MIAMI-SOUTH FLORIDA
National Weather Service
Forecast Office
http://www.weather.gov/miami

New U.S. Climate Normals Released

30-year Normals (1991-2020)

May 4, 2021: The U.S. Climate Normals are a large suite of data products that provide information about typical climate conditions for thousands of locations across the United States. Normals act both as a ruler to compare today's weather and tomorrow's forecast, and as a predictor of conditions in the near future.

The official normals are calculated for a uniform 30-year period, and consist of annual/seasonal, monthly, daily, and hourly averages and statistics of temperature, precipitation, and other climatological variables from almost 15,000 U.S. weather stations. NOAA's National Center for Environmental Information (NCEI) generates the official U.S. normals every 10 years in keeping with the needs of our user community and the requirements of the World Meteorological Organization (WMO) and National Weather Service (NWS). The 1991–2020 U.S. Climate Normals are the latest in a series of decadal normals first produced in the 1950s.

Below is a comparison of the old (1981-2010) and new (1991-2020) annual normals at the 4 main South Florida climate sites:

New Annual Climate Normals: Naples

Naples	1981-2010 (old)	1991-2020 (new)	Difference between new & old normals
Max Temperature	84.1 ℉	84.1 ℉	0.0 ℉
Min Temperature	66.0 ℉	67.0 ℉	+1.0 ℉
Mean Temperature	75.1 ℉	75.5 ℉	+0.4 ℉
Rainfall	51.89”	49.55”	-2.34”

New Climate Normals
1991-2020

New Annual Climate Normals: West Palm Beach

West Palm Beach	1981-2010 (old)	1991-2020 (new)	Difference between new & old normals
Max Temperature	83.0 ℉	83.0 ℉	0.0 ℉
Min Temperature	67.8 ℉	68.6 ℉	+0.8 ℉
Mean Temperature	75.4 ℉	75.8 ℉	+0.4 ℉
Rainfall	62.33”	61.75”	-0.58”

New Climate Normals
1991-2020

New Annual Climate Normals: Ft. Lauderdale

Ft. Lauderdale	1981-2010 (old)	1991-2020 (new)	Difference between new & old normals
Max Temperature	83.9 ℉	83.5 ℉	-0.4 ℉
Min Temperature	71.4 ℉	70.8 ℉	-0.6 ℉
Mean Temperature	77.7 ℉	77.2 ℉	-0.5 ℉
Rainfall	62.18”	60.95”	-1.23”

New Climate Normals
1991-2020

New Annual Climate Normals: Miami

Miami	1981-2010 (old)	1991-2020 (new)	Difference between new & old normals
Max Temperature	84.3 ℉	84.2 ℉	-0.1 ℉
Min Temperature	70.1 ℉	70.7 ℉	+0.6 ℉
Mean Temperature	77.2 ℉	77.4 ℉	+0.2 ℉
Rainfall	61.90”	67.41”	+5.51”

New Climate Normals
1991-2020

In South Florida there were some minor adjustments in the new normals. Average annual temperature normals increased at all sites, mainly driven by increases in the minimum temperature, except at Fort Lauderdale where the average annual temperature decreased slightly. Annual precipitation normals decreased at all sites, except at Miami which increased by over 5 inches.

The somewhat inconsistent changes in the precipitation normals can be mainly attributed to the highly-variable precipitation patterns typically observed across South Florida, especially during the wet season.

A few questions which may arise from the new normals:

- *What's behind the temperature decrease at Fort Lauderdale when every other station increased?*

That's a good question, and while there's no one clear reason, a contributing factor is that the 30-year normals are "homogenized" to account for discontinuities or gaps in the data at any one location. Since Ft. Lauderdale's data at its current site at Ft. Lauderdale/Hollywood International Airport only goes back to September 1998, there are over 7 years of missing data in the current normals period, and over 17 years of missing data in the previous normals period. Therefore, adjustments are determined by pairing it to nearby stations with a longer period of record in order to properly calculate a correlation in the data between the two stations. Gaps in the data at Fort Lauderdale/Hollywood Airport are then filled using this pairing technique to complete the time series of normals.

Since the data period of record at Fort Lauderdale/Hollywood Airport (which began in 1998) encompasses a greater portion of the 1991-2020 time frame, we believe that it is a more accurate representation of the actual climate normals at that location compared to the 1981-2010 normals. This is confirmed by overall temperature trends and patterns across all metro Southeast Florida stations which are properly reflected in the latest normals.

- *Oh, so these aren't really pure "averages"?*

Correct. The homogenization described above is used to fill data gaps, as well as to account for relocation of instruments and time of daily data collection which can alter the consistency daily temperature and precipitation readings over a period of time. The data is adjusted to eliminate any inconsistencies which may arise from these and other factors. Therefore, the raw averages at any one location may differ slightly from the calculated normals reflected here.

- *What other data is available?*

There are also 15-year supplemental normals (2006-2020) to compare shorter time scales and capture more recent temperature and precipitation trends than a 30-year period would provide. This data can be useful for predicting energy system loads and other economic decisions.

Here's a link to comparison maps between the old and new normals for the continental U.S., as well as answers to other questions about the data:
https://www.ncei.noaa.gov/products/us-climate-normals

The new normals for 1991-2020 can be found here for each station in the U.S.:
https://www.ncei.noaa.gov/access/us-climate-normals/