17 <sup>th</sup> driest	-1.15″
Coconino	0.19"	14 <sup>th</sup> driest	-1.00''
Gila	0.51"	18 <sup>th</sup> driest	-1.20''
Graham	0.86"	34 <sup>th</sup> driest	-0.74"
Greenlee	0.90"	27 <sup>th</sup> driest	-0.93"
La Paz	0.01"	13 <sup>th</sup> driest	-0.52"
Maricopa	0.03"	11 <sup>th</sup> driest	-0.79"
Mohave	0.05"	10 <sup>th</sup> driest	-0.75"
Navajo	0.22"	11 <sup>th</sup> driest	-0.99''
Pima	0.19"	11 <sup>th</sup> driest	-1.07"
Pinal	0.25"	18 <sup>th</sup> driest	-0.89''
Santa Cruz	0.33"	9 <sup>th</sup> driest	-1.56"
Yavapai	0.23"	19 <sup>th</sup> driest	-1.15"
Yuma	0.00''	Driest	-0.47"
		(tied with 2020, 2000,	
		and 11 other years)	

Period of record: 1895-2024

#### September Statewide Precipitation (1895 to date)

#### **Arizona Precipitation**



This chart shows average Arizona precipitation each September through the period of record (1895 to present). September 2024 ranked as the 14<sup>th</sup> driest with an average of 0.24 inches, which is 0.92 inches below the 1895-2024 average of 1.16 inches.

#### **Flagstaff Climate Statistics**

September 2024

This ranked as the 5<sup>th</sup> warmest September on record Heating Degree Days: 128 Normal: 204 (9/10/1898 to present). With 0.29 inches Cooling Degree Days: 11 Normal: 4 of precipitation, it ranked as the 20<sup>th</sup> driest Degree base 65°F September on record. **Total September Precipitation:** 0.29" Normal: 74.1°F Normal September Precipitation: 1.84" Avg Max Temp: 78.7°F Departure from Normal: Avg Min Temp: 43.1°F Normal: 42.5°F -1.55" 0.19" on 21<sup>st</sup> Avg Mean Temp: 60.9°F Normal: 58.3°F Greatest 24-Hr Precip: Total Precipitation Year-to-Date: Highest Monthly Avg Temp: 62.1°F in 1947 15.73" Departure from Normal: +0.18" Lowest Monthly Avg Temp: 52.3°F in 1912 Total Precip Year-to-Date (Last Year): 22.12" Highest Temp this month: 86°F on 5<sup>th</sup>, 6<sup>th</sup>, 28<sup>th</sup> Lowest Temp this month: 34°F on 18<sup>th</sup>, 19<sup>th</sup> Total September Snowfall: 0.0" Normal: 0.0" Record September Snowfall: 2.0" in 1965 Record High: 91°F on 9/27/2020 Record Low: 20°F on 9/22/1912 Greatest September Precipitation: 6.75" in 1983 Least September Precipitation: 0.00" in 2020 Temperature or precipitation records this month: and 4 other years HiMax: 84°F on 9/26/2024, tying the record set on 9/26/1899 Number of Days: Clear 27 Partly Cloudy HiMax: 85°F on 9/27/2024, 3 previous record 83°F on 9/27/2009, 9/27/1963 Cloudy 0 HiMax: 86°F on 9/28/2024, previous record 83°F on 9/28/2010 Average Wind Speed: 5.5 mph Highest Peak Gust: 55 mph from 220° on 16<sup>th</sup> HiMax: 84°F on 9/29/2024, previous record 83°F on 9/29/2010 Data are from NOAA, the Northeast Regional HiMax: 84°F on 9/30/2024, Climate Center, and the Southeast Regional Climate Center and are **preliminary.** previous record 83°F on 9/30/2010, 9/30/1980 Normals on this page are from 1991-2020 Flagstaff Number of Days of: Minimum Temp 32°F or lower 0 Minimum Temp 0°F or lower 0 Maximum Temp 90°F or higher 0

Maximum Temp 32°F or lower 0

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29	30						
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Flagstaff recorded 21 days of above average temperatures, 1 day of average temperatures, and 8 days of below average temperatures this month.

#### **Phoenix Climate Statistics**

September 2024

This ranked as the hottest September on record (8/6/1895 to present). With 0.00 inches of precipitation, it tied as the driest September on record.	Heating Degree Days: 0 Normal: 0 Cooling Degree Days: 893 Normal: 727 Degree base 65°F				
Avg Max Temp: 106.6°F Normal: 100.4°F Avg Min Temp: 82.5°F Normal: 78.1°F Avg Mean Temp: 94.6°F Normal: 89.2°F	Total September Precipitation:0.00"Normal September Precipitation:0.57"Departure from Normal:-0.57"				
Highest Monthly Avg Temp: 94.6°F in 2024 Lowest Monthly Avg Temp: 78.9°F in 1912, 1900	Total Precipitation Year-to-Date:4.54"Departure from Normal:-0.81"Total Precip Year-to-Date (Last Year):3.03"				
Highest Temp this month: 117°F on 28 <sup>th</sup> Lowest Temp this month: 73°F on 18 <sup>th</sup> , 21 <sup>st</sup> , 22 <sup>nd</sup>	Greatest September Precipitation: 5.41" in 1939 Least September Precipitation: 0.00" in 2024 and 20 other years				
Record High: 117°F on 9/28/2024 Record Low: 47°F on 9/21/1965, 9/20/1965, 9/22/1895	Number of Days: Clear 25 Partly Cloudy 5 Cloudy 0				
Temperature or precipitation records this month: On next page	Average Wind Speed: 6.9 mph Highest Peak Gust: 37 mph from 180° on 16 <sup>th</sup>				
Phoenix Number of Days of:Minimum Temp 32°F or lower0Minimum Temp 0°F or lower0Maximum Temp 90°F or higher30Maximum Temp 32°F or lower0	Data are from NOAA and the Southeast Regional Climate Center and are <b>preliminary.</b> Normals on this page are from 1991-2020				

<u>Phoenix temperature or precipitation records this</u> <u>month:</u> HiMax: 116°F on 9/5/2024, previous record 115°F on 9/5/2020

HiMax: 110°F on 9/8/2024, tying the record set on 9/8/2023, 9/8/1979

HiMax: 108°F on 9/24/2024, tying the record set on 9/24/2002

HiMax: 113°F on 9/25/2024, previous record 108°F on 9/25/1989, 9/25/1979

HiMax: 110°F on 9/26/2024, previous record 108°F on 9/26/1989

HiMax: 113°F on 9/27/2024, previous record 107°F on 9/27/2009

HiMax: 117°F on 9/28/2024, previous record 108°F on 9/28/1992

HiMax: 113°F on 9/29/2024, previous record 107°F on 9/29/2003, 9/29/2001

HiMax: 107°F on 9/30/2024, tying the record set on 9/30/2010 and 2 other years

HiMin: 93°F on 9/6/2024, previous record 89°F on 9/6/2020 and 2 other years

HiMin: 91°F on 9/7/2024, previous record 90°F on 9/7/2019

HiMin: 88°F on 9/8/2024, previous record 87°F on 9/8/2011, 9/8/2005

HiMin: 86°F on 9/14/2024, tying the record set on 9/14/1983

HiMin: 82°F on 9/26/2024, tying the record set on 9/26/2015 and 2 other years HiMin: 85°F on 9/28/2024, previous record 82°F set on 9/28/2022

HiMin: 88°F on 9/29/2024, previous record 82°F set on 9/29/1992

HiMin: 83°F on 9/30/2024, previous record 82°F set on 9/30/1997

Data are from NOAA and the Northeast Regional Climate Center and are **preliminary.** 

		Р	М В Е Ноер	XIX		4	
AVERAGE DAILY TEMPERATURE ABOVE AVERAGE BELOW +/- 0.5°F							
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8	9	10	11	12	13	14	
15	16	17	18	19	20	21	
22	23	24	25	26	27	28	
29	30						
are from the Natio	onal Weather Se	ervice office in F	Phoenix and are	preliminary.			

This month, Phoenix observed 24 days of above average temperatures and 6 days of below average temperatures.

#### **Tucson Climate Statistics**

#### September 2024

This ranked as the hottest September on record HiMin: 80°F on 9/8/2024, (9/1/1894 to present). With 0.12 inches of previous record 79°F on 9/8/2020 and 2 other years precipitation, it ranked as the 17<sup>th</sup> driest September on record. HiMin: 79°F on 9/29/2024, previous record 76°F on 9/29/1992 Avg Max Temp: 99.9°F Normal: 95.1°F Avg Min Temp: 73.2°F Normal: 70.4°F Tucson Number of Days of: Avg Mean Temp: 86.6°F Normal: 82.8°F Minimum Temp 32°F or lower 0 Minimum Temp 0°F or lower 0 Maximum Temp 90°F or higher 29 Highest Monthly Avg Temp: 86.6°F in 2024 Maximum Temp 32°F or lower 0 Lowest Monthly Avg Temp: 76.3°F in 1964 Normal: Heating Degree Days: 0 0 Highest Temp this month: 108°F on 27<sup>th</sup>, 28<sup>th</sup> Cooling Degree Days: 651 Normal: 532 Lowest Temp this month: 62°F on 22<sup>nd</sup> Degree base 65°F Record High: 111°F on 9/10/2023 Total September Precipitation: 0.12" Record Low: 43°F on 9/26/1913 Normal September Precipitation: 1.32" Departure from Normal: -1.20" Greatest 24-Hr Precip: 0.11" on 15<sup>th</sup> Temperature or precipitation records this month: HiMax: 105°F on 9/25/2024, previous record 104°F on 9/25/1899 **Total Precipitation Year-to-Date:** 11.09" Departure from Normal: +2.67" HiMax: 105°F on 9/26/2024, Total Precip Year-to-Date (Last Year): 8.27" previous record 104°F on 9/26/2023, 9/26/1899 HiMax: 108°F on 9/27/2024, Greatest September Precipitation: 5.60" in 2011 previous record 103°F on 9/27/2023 Least September Precipitation: 0.00" in 2020 and 6 other years HiMax: 108°F on 9/28/2024, Number of Days: previous record 103°F on 9/28/1994 Clear 25 HiMax: 104°F on 9/29/2024, Partly Cloudy 1 previous record 101°F on 9/29/2010 and 2 other years Cloudy 4 HiMax: 105°F on 9/30/2024, Average Wind Speed: 8.3 mph previous record 104°F on 9/30/2010 Highest Peak Gust: 38 mph from 230° on 12<sup>th</sup> HiMin: 86°F on 9/6/2024, previous record 84°F on 9/6/2020 Data are from NOAA, the Northeast Regional Climate Center, and the Southeast Regional Climate Center HiMin: 83°F on 9/7/2024, and are preliminary.

previous record 81°F on 9/7/2019

Normals on this page are from 1991-2020

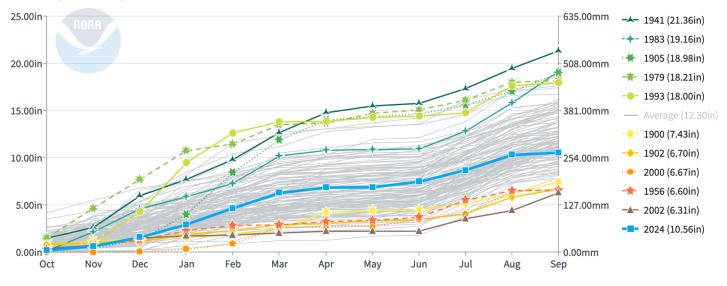
SEPTEMBER 2024								
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Tucson measured 24 days of above average temperatures, 1 day of average temperatures, and 5 days of below average temperatures this month.

#### Cumulative Statewide Precipitation per Water Year (Oct 2023-Sept 2024)

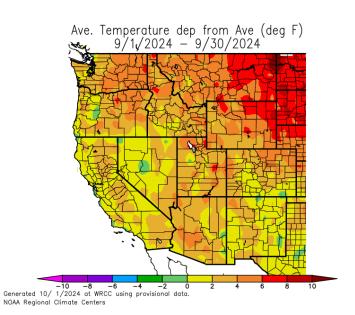


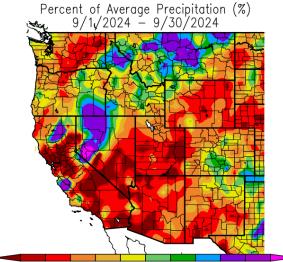




The average state cumulative Water Year precipitation was 10.56 inches at the end of September, which is 1.69 inches below the October-September average of 12.25 inches.

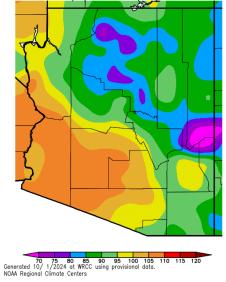
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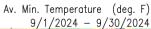


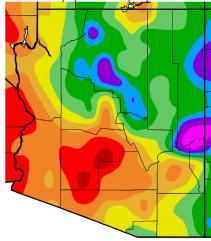


2 5 25 50 75 100 125 150 200 400 800 Generated 10/ 1/2024 at WRCC using provisional data. NOAA Regional Climate Centers

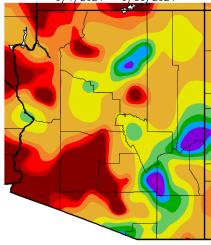
Av. Max. Temperature (deg. F) 9/1/2024 - 9/30/2024





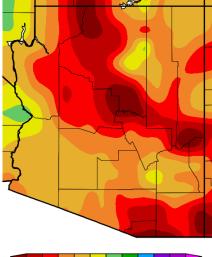


35 40 45 50 55 60 65 70 75 80 85 Generated 10/ 1/2024 at WRCC using provisional data. NOAA Regional Climate Centers Total Precipitation (in.) 9/1/2024 - 9/30/2024



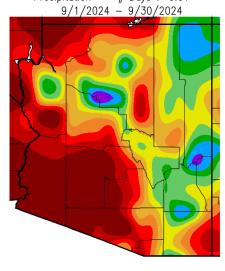
0.01 0.02 0.05 0.1 0.25 0.4 0.55 0.7 0.85 1 1.15 Generated 10/ 1/2024 ot WRCC using provisional data. NOAA Regional Climate Centers

Precipitation Departure from Average (in.) 9/1/2024 - 9/30/2024



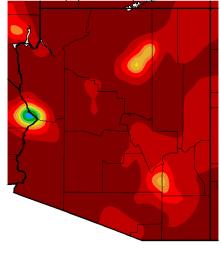
-1.5 -1.2 -0.9 -0.6 -0.3 0 0.3 0.6 0.9 1.2 1.5 Generated 10/ 1/2024 at WRCC using provisional data. NOAA Regional Climate Centers

Precipitation # Days > 0.01"



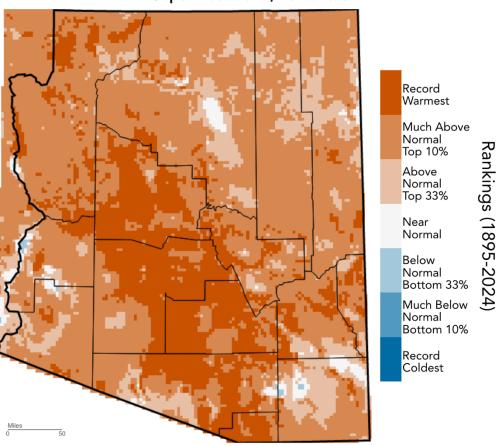
0.5 1 1.5 2 2.5 3 3.5 4 4.5 5 5.5 Generated 10/1 //2024 at WRCC using provisional data. NOAA Regional Climate Centers

Percent of Average Precipitation (%) 9/1/2024 - 9/30/2024



25 50 70 80 90 100 110 120 130 150 175 Generated 10/ 1/2024 of WKCC using provisional data. NOAA Regional Climate Centers

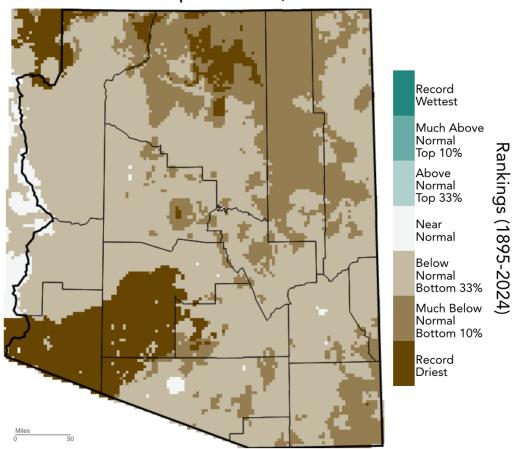
### Arizona - Mean Temperature September 2024, Percentile



WestWide Drought Tracker, WRCC, Climate Engine, Data Source: PRISM Prelim, created 05 Oct 2024

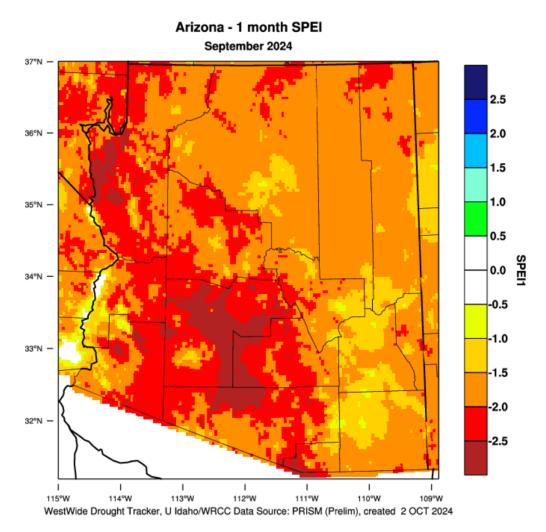
Much above normal temperatures were prevalent across most of the state, with some locations experiencing record-breaking temperatures.

# Arizona - Precipitation September 2024, Percentile



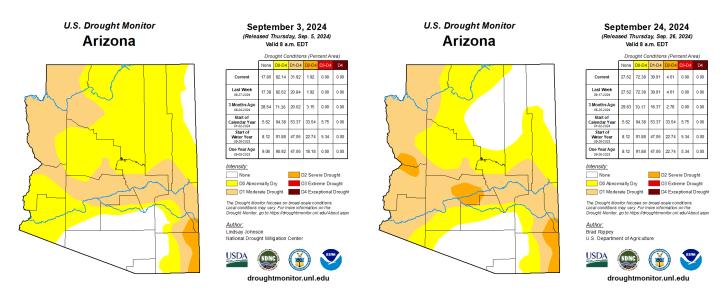
WestWide Drought Tracker, WRCC, Climate Engine, Data Source: PRISM Prelim, created 05 Oct 2024

Much of the state observed below normal to much below normal precipitation.



This map shows the Standardized Precipitation Evapotranspiration Index (SPEI) across Arizona. September precipitation and evapotranspiration totals are measured across the state and are compared to previous September precipitation and evapotranspiration totals through the period of record (1895-present). Positive values represent wet conditions, while negative values represent dry conditions.

### Short-term Drought



In northeastern counties, Abnormally Dry (D0) conditions mitigated into areas without drought. Along western, central, and southeastern counties, Moderate (D1) and Severe (D2) short-term drought advanced.

