

# Phoenix's Long Summer of 2020 Extends through September

By Don Sutherland

Following its hottest summer on record, Phoenix experienced its 3rd warmest September on record with a mean temperature of 91.5° and warmest June-September period on record with an average temperature of 95.4°.

2020 was the 13th year on record where Phoenix recorded a mean temperature of 90.0° or above in September. 9/13 (69%) of those years have occurred 2000 or later and 4/13 (31%) have occurred 2010 or later. September 2020 is the most recent example demonstrating that anthropogenic climate change is producing what amounts to a lengthening summer.

## September 2020 Summary:

Average high temperature: 104.1° (2nd highest)

Average low temperature: 79.0° (9th highest)

Average temperature: 91.5° (3rd highest)

In addition, all five September cases with a monthly mean temperature of 91.0° or above occurred 2000 or later. Four (80%) of those cases occurred 2010 or later.

During the 1980s, the 30-year moving average mean temperature for September broke out of the multi-decade range 84.0° - 85.0° that had held since 1950. The September mean temperature now exceeds 89.0°. The average high temperature now stands at 100° or above. The number of days on which the temperature reaches 100° or above has increased by 2.3 days since 2000. The number of days on which the temperature reaches 105° or above has increased by 2.0 days. The frequency of low temperatures at or above 80° has increased by 3.6 days since 2000. Such elevated minimum temperatures now account for nearly 3 out of every 8 days in September.

**Table 1: Select September Data (30-Year Moving Average)**

30-Year Period Ending	Mean Temperature	High Temperature	Low Temperature	Highs 100° or above (days)	Highs 105° or above (days)	Lows 80° or above (days)
1950	84.4°	98.3°	70.6°	13.7	4.2	1.1
1960	85.0°	98.9°	71.2°	15.3	5.1	1.6
1970	84.2°	98.2°	70.3°	13.7	4.3	1.4
1980	84.7°	98.4°	71.1°	14.0	4.4	2.5
1990	85.5°	98.3°	72.7°	13.9	4.9	4.9
2000	87.2°	99.3°	75.2°	15.9	5.9	7.6
2010	88.4°	100.0°	76.8°	17.4	7.3	9.9
2020	89.2°	100.5°	77.8°	18.2	7.9	11.2

**Table 2: Record High Maximum Temperatures**

Date	Temperature	Prior Record
September 4	114°	112°, 1945 and 2019
September 5	115°	113°, 1945
September 6	113°	111°, 1986 and 2013
September 16	109°	1928
September 17	109°	1962

**Key:**

	Tied Record
	New Record

**Table 3: Record High Minimum Temperature**

Date	Temperature	Prior Record
September 6	89°	2013 and 2019
September 19	82°	2000 and 2014
September 22	84°	82°, 2005

**Key:**

	Tied Record
	New Record

June-September 2020 was, by far, the warmest June-September period on record for Phoenix. The four-month mean temperature was 95.4°. The old record was 93.9°, which was set in 2011. That four-month average exceeds the hottest summer temperature prior to 2020, which was 95.1°. That prior record was set in 2013 and tied in 2015.

All 9 June-September periods with a mean temperature of 93.5° or above have occurred in 2000 or later. 6/9 (67%) have occurred during 2010 or later.

The average June-September period is now as warm as the average summer was during the 30-year period ending in 2000. The last time Phoenix had a June-September mean temperature below 90° was 1984 when the four-month mean temperature was 89.8°.

**Table 4: Average Summer and June-September Temperatures (30-Year Moving Average)**

30-Year Period Ending	Summer Mean Temperature	June-September Mean Temperature
1950	88.9°	87.8°
1960	89.1°	88.1°
1970	88.6°	87.5°
1980	89.7°	88.5°
1990	91.0°	89.7°
2000	92.2°	91.0°
2010	93.1°	92.0°
2020	93.7°	92.6°

Just as summer 2020 provided a foretaste of the kind of summers that are expected to become routine by 2050 on account of climate change, September 2020 and the June-September 2020 period offered a glimpse into the future of longer summers that will continue to emerge from the evolving climate regime.