

Temperatures

The National Centers for Environmental Information (NCEI) reports that 2021 was the fourth-warmest year on record for the contiguous U.S. based on records dating back to 1895. The average contiguous U.S. temperature was 54.5 °F, which was 2.5 °F above the 20th century average. The contiguous U.S. saw above-average temperatures in 2021, especially across the West and North (Figure 1). Annual average temperatures for most states, except for much of the Southeast, had their top 10 warmest years on record dating back to 1895.

In Florida, average temperatures across the state were above the historical average. The statewide annual average temperature was 72.3 °F in 2021, which was 0.9 °F above normal (1991-2020) and 2.2 °F above the 20th century average of 70.1 °F (Figure 2).

2021 tied with 2018 as the **8th-warmest year on record** in Florida since 1895. A few months of the year were relatively cool or near normal, which kept 2021 from ranking higher. However, Florida continues to see above-average warmth. 2021 was the 11th year in a row with above-average temperatures, and 21 out of the past 22 years have been warmer than the historical average in Florida. 2015 remains our warmest year on record, which had an annual average temperature of 73.4 °F.

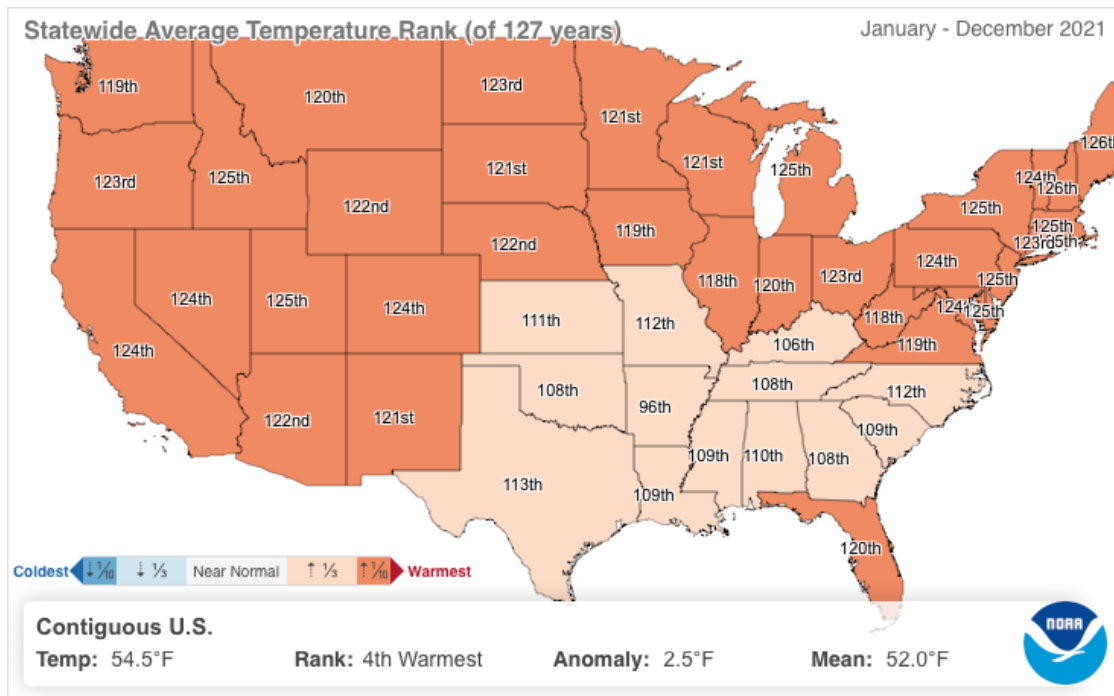
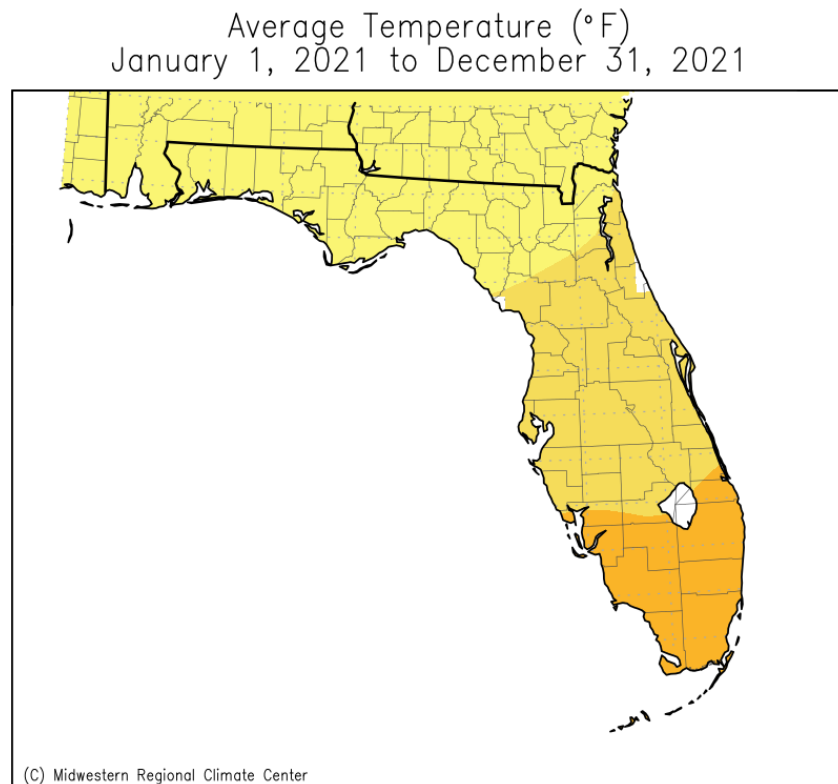


Figure 1. Map displaying the ranking of each state's annual average (mean) temperature in 2021, based on the historical instrumental record 1895-2021.

Based on a review of stations in the NWS COOP and ASOS networks, as well as stations from the Florida Automated Weather Network (FAWN), the highest temperature recorded in Florida in 2021 was 108 °F, which occurred at the Jacksonville Whitehouse Naval Outlying Field on October 7. The Naval Live Oaks station in Santa Rosa County recorded a temperature of 104 °F on August 22. The lowest temperature recorded in 2021 was 18 °F at Okeechobee on February 4, followed by 20 °F recorded near Venus (at the Archbold Bio Station), occurring on the same day.

As in recent years, annual overnight temperatures were above average across the state, with departures from normal ranging from +1 °F to +2 °F in most places. Daytime temperatures were near normal in north Florida and above normal in southern Florida.

Locally, several observing sites had one of their top five warmest years on record based on annual average temperatures, including in Jacksonville, Orlando, Tampa, Perrine, Ft. Myers, Miami, West Palm Beach, and Vero Beach. The average temperature county rankings are shown in Figure 3, along with select counties that recorded one of their top 10 warmest years on record since 1895.



Midwestern Regional Climate Center
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Figure 2. Annual average temperatures in Florida for 2021.

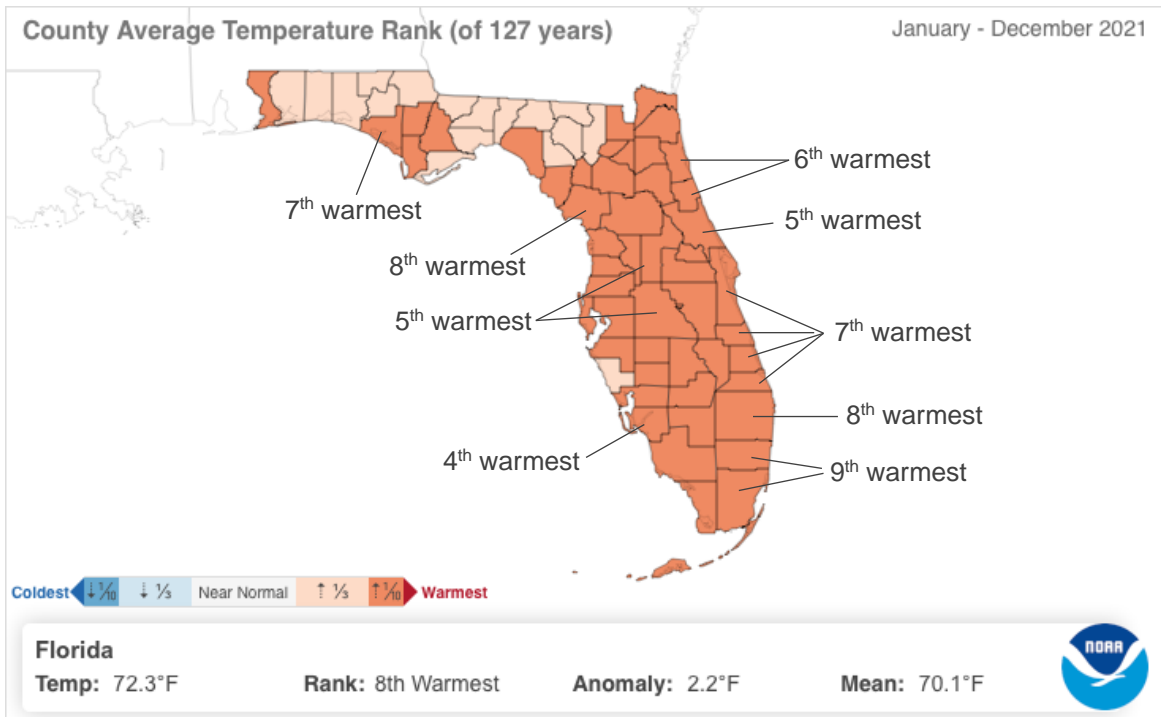


Figure 3. Map displaying the ranking of each county’s annual average (mean) temperature in 2021, based on the historical instrumental record 1895-2021.

Florida is divided into 7 climate divisions representing regions of generally homogenous climate. These 7 divisions span from the Panhandle to the Keys, as follows: Panhandle (1), North (2), North Central (3), South Central (4), Everglades and Southwest Coast (5), Lower East Coast (6), and Keys (7) (Figure 3). The 2021 annual average temperatures by climate division and their rankings are shown in Table 1. All climate divisions, except the North (1), ranked within the top 10 warmest years on record since 1895. The seasonal average temperatures and their rankings (in parentheses) compared to the long-term average (1895-2021) by climate division are provided in Table 2. The southern part of the state was especially warm in spring, while central Florida was warmest during summer.

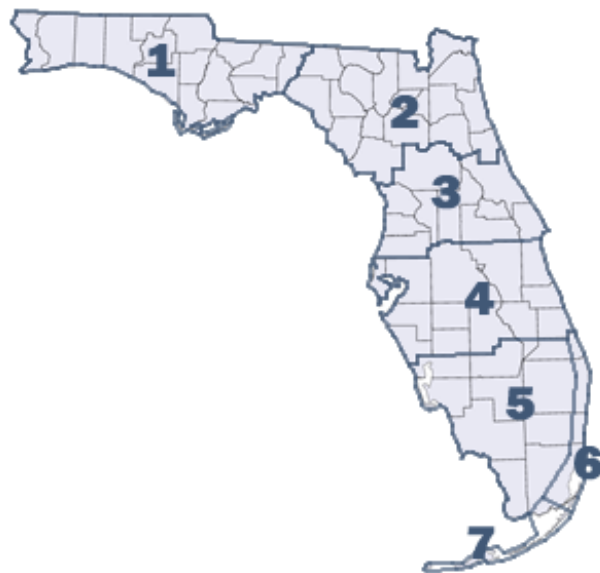


Figure 4. Map of Florida’s seven climate divisions.

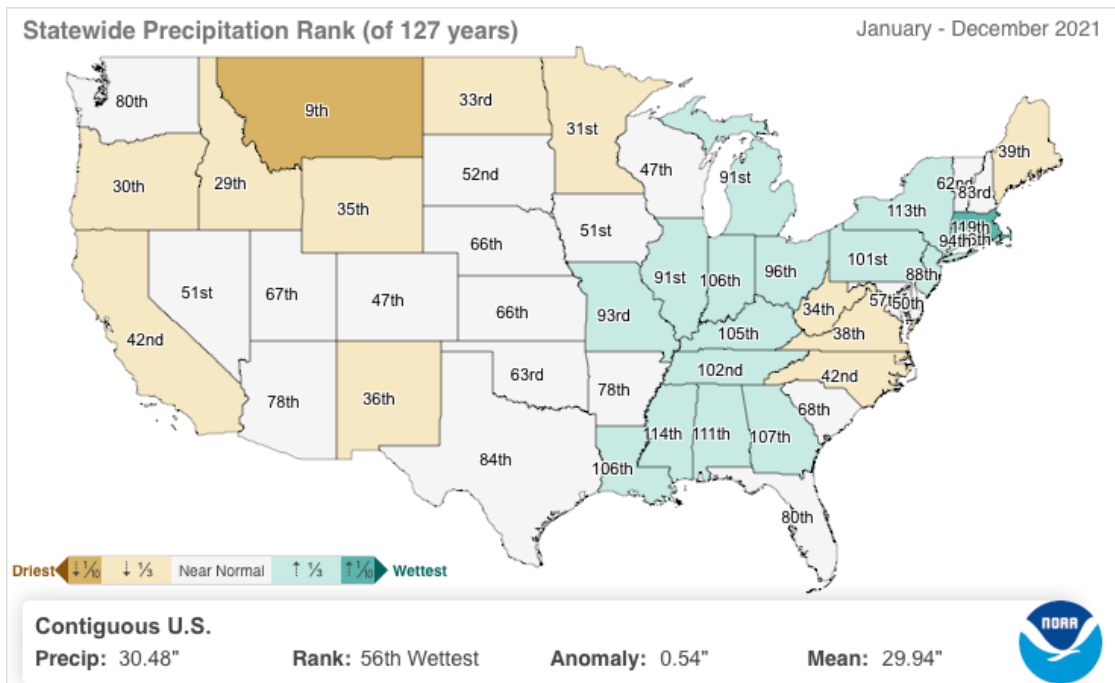


Figure 5. Map displaying the ranking of each state's annual average (mean) precipitation in 2021, based on the historical instrumental record 1895-2021.

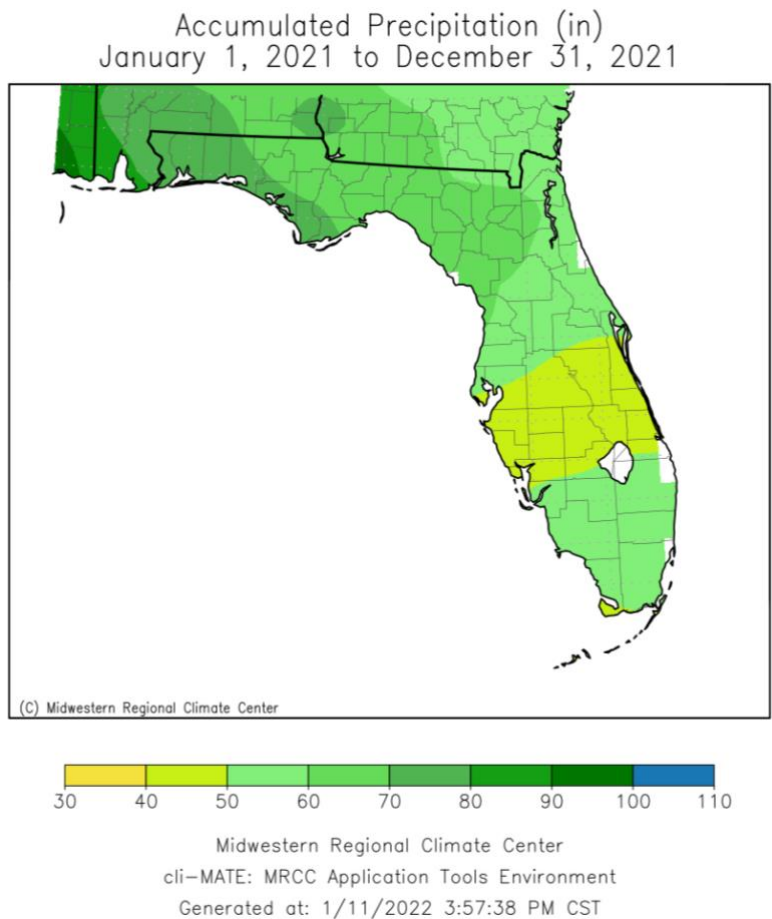


Figure 6. Map displaying statewide accumulated precipitation (in inches) for 2021.

Elsa became a hurricane on July 2 and was the earliest fifth named storm on record in the Atlantic Basin. Elsa affected the Florida Keys with wind gusts, heavy rain and flooding. It then made landfall in the Florida Panhandle near Steinhatchee in Taylor County on July 7 as a tropical storm with maximum sustained winds of 65 mph, generating heavy rain upwards of 8-11 inches and wind gusts up to 71 mph (recorded at Horseshoe Beach). The storm also caused flooding and generated a storm surge of 2.7 feet near Cedar Key. Elsa then moved quickly up the East Coast and impacted the Northeast.

The approach of Elsa further prompted officials in South Florida to bring the rest of the recently collapsed Champlain Towers South condo down in a controlled demolition on July 5, fearing the approaching storm might bring the rest of the unsteady building down in an uncontrolled manner and cause more damage. The collapse of the South Tower occurred on June 24 in Surfside, resulting in 98 fatalities. While primary cause(s) are still being studied, the collapse was a reminder of the vulnerability of coastal infrastructure to the combined effects of sea level rise, land subsidence, and saltwater intrusion.

On August 16, Tropical Storm Fred made landfall near Panama City with winds of 65 mph and a minimum pressure of 994 mb. The storm produced storm surge levels ranging from 1 to 4 feet along the Florida Panhandle and Big Bend coastal areas, with a peak surge of 4.64 observed at Apalachicola according to SURGEDAT. The storm weakened quickly as it moved north-northeastwards up the Atlantic Coast.



Surge flooding from Fred at Indian Pass in the Big Bend of Florida, August 16, 2021 (NWS).

Hurricane Ida was the strongest landfalling hurricane of 2021, which made came ashore on August 29 as a powerful category 4 hurricane near Port Fourchon, Louisiana. The storm brought heavy rain as far east as the western Panhandle and generated a peak storm surge of 2.43 feet in Pensacola Bay, per the NWS.

Tropical Storm Mindy made landfall on September 9 at St. Vincent Island near Apalachicola, Florida, with maximum sustained winds of 45 mph. It produced heavy rainfall and localized flooding but quickly weakened before moving off the coast of Georgia.

Figure 9. Tropical cyclones impacting Florida during the 2021 Atlantic Hurricane Season.