

# National Weather Service Melbourne

## DRY SEASON FORECAST

Jan  
2025

The Forecast

### November – December - January

STRONG EL NINO	WELL ABOVE NORMAL	WELL ABOVE NORMAL	WELL ABOVE NORMAL
WEAK EL NINO	ABOVE NORMAL	ABOVE NORMAL	ABOVE NORMAL
NEUTRAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
WEAK LA NINA	BELOW NORMAL	BELOW NORMAL	BELOW NORMAL
STRONG LA NINA	WELL BELOW NORMAL	WELL BELOW NORMAL	WELL BELOW NORMAL
ENSO State	Temperature	Precipitation	Storminess

### February – March - April

STRONG EL NINO	WELL ABOVE NORMAL	WELL ABOVE NORMAL	WELL ABOVE NORMAL
WEAK EL NINO	ABOVE NORMAL	ABOVE NORMAL	ABOVE NORMAL
NEUTRAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
WEAK LA NINA	BELOW NORMAL	BELOW NORMAL	BELOW NORMAL
STRONG LA NINA	WELL BELOW NORMAL	WELL BELOW NORMAL	WELL BELOW NORMAL
ENSO State	Temperature	Precipitation	Storminess

## Forecast Overview | January 2025

- La Niña Advisory** in effect: La Niña conditions are currently ongoing across the equatorial Pacific Ocean and are forecast to continue, but be short-lived, with a likely transition to ENSO-neutral later in the spring (Mar-May).
- Typical La Niña impacts are forecast across Central Florida through the second half of the dry season (Feb-Apr), with above normal temperatures and below normal rainfall generally favored through this period.
- Other large scale weather patterns, however, can easily overwhelm a weak La Niña signal, and periods of cooler than normal temperatures and increases in rainfall will still be likely.
- The general outlook for below normal rainfall to continue during the second half of the dry season, will increase the threat for expanding and intensifying drought conditions across the region, and also lead to a greater risk for wildfire activity into the late winter and spring.
- Seasonal storminess is forecast to be below normal through the remainder of the dry season. However, individual storm systems can still bring an increased risk of hazardous weather, including severe thunderstorms and tornadoes.

## About this Product

This forecast product is a result of research from the National Weather Service (NWS) in Melbourne, Florida on the El Niño - Southern Oscillation (ENSO) and its impact on Central Florida's dry season (November – April). This research, conducted since early 1997, was produced in recognition of the fact that climatic fluctuations on regional and global scales have been shown to have a profound impact on Florida's weather from season to season. The importance of seasonal forecasting continues to increase as extreme weather events affect more of Florida's growing population. These forecasts are meant to supplement, not replace, the official NWS Climate Prediction Center's (CPC) seasonal and winter outlooks by providing more detail and adaptive meteorological interpretation of the impact of predicted climatic events on Central Florida.

## Forecast Basis & Interpretation

The seasonal forecast is produced by a team of National Weather Service Melbourne meteorologists that employ the use of linear and logistic regression equations as well as analog-based techniques. These methods are based on the official observed and forecast Niño 3.4 and 3.0 values from the Climate Prediction Center and historical weather data for the Central Florida region. The accuracy of these indices will have a bearing on the accuracy of the seasonal forecast.

The Florida dry season forecast is issued for the period between November 1, 2024 and April 30, 2025 and is intended to serve as an early warning of significant impacts from climatic variability for planners and decision makers. Seasonal temperature and precipitation for Central Florida (climate divisions 3 and 4 as shown in figure 1), as well as the number of extratropical storms expected to impact the state are forecast into two separate periods: November-December-January (NDJ) and February-March-April (FMA).

The ENSO state and forecasts for storminess, rainfall, and temperature are divided into five categories, or quintiles: well below normal, below normal, normal, above normal, and well above normal. Discussions for each individual forecast parameter are included on the next several pages to help address uncertainty and should be used to supplement the forecast charts.



**Fig 1.** Temperature and precipitation forecasts are provided for Division 3 and 4 (Central Florida) while storminess forecasts are for the entire state of Florida.

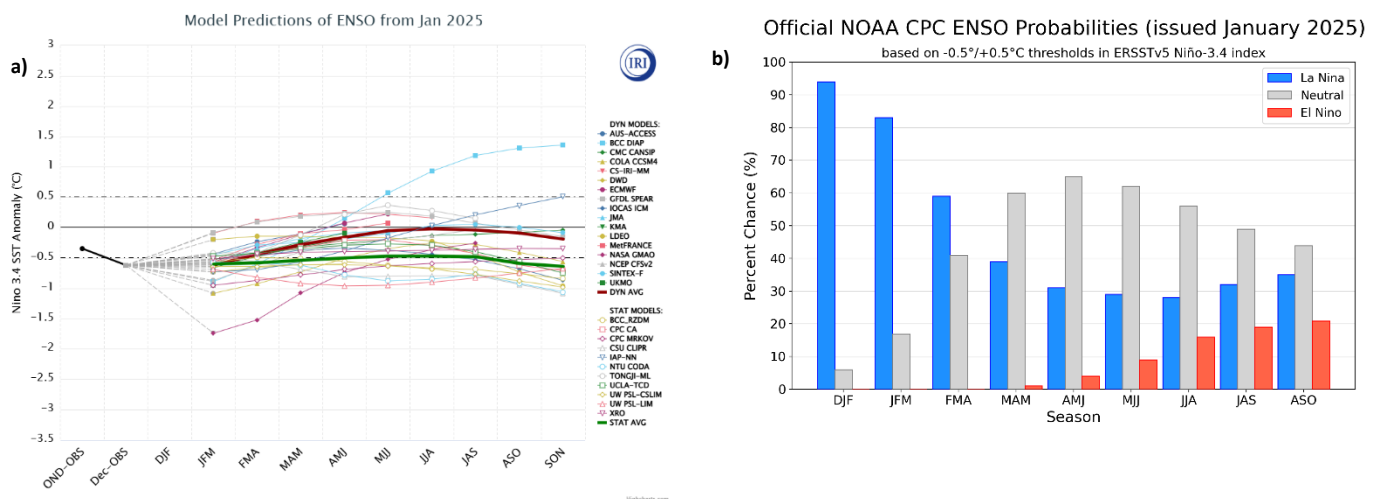
# ENSO

**Latest Discussion** | The latest El Niño/Southern Oscillation (ENSO) diagnostic discussion from the Climate Prediction Center (CPC) states that weak La Niña conditions over the equatorial Pacific Ocean developed in December 2024 and currently persist into early 2025. There is a 59 percent chance for La Niña conditions to continue through the February-April 2025 period, with a transition to ENSO-neutral favored during March-May 2025 (fig. 2b).

The latest ONI, which is a 3-month running mean of sea surface temperature (SST) departures in the Niño 3.4 region, for October through December 2024 was  $-0.4^{\circ}\text{C}$ . As of January 27th, the latest weekly SST departure in the Niño 3.4 region was  $-0.9^{\circ}\text{C}$ . The most recent forecasts of statistical and dynamical models (fig. 2a) collectively show SSTs departures in the Niño 3.4 region remaining cooler than normal through the spring, with La Niña conditions remaining weak. This will likely not last long enough to be considered a La Niña event, which would require five consecutive ONI values of  $\leq -0.5^{\circ}\text{C}$ .

**Additional Information** | The El Niño Southern Oscillation or ENSO is a complex meteorological phenomenon that relates to changes in sea surface temperature and sea level pressure over the equatorial regions of the Pacific Ocean. ENSO has a warm phase (El Niño) and a cool phase (La Niña) and has profound influences on the atmospheric circulations over the Pacific Ocean, and consequently, the circulations over North America and other parts of the globe. Locally, research shows that there is a physical relationship between the state of ENSO and the mean position of the jet stream over North America during the winter and spring seasons. These shifts in the jet stream often influence central Florida in the form of increased/decreased rainfall, storminess, and seasonal temperatures depending on the state of ENSO.

The relationship between Florida weather and ENSO is not just a simple “one-to-one” relationship, however, as other weather patterns (teleconnections) including the North Atlantic Oscillation (NAO), Arctic Oscillation (AO), Pacific-North American teleconnection pattern (PNA) and Madden-Julian Oscillation (MJO) can also play a major role in Florida dry season weather. Even when El Niño/La Niña conditions are occurring over the equatorial pacific, these other teleconnections can act to enhance or suppress the impact of ENSO, or cause extreme variability on their own. Considerable uncertainty remains in longer range outlooks since these other oscillations are generally not predictable beyond 10 – 14 days.



**Fig 2.** ENSO guidance from the International Research Institute (IRI) for Climate and Society and the Climate Prediction Center (CPC). (a) Dynamical and statistical model plume of ENSO predictions. (b) Official ENSO forecast probabilities based off a consensus between CPC and IRI forecasters. Images provided by The International Research Institute for Climate and Society, Columbia University Climate School. <https://iri.columbia.edu/ENSO>

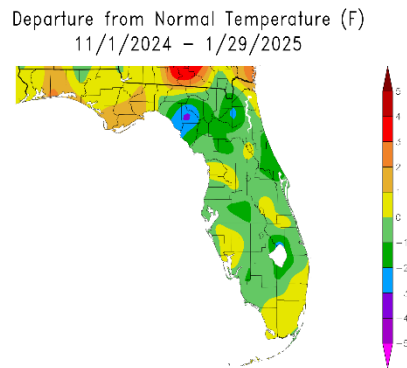
# Temperature

*Discussion* | Temperatures during the first half of the dry season started off warmer than normal in November, and were closer to normal in December. However, much colder conditions in January led to average temperatures that were near to slightly below normal for the November 2024-January 2025 period (fig. 3). The temperature forecast for the remainder of the dry season (February-April 2025) across Central Florida leans toward average temperatures that are above normal based on guidance from CPC and weak La Niña conditions through early spring.

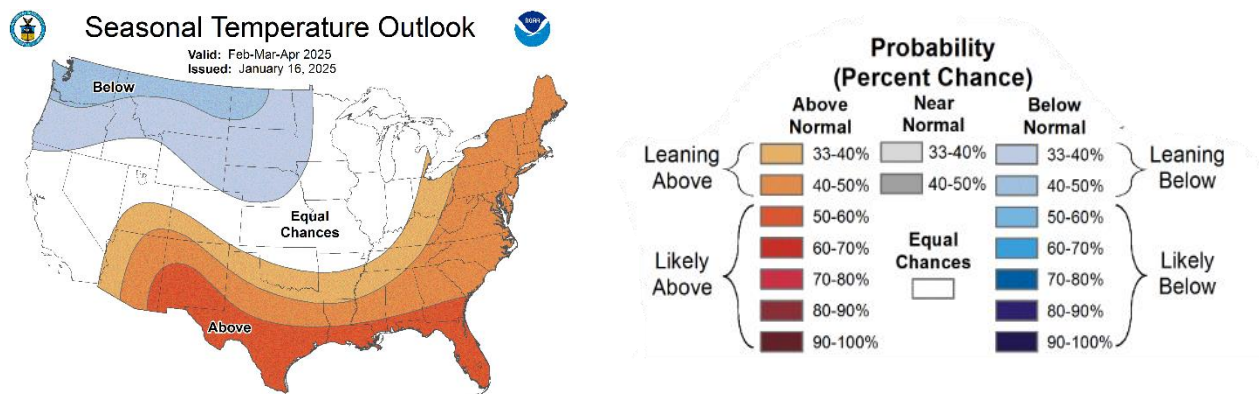
The latest CPC temperature outlook for February-April (fig. 4) currently indicates a greater potential (near 60 percent chance) for above normal temperatures across Central Florida. Long term temperature trends and local logistic regression analysis also provide support for slightly greater probabilities of above normal temperatures through the remainder of the dry season. However, significant week-to-week and month-to-month variations in temperatures will occur as other large-scale weather patterns can often overwhelm a weak La Niña.

Freezing conditions can occur during all ENSO states (table 1, page 8), but with the greater potential for above normal warmth into late winter and spring, and as we move out of the more climatologically favored period for freezing temperatures, the potential for additional freeze events is rather low across Central Florida. Again, other shorter-term teleconnection patterns especially the Arctic Oscillation (AO), typically dictate the timing of dry season freeze events.

*Additional Information* | When trying to correlate the state of ENSO and seasonal temperature over Central Florida, one finds much less skill compared to precipitation and storminess. Other large-scale phenomena, including the North Atlantic Oscillation (NAO) and Arctic Oscillation (AO), play a significant role in the week-to-week weather patterns over the state. For instance, strongly negative (positive) phases of the AO often lead to colder (warmer) than normal weather across the eastern half of the United States, including Florida. The AO is not predictable beyond a few weeks, and there are no long-range outlooks available at this time.



**Fig 3.** Average temperature departure from normal for the Nov 2024-Jan 2025 period across Florida (Image generated at HPRCC).



**Fig 4.** Three-month temperature probability outlook issued by the Climate Prediction Center (CPC) for Feb-Mar-Apr, and probability legend.

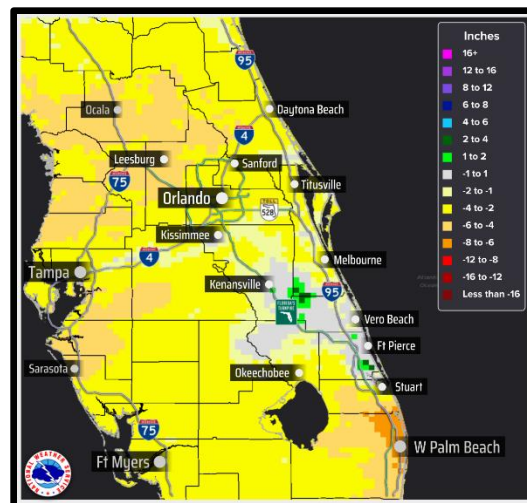


# Precipitation

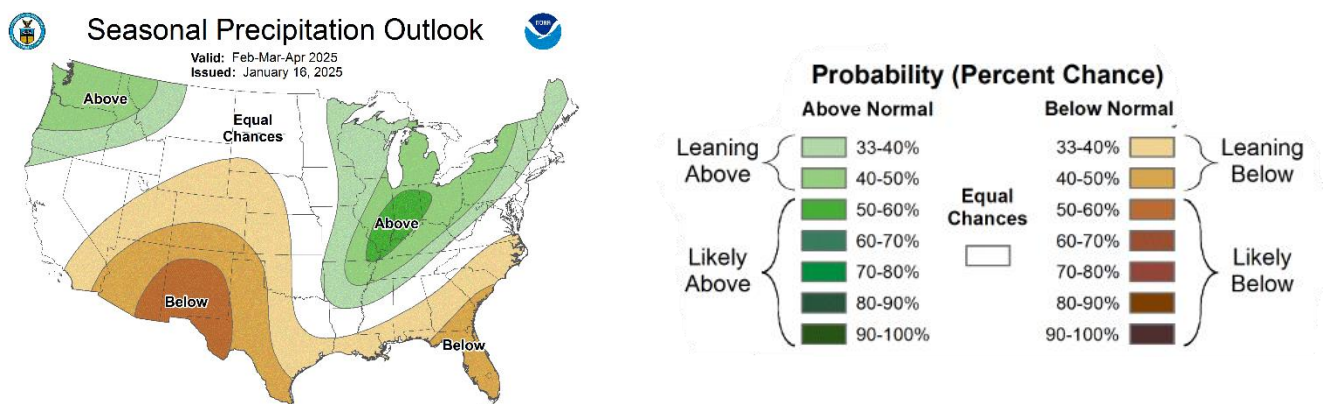
*Discussion* | Drier than normal conditions largely prevailed across Central Florida during the first half of the dry season (fig. 5). The precipitation forecast for the remainder of the dry season (February-April 2025) across Central Florida favors below normal rainfall across Central Florida, based on guidance from CPC and weak La Niña conditions through the early spring.

The latest CPC precipitation outlook for February-April (fig. 6) shows a greater potential (around a 40 to 50 percent chance), for below normal rainfall across Central Florida. Logistic regression and analog-based techniques also support greater chances for below normal rainfall through the remainder of the dry season, even during weak La Niña events. The general outlook favoring drier than normal conditions this dry season, will lead to an increasing threat of expanding and intensifying drought conditions and higher risk of wildfire activity across the area through the late winter and spring.

*Additional Information* | The relationship between ENSO and rainfall is perhaps the most straightforward and statistically significant of all weather parameters. In general, during the Florida dry season, substantial rainfall is only provided by passing extratropical disturbances in the westerlies or by stalled frontal boundaries. During an El Niño event, the number of extratropical systems is often increased over Florida and the Gulf of Mexico leading to above average rainfall. Likewise, during a La Niña event, rainfall is often lower than normal due to a limited number of extratropical systems impacting the state.



**Fig 5.** Rainfall departures from normal for the Nov 2024-Jan 2025 period across Central Florida.



**Fig 6.** Three-month precipitation probability outlook issued by the Climate Prediction Center (CPC) for Feb-Mar-Apr, and probability legend.

## Storminess

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*Discussion* | The forecast for the remainder of the dry season (February-April 2025) is for below average storminess across the state, due to weak La Niña conditions forecast to continue through the early spring. However, even during a La Niña pattern, individual storm systems can still move through the region, leading to an increased threat of hazardous weather, including severe thunderstorms and tornadoes.

*Additional Information* | This forecast attempts to estimate the number of extratropical low pressure systems that will impact the state during a given dry season. There is a very strong relationship between ENSO and winter storminess and severe weather in Florida. Extratropical cyclones can produce excessive rainfall, damaging straight-line winds, tornadoes, dangerous marine conditions, coastal flooding, and beach erosion. The number of extratropical low pressure systems passing near or over the state often increases during El Niño episodes due an extension of the subtropical jet stream over the southern United States.

## Preparedness Advice

While seasonal storminess is forecast to be below normal, individual storm systems can still bring an enhanced risk of hazardous weather, including severe thunderstorms and tornadoes. Here is some safety information for you and your family to help prepare for when the next storm strikes!

### BE AWARE: PREPARE!

- ✓ Monitor local television, radio, and the internet for severe weather situations
  - Severe weather threats are typically identified a few days in advance, with more specific information about the most likely time(s) and location(s) of impact provided one day in advance
- ✓ Have an all-hazards plan in place
  - Every person and/or family should have an all-hazards plan that includes multiple ways to receive severe weather warnings and knowing what to do when one is issued
- ✓ Have multiple dependable ways to receive timely weather warning alerts
  - Ensure that you have a NOAA Weather Radio (programmed, with fresh batteries) and/or the Wireless Emergency Alert feature on your cell phone (or NWS warnings relayed by text message from Emergency Management, Media, or another reliable app)
  - Can save lives, especially with dangerous, nighttime tornadoes

### BEFORE / DURING THREAT

- ✓ If living in a mobile home, RV, or boat:
  - Make plans to stay with family or friends and leave before the threat for severe weather arrives
  - If you can't leave, identify the closest sturdy shelter such as a clubhouse or laundry room and go there immediately if a warning is issued for your location
- ✓ Identify your shelter location and "safe place" in advance of a threat
  - Small interior room on the lowest floor of your home or business, far from windows
  - Ensure everyone in your family or business is aware of the location
- ✓ Words of advice from those who have survived tornadoes
  - "Putting on your shoes, placing your charged cell phone in your pocket, making good use of any kind of helmet and/or pillow to protect your head, and holding tightly to one another" (these actions must be done quickly and prior to the arrival of a tornado)
- ✓ If a tornado warning is issued for your location:
  - Take immediate action and move to your shelter, remain in place until the threat passes

## Additional Information and Links

ENSO State	Daytona Beach		Orlando		Melbourne		Vero Beach		ENSO State
	≤ 32°F	≤ 28°F	≤ 32°F	≤ 28°F	≤ 32°F	≤ 28°F	≤ 32°F	≤ 28°F	
El Niño	4.5	1.3	2.2	0.7	1.9	0.5	1.6	0.4	El Niño
Neutral	5.0	1.6	2.5	0.8	2.0	0.7	1.8	0.5	Neutral
La Niña	4.8	1.4	2.6	0.5	2.2	0.5	2.0	0.4	La Niña

**Table 1.** Average number of days during the dry season when the minimum temperature reaches at or below freezing based on ENSO state using data from 1950 to 2022. A hard freeze is when minimum temperatures reached 28°F or lower.

### Helpful Links

#### Teleconnection Guidance & Forecasts from the Climate Prediction Center (CPC)

[ENSO](#) | [AO](#) | [NAO](#) | [PNA](#) | [MJO](#)

#### CPC Guidance (Temperature, Precipitation, Drought, Hazards)

[1-Month Outlook](#) | [3-Month Outlook \(~90 Days\)](#)

[U.S. Drought Information](#) | [U.S. Hazards Assessment](#) (out to 2 weeks)

#### National Weather Service Melbourne, FL Research

[ENSO and Climate](#) | [Storminess](#) | [Severe Weather](#) | [Rainfall](#) | [Temperature](#)

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Next Forecast Issuance: Final Forecast Update

Dry Season Overview: Mid-May 2025