

Phoenix Experiences Record Heat to Start September

By Don Sutherland

Phoenix experienced its hottest summer on record. Following that, it experienced one of its warmest first weeks of September on record. With climate change, the intense heat of increasingly hot summers is lingering longer. Summer is now stretching into the opening week of September.

September 1-7, 2020 Summary:

Average high temperature: 108.9° (tied 2nd highest)

Average low temperature: 85.9° (6th highest)

Average temperature: 97.4° (tied 2nd highest)

Since 1980, the 30-year moving average mean temperature for the first week of September has increased 4.3°. The summer mean temperature has increased a similar 4.0°.

Table 1: Average Summer and September 1-7 Temperatures (30-Year Moving Average)

30-Year Period Ending	Summer Mean Temperature	September 1-7 Mean Temperature
1950	88.9°	87.9°
1960	89.1°	88.8°
1970	88.6°	87.8°
1980	89.7°	88.1°
1990	91.0°	89.1°
2000	92.2°	90.6°
2010	93.1°	91.6°
2020	93.7°	92.4°

September 1-7, 1928 was the first case during which the mean temperature reached 90° (90.0°). By 1995, the mean temperature (30-year moving average) reached 90° for the first time (90.1°). September 1-7, 2006, with a mean temperature of 88.7°, was the last case during which the mean temperature was less than 90° during the first week of September. The first week of September is now as warm as the typical summer was during the 1971-2000 period.

Average low temperatures now come to 80° or above. The last time the first week of September saw a weekly mean temperature below 80° was 2009 when the average temperature was 79.6°. The average number of days on which the high temperature reached 100° or above and 105° or above has also increased in recent years.

Table 2: September 1-7 Select Data (30-Year Moving Average)

30-Year Period Ending	Mean Temperature	High Temperature	Low Temperature	Days 100° or above	Days 105° or above
1950	87.9°	101.5°	74.3°	4.7	2.0
1960	88.8°	102.5°	75.0°	5.3	2.4
1970	87.8°	101.6°	74.0°	4.9	1.9
1980	88.1°	101.2°	75.1°	4.8	1.8
1990	89.1°	101.3°	76.9°	4.9	2.1
2000	90.6°	102.2°	79.0°	5.3	2.5
2010	91.6°	102.8°	80.3°	5.4	2.9
2020	92.4°	103.3°	81.6°	5.6	3.1

Since recordkeeping began in 1895, Phoenix has had 11 cases during which the mean temperature was 95.0° or above during the first week of September. Eight (73%) of those cases occurred during 2000 or later. Six (55%) of those cases occurred during 2010 or later.

September 4-6, 2020 was the hottest three-day period on record in September:

Mean Temperature: 100.5° (highest on record)

Mean High Temperature: 114.0° (highest on record)

Mean Low Temperature: 88.7° (2nd highest on record; record: 89.3°, September 5-7, 2019)

Table 3: 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

Table 4: Record High Minimum Temperature

Date	Temperature	Prior Record
September 6	89°	2013 and 2019

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, the first week of September 2020 offered a glimpse into the future of the staying power of summer's most intense heat under the evolving climate regime.