Climate Summary for Florida – July 2023

Prepared by the Florida Climate Center, The Florida State University, Tallahassee, Florida
Online at: http://climatecenter.fsu.edu/products-services/summaries

Summary

- July 2023 was the hottest July on record for many stations, and July 2023 became the hottest month ever recorded at several stations.
- July 2023 tied June 1998 as the hottest month ever in Florida.
- Monthly precipitation totals in July were above normal across the eastern coast but well below normal along the west Florida coast.
- Extreme drought was reintroduced to the Florida west coast by the end of the month, with continued below-normal rainfall.
- An El Niño Advisory continues and has a 90% chance of persisting through the Northern Hemisphere winter, peaking with moderate to strong intensity.

Average monthly temperatures in July were above normal across the state. Average temperature departures from normal ranged from +0.7℉ in Melbourne to +3.0℉ in Sarasota for the month (see Table 1 and Appendix 1 for select cities). High temperatures and oppressive humidity affected much of the state. Triple digit temperatures were reached in several locations, such as **Tallahassee** on the 1st and 21st (100℉) and on the 30th (101℉), and **Clermont** on the 4th (102℉) and 5th (101℉). Most places statewide saw one of their top 5 hottest Julys on record, and several locations observed their hottest July on record, based on monthly average temperatures, including **Pensacola**, **Jacksonville**, **Tampa**, **Sarasota**, **Vero Beach**, **Fort Myers**, **Naples**, **Miami**, and **Key West**. South Florida experienced record-breaking heat indices, with **Miami** reaching a heat index of over 110℉ on both the 9th and 10th, as well as a record 46 consecutive days with a heat index above 100℉. In addition, not only was July 2023 the hottest July on record for Miami, it was the hottest month ever recorded at the Miami International Airport station, since 1937. July 2023 also tied June 1998 as Florida's hottest month ever recorded, based on statewide monthly average temperatures. Select daily high maximum temperature records tied or broken during the month are provided in Appendix 2.

Table 1. July average temperatures and departures from normal (℉) for selected cities.

Station	Mean Temperature	Departure from Normal
Pensacola	85.5	+2.0
Tallahassee	84.6	+2.1
Jacksonville	84.7	+2.2
Orlando	84.9	+2.3
Tampa	86.5	+2.7

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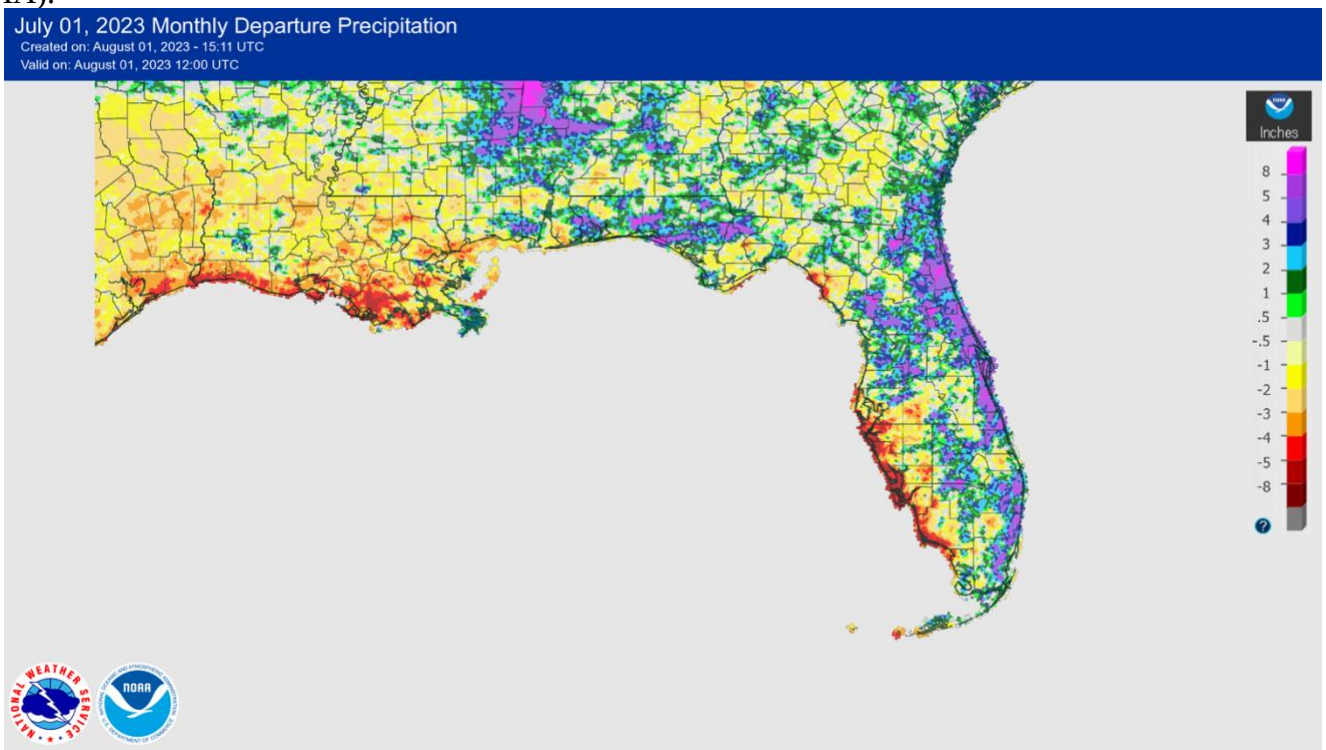
Miami	86.5	+2.4
Key West	87.7	+2.3

Monthly rainfall totals in July were near to above normal in the Panhandle and eastern Florida, while the western coast was well below normal. The monthly precipitation departures from normal ranged from -6.29 inches in Sarasota to +5.91 inches in West Palm Beach (see Table 2 and Appendix 1 for select locations). July saw plentiful rainfall, but much of the rain was confined to the eastern coast and the Panhandle. Indeed, July became a tale of two Peninsulas – plentiful rainfall in the east and much below normal rainfall along the west coast. The **Sarasota-Bradenton** area had its 2nd-driest July on record, and **Naples** had its 3rd-driest July on record. **Melbourne** had its 2nd-wettest July on record, **Vero Beach** was 3rd-wettest, and **Fort Lauderdale** had its 5th-wettest July on record. **Fort Lauderdale** has had its wettest year on record to date, while the **Sarasota-Bradenton** area has had its driest year on record so far, where the year-to-date rainfall deficit stands at a staggering 20.68 inches.

Table 2. July precipitation totals and departures from normal (inches) for selected cities.

Station	Total Rainfall	Departure from Normal
Pensacola	6.99	-0.90
Tallahassee	6.41	-0.73
Jacksonville	7.93	+1.16
Orlando	6.82	-0.64
Tampa	2.84	-4.91
Miami	7.42	+0.06
Key West	1.46	-2.17

Figure 1. A graphical depiction of the monthly rainfall departure from normal (in inches) for July (courtesy of NOAA).



El Niño Advisory.

Weak El Niño conditions, the warm phase of the El Niño Southern Oscillation climate pattern, in the tropical equatorial Pacific Ocean continued in July. El Niño is still expected to persist through the Northern Hemisphere winter 2023-24 (90% chance). Forecasters favor continued growth of El Niño through the fall, peaking this winter with moderate-to-strong intensity (81% chance of November-January Niño-3.4 ≥ 1.0°C). However, a strong El Niño, with seasonally averaged Niño-3.4 values equal to or greater than 2.0°C (rivaling the winters of 1997-98 or 2015-16), has only a 20% chance of occurring.

Hazardous Weather Events in July.

According to the Local Storm Reports issued by the local National Weather Service offices serving Florida, there were 595 individual local reports of hazardous weather events recorded across the state during the month of July (see Table 4 for a breakdown by event type). July saw active weather with heavy rain, thunderstorm activity, and strong wind gusts. Three fatalities occurred during the month due to rip currents. No tornadoes were reported during the month.

Table 3. Breakdown of storm reports submitted in Florida during the month of July (compiled from Iowa State University/Iowa Environmental Mesonet).

Report Type	Number of Reports
Heavy Rain	37
Flood	10
Coastal Flood	0
Flash Flood	22
Hail	13
Lightning	4
Non-Thunderstorm Wind Gust	9
Non-Thunderstorm Wind Damage	0
Tornado/Waterspout/Funnel Cloud	0 / 17 / 2
Thunderstorm Wind Damage	120
Thunderstorm Wind Gust	351
Rip Currents	10

Daily Record Events in July.

Table 4. Summary of daily records broken in Florida in July (source: NCEI Daily Weather Records).

Category	Number of Records
Highest daily max. temp.	72
Highest daily min. temp.	89
Lowest daily max. temp.	6
Lowest daily min. temp.	2
Highest daily precipitation	39
Total	**208**

Weather/Climate Highlight of the Month: Extreme Heat

July 2023 was the hottest month ever recorded for many stations in Florida, based on monthly average temperatures, including **Miami**, **Key West**, **Tampa**, **Fort Myers** (dating back to 1892), and **Bradenton** (dating back to 1911). A marine heatwave also affected areas around the Florida Keys, with water temperatures reaching into the upper 90s, which is well above normal and has led to coral bleaching and die-off. A buoy in Manatee Bay recorded a water temperature of 101℉ on July 24th, which received a lot of media attention. While not representative of ocean temperatures in general, coastal and open ocean temperatures in the Atlantic, Gulf of Mexico, and around the Florida Keys have been much above normal.

Globally, the past two months have been record-breaking. June 2023 was the warmest June on record globally, and July 2023 is set to be the hottest month ever recorded.

Drought-Related Impacts.

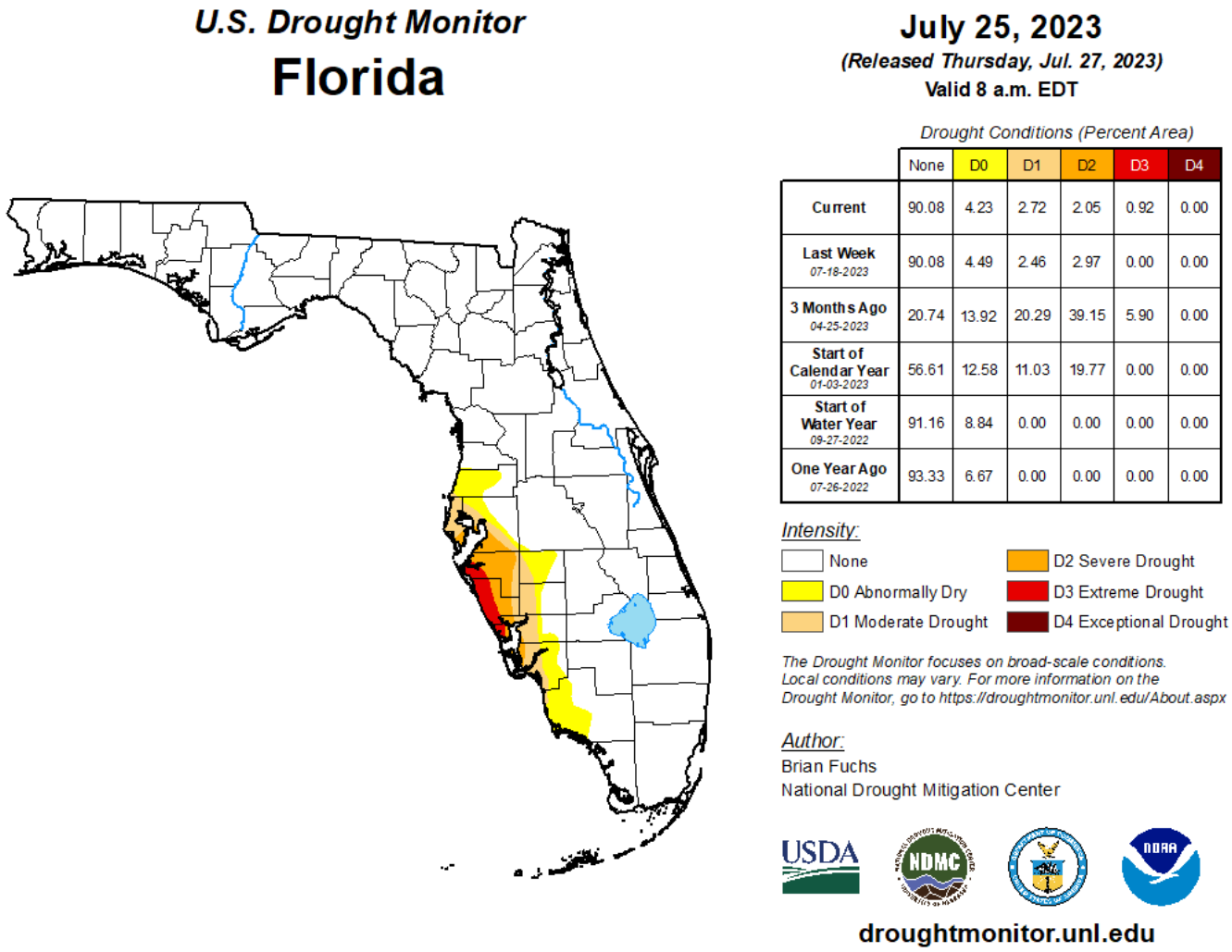
In mid-July, severe drought (D2) was introduced to the western coast of the Peninsula as year-to-date rainfall deficits continued to accumulate. About 3% of the state was in severe drought (D2), 3% was in moderate drought (D1), and 8% was abnormally dry, according to the U.S. Drought Monitor. As the month neared its end, continued below-normal rainfall led to the introduction of extreme drought confined to the west Florida coast. As of July 25, 1% of the state was in extreme drought (D3), 2% was in severe drought (D2), 3% was in moderate drought (D1), and 4% was abnormally dry (Figure 2 below).

As of July 31, the Lake Okeechobee water level was 15.13 ft. above sea level (Feet-NGVD29**)**, which is above average for this time of year. At the first of the month, the water level was 14.65 ft. above sea level.

Agriculture-Related Impacts.

In mid-July, topsoil moisture conditions were adequate in 69% of the state, short in 8%, and very short in 3% of the state, while 20% of the state was experiencing surplus topsoil moisture conditions. By the end of July, topsoil moisture conditions were adequate in 73% of the state, short in 16%, and very short in 5% of the state; 6% of the state was in surplus. For more information, consult the Crop Progress and Conditions report, which is published by the USDA's National Agricultural Statistics Service.

Figure 2. A graphical depiction of the latest drought conditions in Florida according to the U.S. Drought Monitor (courtesy of the National Drought Mitigation Center, University of Nebraska-Lincoln).



Appendix 1. Additional July departures from normal data for select Florida locations (source: NWS).

Station	Average Temperature (ºF)	Departure from Normal (ºF)	Total Rainfall (in.)	Departure from Normal (in.)
Gainesville	83.4	+2.0	4.57	-2.11
Sarasota	86.2	+3.1	1.10	-6.29
Melbourne	83.8	+0.7	11.79	+5.29
Fort Myers	86.1	+2.9	4.24	-5.14
West Palm Beach	84.5	+1.4	11.54	+5.91

Appendix 2. Select daily record high maximum temperatures broken or tied during July (compiled from NOAA).

Location	Date	Record (ºF)	Broken/Tied	Last
Homestead	1	98	Broken	97 in 2007
Tampa	1	97	Broken	95 in 2014
Tallahassee	2	100	Tied	100 in 1998
Plant City	2	100	Broken	99 in 2019
Clermont	4	102	Broken	97 in 2019
Plant City	4	103	Broken	99 in 1997
Tampa	4	97	Broken	96 in 1998
Orlando	4	98	Broken	96 in 2016
Canal Point	5	99	Broken	97 in 1992
Clermont	5	101	Broken	98 in 2016
Plant City	5	104	Broken	98 in 2019
Miles City	5	100	Broken	99 in 2016
Jacksonville	5	98	Tied	98 in 1969
Homestead	6	94	Tied	94 in 2016
Miami	6	95	Tied	95 in 2009
West Palm Beach	6	97	Broken	95 in 2016
Homestead	7	98	Broken	95 in 2009
Miami	7	97	Broken	95 in 2020
Vero Beach	7	96	Broken	95 in 2009
Lakeland	7	99	Broken	98 in 1992
Miami	8	96	Broken	95 in 2020
Plant City	9	99	Broken	98 in 2022
Vero Beach	9	96	Broken	95 in 2020
Homestead	10	100	Broken	98 in 2020
Fort Lauderdale	11	96	Tied	96 in 2020
Homestead	11	98	Broken	97 in 2020
Miles City	11	102	Broken	100 in 2008
Ochopee	11	98	Broken	97 in 1989
Miami	11	96	Broken	95 in 2010
Homestead	12	96	Broken	95 in 2007
Perrine	12	95	Broken	94 in 2022
Key West	12	94	Broken	93 in 2016
Miami	12	97	Broken	95 in 1981
Venice	13	96	Broken	95 in 2022
Bradenton	14	97	Tied	97 in 2020
Plant City	14	101	Broken	99 in 2022
Fort Myers	19	97	Tied	97 in 1979
Tampa	19	96	Tied	96 in 2010
Bradenton	20	98	Broken	96 in 2014
Canal Point	20	97	Broken	96 in 2016
Clermont	20	98	Broken	97 in 1950
Clermont	21	99	Broken	98 in 2021
Tampa	21	96	Broken	95 in 2016
Orlando	21	97	Broken	96 in 2022
Tallahassee	21	100	Tied	100 in 1942
Jacksonville	21	100	Broken	99 in 1993

Miami	22	97	Broken	94 in 2021
Homestead	23	98	Broken	97 in 2021
Miami	23	98	Broken	95 in 2005
Fort Lauderdale	24	98	Broken	97 in 2005
Homestead	24	99	Broken	96 in 2018
Naples	24	98	Broken	97 in 2009
Perrine	24	96	Broken	95 in 1993
Fort Myers	25	98	Tied	98 in 1993
Key West	25	97	Broken	96 in 2022
Fort Lauderdale	26	95	Broken	94 in 2015
Crestview	27	100	Broken	99 in 1993
Jacksonville Beach	29	100	Broken	98 in 1968
Miles City	30	101	Broken	100 in 2016