Phoenix Records Hottest Month of Any U.S. City

By Don Sutherland

Powered by a heatwave without precedent—christened “Heatwave Chevron” by former Weather Channel meteorologist Guy Walton—Phoenix experienced its hottest July and month on record. The dynamic city of 1.625 million spent day after day under a broiling sun in a raging storm of brutal, unforgiving, penetrating heat. Nights offered little relief from the fierce heat.

As a result, July 2023 left the prior hottest month, August 2020, in the dust much as Secretariat demolished the field in the 1973 Belmont Stakes. July 2023 surpassed the previous monthly mean temperature record by the largest margin by which any prior mark was surpassed. Phoenix also recorded the highest mean temperature and highest average low temperature for any month in any American city. The old records were a mean temperature of 102.2° and an average low temperature of 90.1° in Lake Havasu City during July 1996. Lake Havasu also had an average high temperature of 114.4° during July 1996. Further, the lowest maximum temperature during July was 108°, which easily eclipsed the 104° mark from June 2013.

Anthropogenic climate change is driving a warming of Phoenix's summers. This ongoing warming is a global phenomenon with 98% of the world having experienced its warmest 51 years during the current 2,000 years. The IPCC’s Sixth Assessment Report found that heat and heatwaves are increasing on every continent. The primary driver is human-caused climate change. Phoenix’s unprecedented heatwave and record hot month are the result of a combination of factors that includes climate change, which has boosted temperatures and led to “stuck” patterns, the Urban Heat Island Effect, which has raised nighttime temperatures, and the synoptic pattern in which a powerful heat dome developed over the region.

The World Weather Attribution (WWA) Initiative found that the heatwave was “virtually impossible” without climate change and that temperatures were approximately 2°C (3.6°F) warmer on account of climate change. Event attribution studies calculate whether and the degree to which an event was made more (or less) likely and/or intense because of climate change.

The WWA warned, “Unless the world rapidly stops burning fossil fuels, these events will become even more common and the world will experience heatwaves that are even hotter and longer-lasting.” Heatwaves of the magnitude of the 2023 heatwave could occur every 2-5 years in a world that is 2°C (3.6°C) warmer than the pre-industrial world.

The record-setting summer of 2020 was a “summer from the future,” as it resembled the kind of summers that will likely occur on a regular basis by 2050. Similarly, the great 2023 heatwave can be said to be a “heatwave from the future.” On account of the unparalleled heatwave, July went on to become Phoenix’s hottest month on record, by far. In her poem, “Heatwave...Pleiades," Elizabeth Squires wrote of a heatwave "hotter than Hades... haranguing us from dusk to dawn." That was Phoenix in July 2023.

Table 1: 10 Hottest Months (Averages)

Mean Temperature	High Temperature	Low Temperature
1. 102.7°, July 2023	**1. 114.7°, July 2023**	**1. 90.8°, July 2023**
2. 99.1°, August 2020	2. 110.7°, August 2020	2. 88.0°, July 2020
3. 98.9°, July 2020	3. 109.8° July 1989 and July 2020	3. 87.5°, August 2011
4. 98.3°, July 2009 and August 2011	5. 109.5°, July 2005 and July 2009	4. 87.4°, August 2020
6. 97.6°, July 2003	7. 109.0°, August 2011	5. 86.9°, July 2010
7. 97.4°, July 1989	8. 108.7°, July 2003	6. 86.6°, July 2003
8. 97.2°, July 2005	9. 108.6°, June 1974	7. 86.4°, July 2006
9. 97.1°, July 2016	10. 108.4°, June 2013	8. 86.1°, August 2007
10. 96.8°, August 2019		9. 86.0°, July 2016 and July 2022

Table 2: Progression of Hottest Monthly Records (Averages)

Mean Temperature	High Temperature	Low Temperature
88.5°, August 1895	101.4°, August 1895	75.7°, August 1895
88.6°, August 1896	105.1°, June 1896	75.8°, July 1896
89.7°, July 1897	106.2°, July 1901	76.5°, August 1896
92.2°, July 1898	106.4°, July 1920	80.4°, July 1898
92.9°, July 1901	107.5°, July 1931	82.8°, July 1931
95.1°, July 1931	108.6°, June 1974	83.3°, July 1970
95.6°, July 1980	109.8°, July 1989	84.8°, July 1981
95.8°, August 1981	110.7°, August 2020	85.0°, July 1989
96.1°, July 1988	**114.7°, July 2023**	86.6°, July 2003
97.4°, July 1989		87.1°, July 2009
97.6°, July 2003		87.5°, August 2011
98.3°, July 2009		88.0°, July 2020
98.9°, July 2020		**90.8°, July 2023**
99.1°, August 2020		
102.7°, July 2023		

Table 3: Hottest July Cases

Mean Temperature	High Temperature	Low Temperature
1. 102.7°, 2023	**1. 114.7°, 2023**	**1. 90.8°, 2023**
2. 98.9°, 2020	2. 109.8°, 1989 and 2020	2. 88.0°, 2020
3. 98.3°, 2009	4. 109.5°, 2005 and 2009	3. 87.1°, 2009
4. 97.6°, 2003	6. 108.7°, 2003	4. 86.9°, 2010
5. 97.4°, 1989	7. 108.3°, 1978 and 2016	5. 86.6°, 2003
6. 97.2°, 2005	9. 108.2°, 2019	6. 86.4°, 2006
7. 97.1°, 2016	10. 108.1°, 1979	7. 86.0°, 2016 and 2022
8. 96.7°, 2010, 2019, and 2022		9. 85.9°, 2014
		10. 85.7°, 2013