

Comparison of 1981-2010 and 1991-2020 Annual Normals

[New normals NCEI link](#)

In the table below, the differences between the old and new normals calculated by the National Centers for Environmental Information (NCEI) are shown. The values show the increase or decrease from the old normals to the new normals. So, for example, the average annual temperature at Austin Camp Mabry increased (got warmer) by 0.6° from the old normals to the new normals. For another example, average annual precipitation at San Antonio increased (got wetter) by a mere 0.11” from the old normals to the new normals.

A few interesting things of note:

- 1) The number of days with measurable precipitation has remained steady or decreased at all sites, however total annual precipitation has still increased as a result of more days with heavy rain (>1.00”). This suggests both an increased risk of drought AND an increased risk for flash flood events, a finding that is supported by scientific research.
- 2) Annual Average Temperature has increased across all of south-central Texas, as well as the number of days with extreme warmth. While not explicitly calculated by NCEI, the annual number of 100 degree days has increased by 6 days at AUS and SAT, 11 days at ATT, and 13 days at DRT over the last 10 years.
- 3) For the first time, there are gridded normals and associated images, including difference maps between the new and old normals. These gridded datasets include other ASOS stations, cooperative observation sites, etc...and are also smoothed. Because of this, the gridded maps may show slightly different values at each point than the table below, i.e. SAT's average temperature increase is lower here than shown in the gridded dataset.
 - a) The gridded normals can be viewed [here](#).
- 4) The patterns of changes between the old and new normals datasets differ somewhat from month to month and season to season. For example, November monthly average temperature at SAT has decreased while the December average has increased.
- 5) Mike Palecki from NCEI: “Interestingly, this shift [to warmer normal] will result in there being fewer 'above normal' temperature days in most of the US at the start of this decade compared to recent years that used the previous normals cycle”

<u>Differences in Annual Normals (new-old)</u>	Austin Camp Mabry (ATT)	Austin Bergstrom (AUS)	San Antonio (SAT)	Del Rio (DRT)
Average Temperature	+0.6F	+1.2F	+0.2F	+1.0F
Average Maximum Temperature	+0.8F	+0.6F	+0.1F	+1.5F
Average Minimum Temperature	+0.5F	+1.7F	+0.3F	+0.6F
Mean Number of Days with Tmax>=90F*	+11.7	+14.2	+11.8	+12.0
Mean Number of Days with Tmax<=32F	-0.2	+0.2	-0.1	0.0
Mean Number of Days with Tmin<=32F	-0.2	-3.8	-1.5	+0.8
Mean Number of Days with Tmin<=0F	0.0	0.0	0.0	0.0
Average Precipitation	+1.93"	+0.93"	+0.11"	+0.30"
Number of Days with Measurable Precip (>=0.01)	-1.7	+0.1	-1.7	-2.4
Mean Number of Days Precipitation>=0.10"	-1.0	-0.7	-0.7	-1.4
Mean Number of Days Precipitation>=0.50"	+0.7	+0.7	-0.3	-0.6
Mean Number of Days Precipitation>=1.00"	+0.9	+1.2	0.0	+0.2
Average Snowfall	-0.4"	0.0"	-0.5"	N/A
Mean Number of Days Snowfall>=0.10"	+0.1	-0.3	-0.1	N/A
Mean Number of Days Snowfall>=1.00"	-0.3	-0.1	-0.2	N/A
Heating Degree Days	-102	-186	-56	-126
Cooling Degree Days	+150	+245	+16	+259

* The Mean Number of Days with Tmax>=90F was miscalculated in the 1981-2010 normals (slightly too low) due to a conversion error between C and F, and so these differences are slightly inflated compared to reality.