

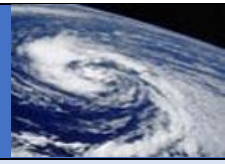
The Weather Wire

July 2023

Volume 30 Number 7

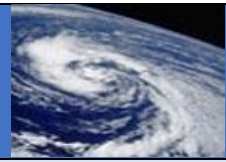
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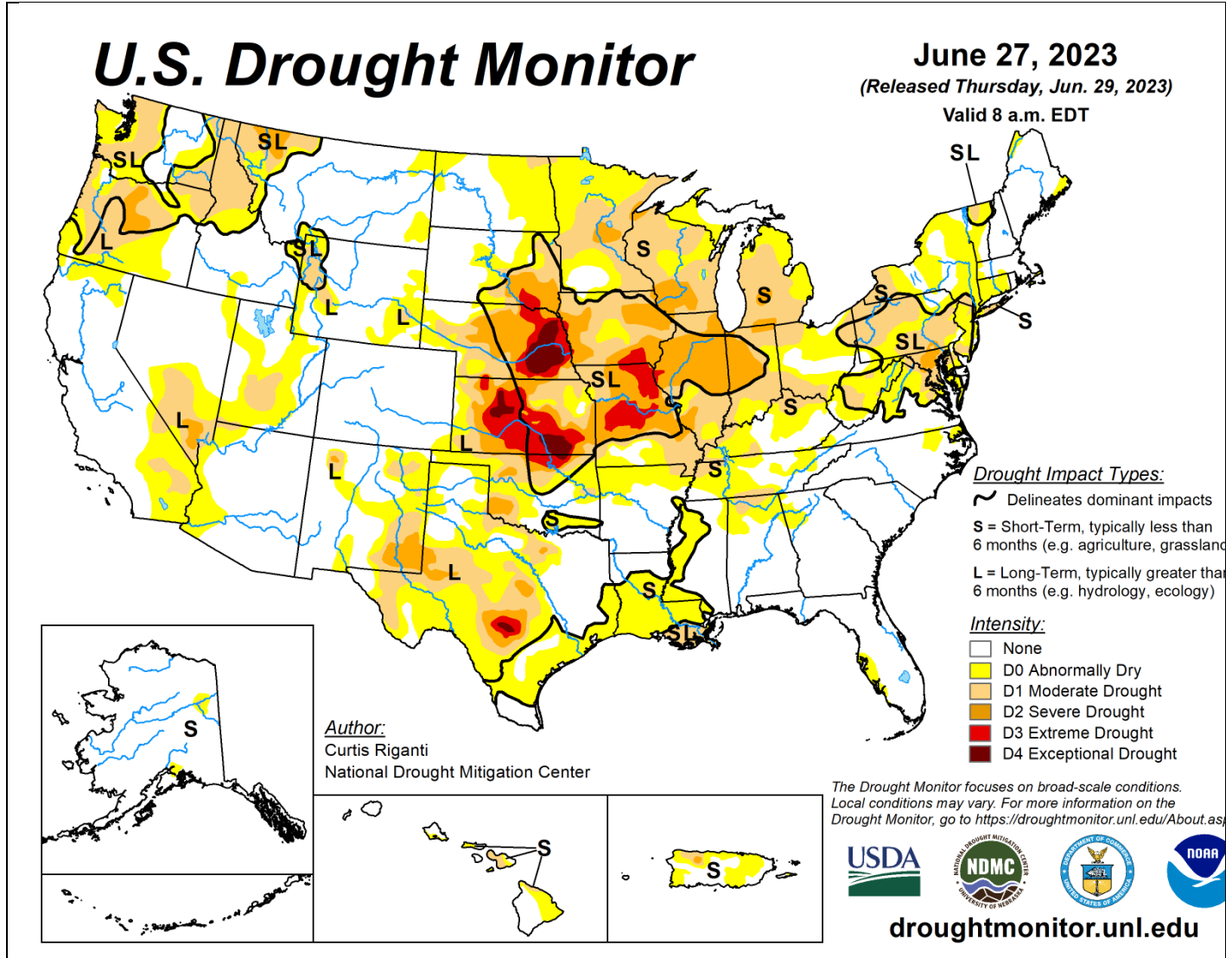


SW Monsoon Arrives Early/Has Little Impact NE CO for July

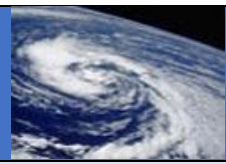
The SW Monsoon or North American Monsoon season began early this year bringing record rainfall in June but has had minimal impact over northeast Colorado in July as most of the stronger rains were limited to areas of south/southeast Colorado. The monsoon season is just really a change in predominant upper-level winds and for a brief period during the year winds are mainly from the S over portions of the southwest US into UT and CO. These south winds import subtropical moisture, Pacific in nature from the Gulf of California and from the Sierra Madre mountains of Mexico. This helps to enhance moisture at all levels in the atmosphere over states like AZ but further N into CO this moisture is wrung out over the Mogollon Rim of AZ and the mountains of New Mexico and the San Juans/Sangre de Cristo's of southern CO. By the time this moisture rich air reaches the Denver Metro area it is mainly in the mid and upper levels of the atmosphere and the lower-level moisture needs to be sourced elsewhere. The surface moisture for eastern Colorado is generated from the Gulf of Mexico and is drawn northward during the summer and can be pushed east against the Front Range via outflow boundaries or fronts that have an easterly component to the wind. South/southeast winds over the plains of Colorado and their interaction with the Palmer Divide often creates a "swirl" or wind convergence known as the DCVZ or Denver Convergence Vorticity zone that can draw moisture from the east into the South Platte River valley as it acts like a micro scale low pressure area and can be a triggering mechanism for storms. When the SW monsoon arrived for NE Colorado in late May/early June the upper-level moisture was in tandem with good surface moisture and the Denver Metro area into Castle Rock generated long stretches of rainy/stormy days through June. Further south into Colorado Springs the thunderstorms were also more numerous during the month of June and precipitation totals for the month were well above average. While we are in a little lull in the monsoon pattern currently, there will still be a chance all the ingredients can come back together just right for widespread wetting rains to develop over coming weeks and into August. The SW Monsoon season typically peaks from mid-July through mid-August and diminishes through the 1st or 2nd week of September. After the 2nd week of September something unusual typically needs to happen for heavy rainfall but it can occur if remnants of a tropical system is drawn northward into the 4-Corners states.



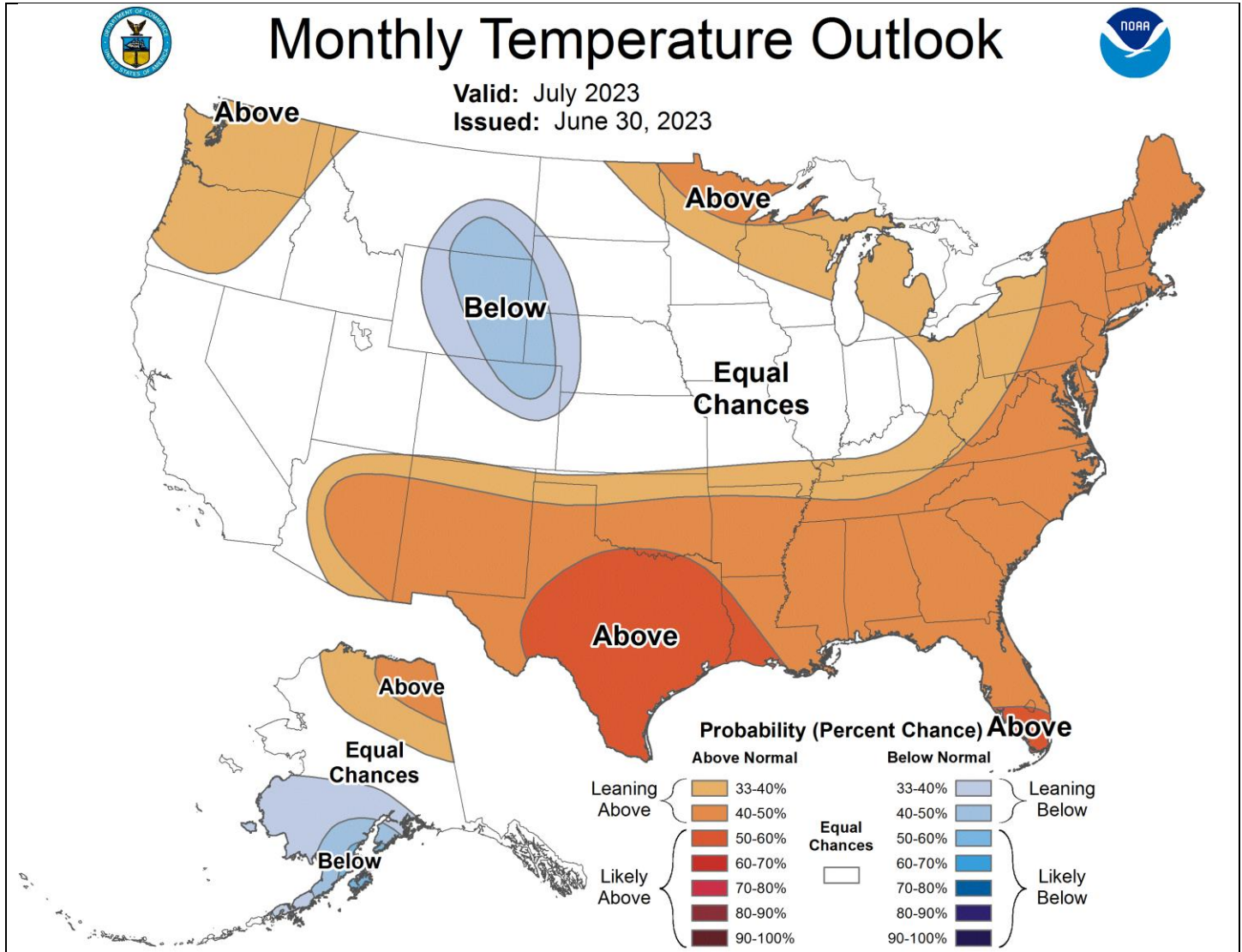
Drought Update



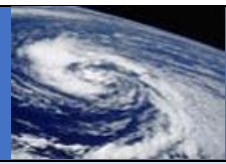
After another active month over most of Colorado, there was even better improvement to the overall drought conditions for all of Colorado. The drought conditions have continued to subside over the southwestern portions of the United States with minimal drought conditions for California compared to previous seasons. An increase in drought conditions for the Pacific Northwest as a lack of typical rainfall continues in that region with no real good storm systems in sight. The largest area of drought continues to be in the central United States, Nebraska, Missouri, and Kansas specifically. Although drought conditions do extend southward and into Texas, and eastward through the Midwest and towards the New England area.



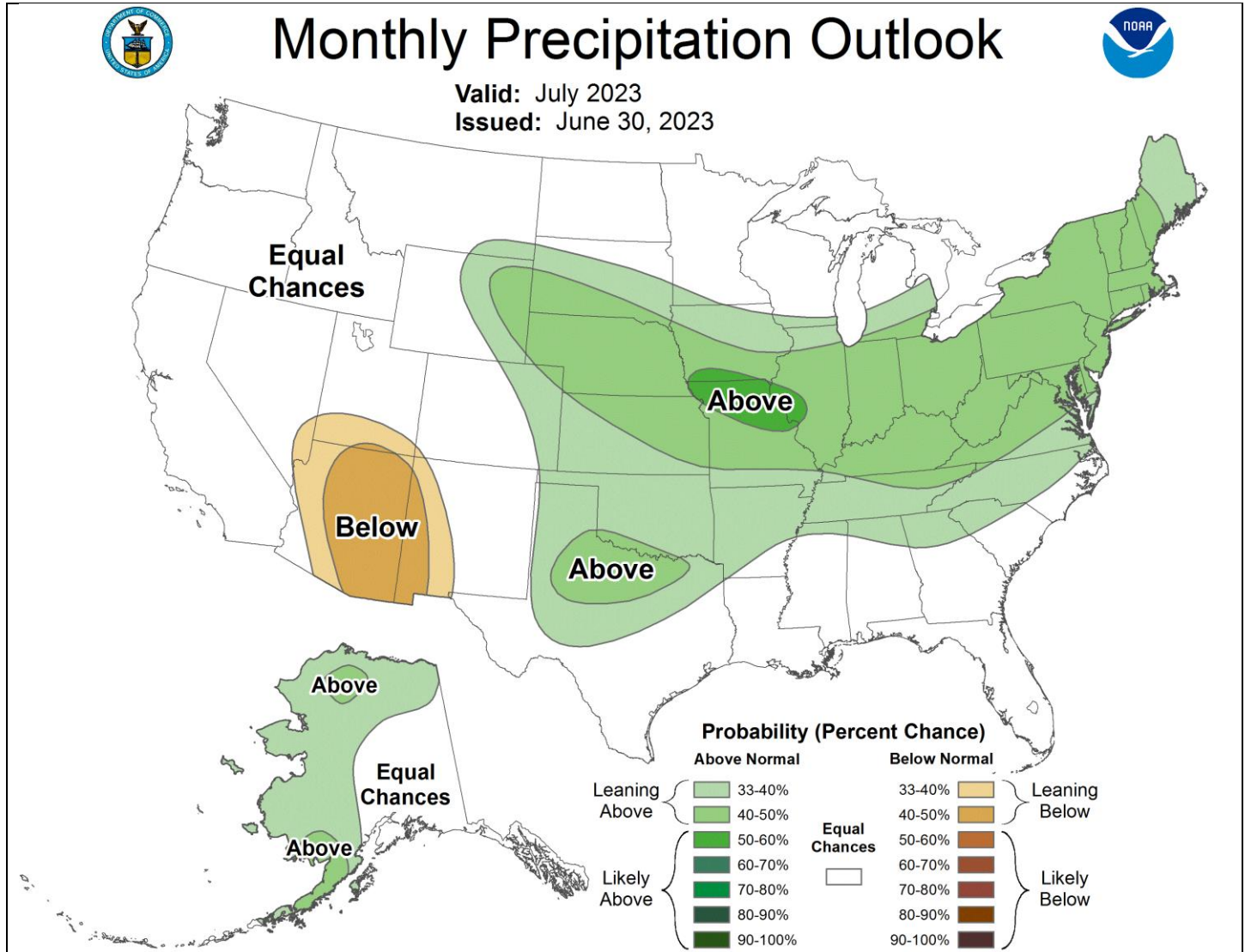
Temperature Anomaly Forecast



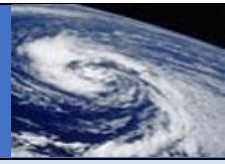
The map above shows forecasted temperature deviances for July 2023. There is a strong bias, especially in northeastern areas of the state for below normal temperatures during the month of July. This has been the case this season, with very few days above 90°F for the Denver Metro. Normal to above average temperatures are expected to persist over the Pacific northwest. Well above average temperatures are expected for the south, northeast and southeastern portion of the United States.



Precipitation Anomaly Forecast



The forecasted precipitation deviances suggest slightly above average precipitation for eastern portions of Colorado. Normal precipitation is expected for areas along and west of the Continental Divide. Below average precipitation chances to the southwest could signal a weaker monsoon season this year. However, with the type of pattern recently, and an increased El Niño, the chances for a typical monsoon season will be likely if not increased this year.



June Summary

Another active month for Colorado in June of 2023, which brought more than needed moisture with well above average precipitation. The normal precipitation for the month of June is 1.94" and 2023 was a staggering 4.16" above the normal with 6.10" total precipitation recorded at DIA. The 21st recorded 1.85" of rainfall alone in that 24-hour period! Temperatures ended up being below normal over northeastern Colorado with only one day with temperatures in the 90's, the 27th respectively. The average daily high temperature reported at DIA was 75.6°F with an average daily low of 52.7°F. Combining the average highs and lows resulted in a monthly mean temperature of 64.2°F, 4.0°F below the normal of 68.2°F. The highest recorded temperature at DIA for the month of June was 92°F set on the 27th, with the lowest temperature of 47°F set in the early morning hours of June 14th & 17th. Once again, the month of June featured very few stretches of inactive weather, with several days of active weather throughout the month with some of those days being high flood threat days due to persistent rainfall throughout the month. There were 16 days with measurable precipitation, with the longest dry stretch between the 23rd through 28th where no precipitation was recorded at DIA for those days.

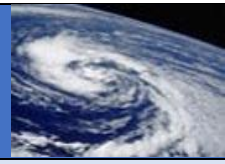
June of 2023 featured below average temperatures with well above average precipitation over southeast Colorado. The airport in Colorado Springs reported the average daily high temperatures for May of 75.6°F and an average low of 52.1°F. Combining the average highs and lows resulted in a monthly mean temperature of 63.9°F which was 3.3°F below the normal June average monthly temperature of 67.2°F. The highest temperature recorded at the Colorado Springs airport during the month of June was 91°F on the 27th with the lowest temperature of 44°F set on the morning of June 13th. Precipitation recorded at the Colorado Springs airport for June totaled 9.62" which was an absurd 7.35" above the normal value of 2.27" for June. 4.05" of that occurred on the 12th alone which broke the daily precipitation record for that day.

Further south into Pueblo temperatures were below average with precipitation above average for the month of June. The average daily high temperatures in Pueblo were 83.1°F with average lows of 54.1°F. Combining the average highs and lows resulted in a monthly mean temperature of 68.6°F which was 3.2°F below the average monthly mean of 65.4°F. The airport, in Pueblo, reported 3.85" of precipitation for the month of June which was 2.57" above the average of 1.28".



June Statistics DIA

TEMPERATURE (IN DEGREES F)	OBSERVED VALUE	NORMAL VALUE		DEPARTURE FROM NORMAL
AVERAGE MAX	75.6°F	83.4°F		-7.8°F
AVERAGE MIN	52.7°F	43.6°F		9.1°F
MONTHLY MEAN	64.2°F	68.2°F		-4.0°F
DAYS WITH MAX 90 OR ABOVE	1	0.8		0.2
DAYS WITH MAX 32 OR BELOW	0	0.0		0.0
DAYS WITH MIN 32 OR BELOW	0	2.9		2.9
DAYS WITH MIN 0 OR BELOW	0	0.0		0.0
	OBSERVED VALUE	DATE(S)	NORMAL VALUE	DEPARTURE FROM NORMAL
HIGHEST	92°F	6/27		
LOWEST	47°F	6/14 & 6/17		
HEATING DEGREE DAYS				
MONTHLY TOTAL	76		52	24
SEASONAL TOTAL	6193		5862	331
COOLING DEGREE DAYS				
MONTHLY TOTAL	57		147	-90
YEARLY TOTAL	66		174	-108
PRECIPITATION (IN INCHES)				
MONTHLY TOTAL	6.10"		1.94"	4.16"
YEARLY TOTAL	11.63"		7.43"	4.20"
GREATEST IN 24 HOURS	1.85"	6/21		
DAYS WITH MEASURABLE PRECIP.	16		10.4	5.6



July Preview

July is typically the end of peak severe weather season for the Denver Metro area and eastern Colorado, with an overall average of 8 thunderstorm days during the month, we have had 2 to 3 already this month depending on your location. July also signals the start of the monsoon season, which typically lasts from mid-July through mid-August. This generally brings an enhanced chance for widespread rain showers and thunderstorms. However, with an active severe season, the beginning of July and into the monsoon season has already been active. A somewhat dry stretch ahead of the peak of the typical monsoon season is on the horizon. Average temperatures continue their upward trend during July with the average high temperature during July being 77.4°F, with an average of 8 days exceeding 90 degrees during the month. July is climatologically the warmest month of the year for Denver. Average precipitation in July is 2.10", making it the 2nd wettest month on average behind, only behind May using the 1981 to 2010 climate data set. Often, the bulk of the month's precipitation can occur from just one or two heavy thunderstorms, and precipitation amounts continue to be more variable in July than during other months due to the convective nature of precipitation. If you believe the drought monitor and its projections for the month of July it will feature below normal temperatures and above normal precipitation. Skyview Weather agrees that many areas will experience this pattern, although the typical monsoon season could come in weaker than most if high-pressure dominates for the rest of the month.



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DENVER'S JULY CLIMATOLOGICAL NORMAL	
(NORMAL PERIOD 1991-2020 DIA Data)	OBSERVED VALUE
TEMPERATURE	
AVERAGE HIGH	89.4°F
AVERAGE LOW	58.9°F
MONTHLY MEAN	74.2°F
DAYS WITH HIGH 90 OR ABOVE	16.0
DAYS WITH HIGH 32 OR BELOW	0.0
DAYS WITH LOW 32 OR BELOW	0.0
DAYS WITH LOWS ZERO OR BELOW	0.0
PRECIPITATION	
MONTHLY MEAN	2.10"
DAYS WITH MEASURABLE PRECIPITATION	8
AVERAGE SNOWFALL IN INCHES	0.0"
DAYS WITH 1.0 INCH OF SNOW OR MORE	0
MISCELLANEOUS AVERAGES	
HEATING DEGREE DAYS	6
COOLING DEGREE DAYS	289
WIND SPEED (MPH)	8.3 mph
WIND DIRECTION	South
DAYS WITH THUNDERSTORMS	11
DAYS WITH DENSE FOG	0
PERCENT OF SUNSHINE POSSIBLE	71%
EXTREMES	
RECORD HIGH	105 on 7/20/2005
RECORD LOW	42 on 7/4/1903, 7/31/1873
WARMEST	78.9 in 2012
COLDEST	67.3 in 1895
WETTEST	6.41" in 1965
DRIEST	0.01" in 1901
SNOWIEST	0.0"
LEAST SNOWY	0.0"



Rainfall

City	May	June	July	Aug	Sept	Total
Aurora (Central)	8.07	5.44				13.51
Boulder	4.61	4.94				9.55
Brighton	5.84	4.69				10.53
Broomfield	5.11	2.92				8.03
Castle Rock	7.64	5.58				13.22
Colorado Springs Airport	5.22	9.62				14.84
Denver DIA	5.35	6.10				11.45
Denver Downtown	4.97	6.01				10.98
Golden	6.10	5.80				11.90
Fort Collins	4.41	5.94				10.35
Highlands Ranch	5.94	7.92				13.86
Lakewood	5.71	6.55				12.26
Littleton	5.81	5.51				11.32
Monument	8.34	4.87				13.21
Parker	6.85	6.20				13.05
Sedalia - Hwy 67	6.03	5.00				11.03
Thornton	5.40	4.34				9.74
Westminster	5.00	4.51				9.51
Wheat Ridge	5.18	5.87				11.05
Windsor	4.03	6.75				10.78