

# Extended Hydrologic Outlook

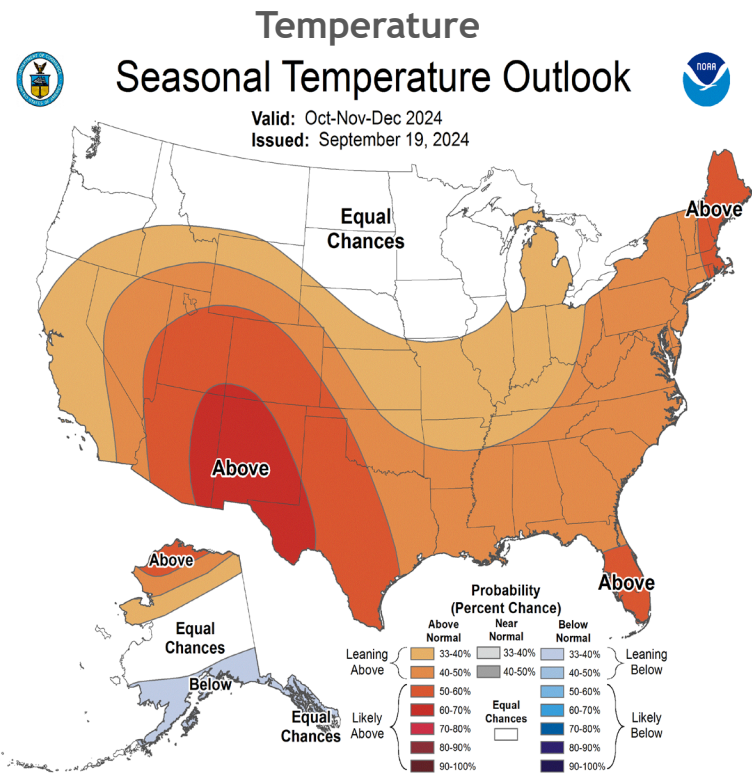
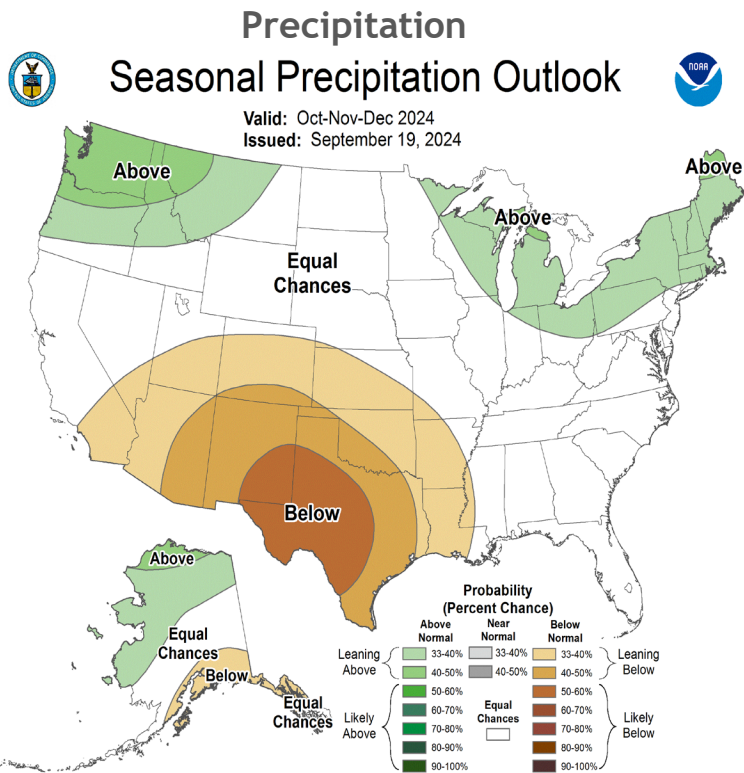
October 8, 2024

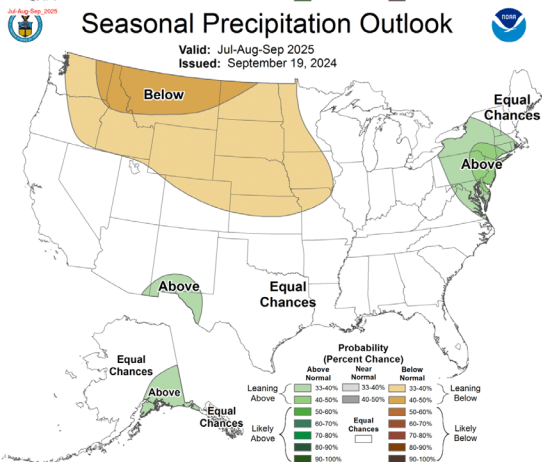
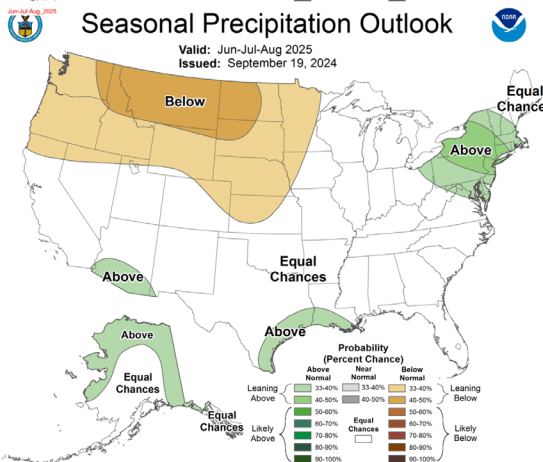
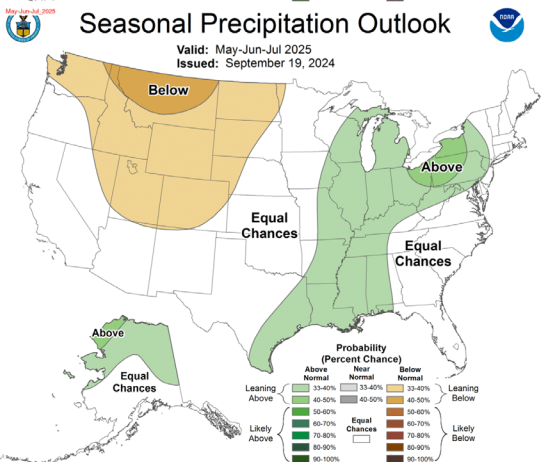
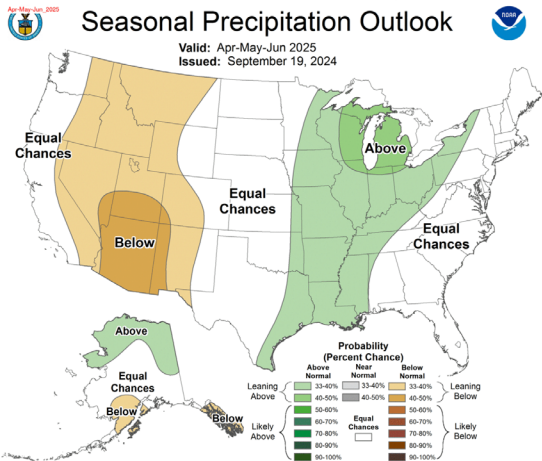
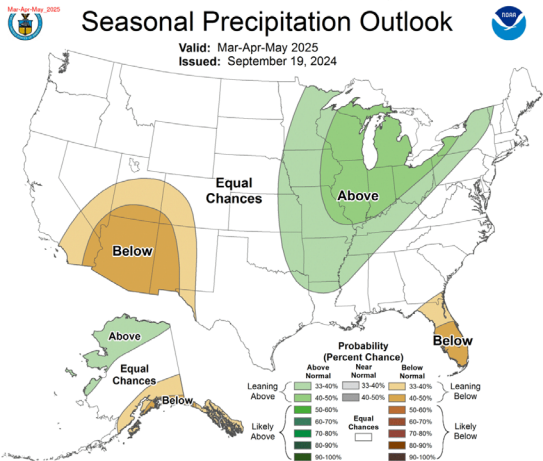
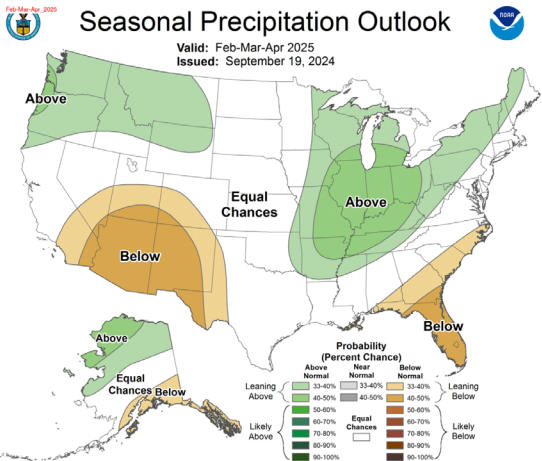
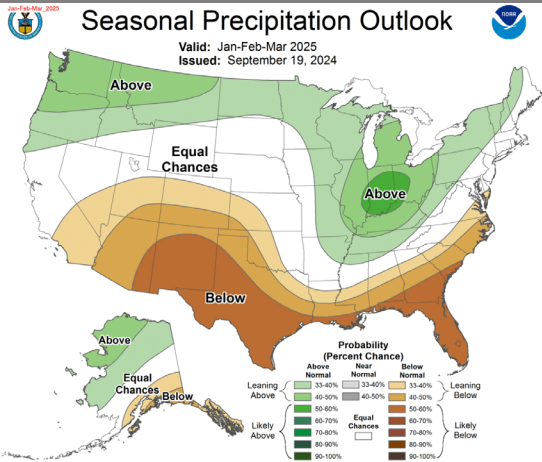
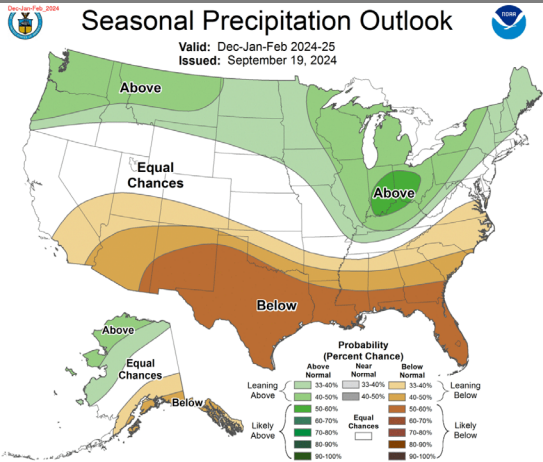
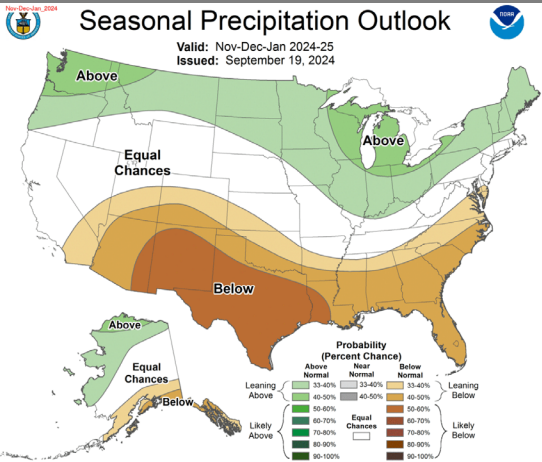
- The Climate Prediction Center (CPC) is forecasting equal chances for below normal, normal and above normal rainfall for October through December.
- ENSO-neutral conditions are present. La Niña is favored to emerge in September-November (71% chance) and is expected to persist through January-March 2025.
- Atlantic Multidecadal Oscillation (AMO) is currently in the warm phase:
  - Average annual inflow to Lake Okeechobee is nearly 50% greater during the warm phase compared to the cold phase.

# U. S. Seasonal Outlooks

October-December 2024

The seasonal outlooks combine the effects of long-term trends, soil moisture, and, when appropriate, ENSO.





# Teleconnections to South Florida

Climate anomalies being related to each other at large distances:

## El Niño Southern Oscillation (ENSO)

- El Niño increases the chances of a wetter-than-normal dry season and decreased tropical activity, La Niña increases the chances of a drier-than-normal dry season and increased tropical activity (both have most influence in south Florida from November through March)

## Pacific Decadal Oscillation (PDO)

- Increases variations in south Florida dry season rainfall, positive leads to more El Niño events, negative leads to more La Niña events
- The current PDO is negative

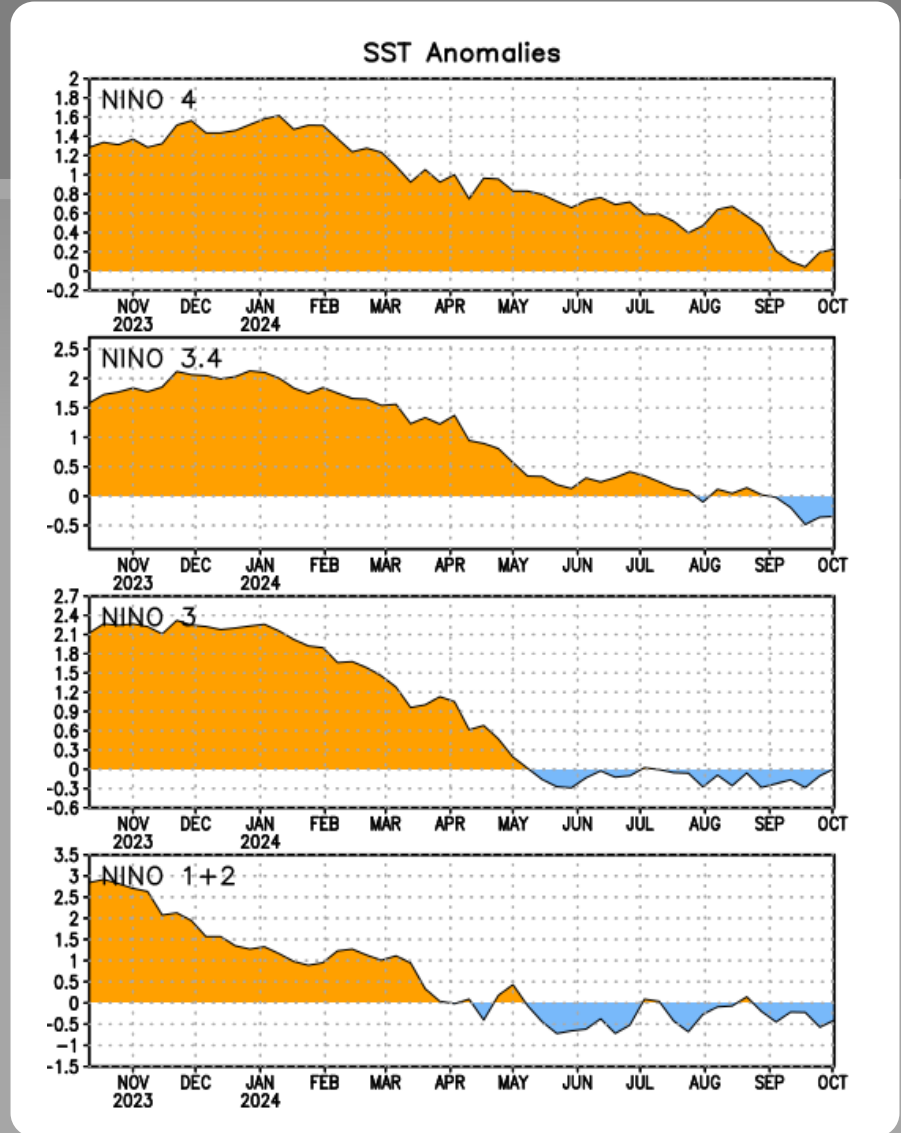
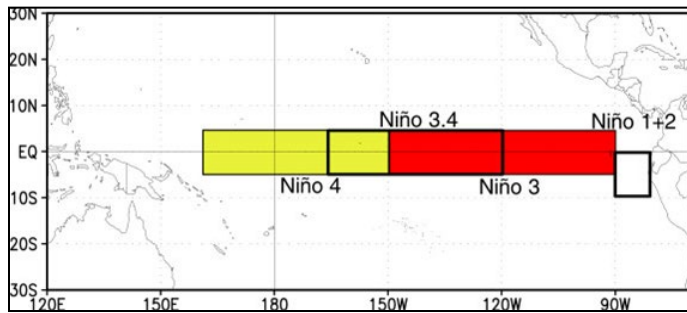
## Atlantic Multidecadal Oscillation (AMO)

- Average annual inflow to Lake Okeechobee is nearly 50% greater during the warm phase compared to the cold phase of the AMO, easterly flow toward south Florida affected by phase
- The AMO is currently in the warm phase

# Niño Region SST Departures (°C) Recent Evolution

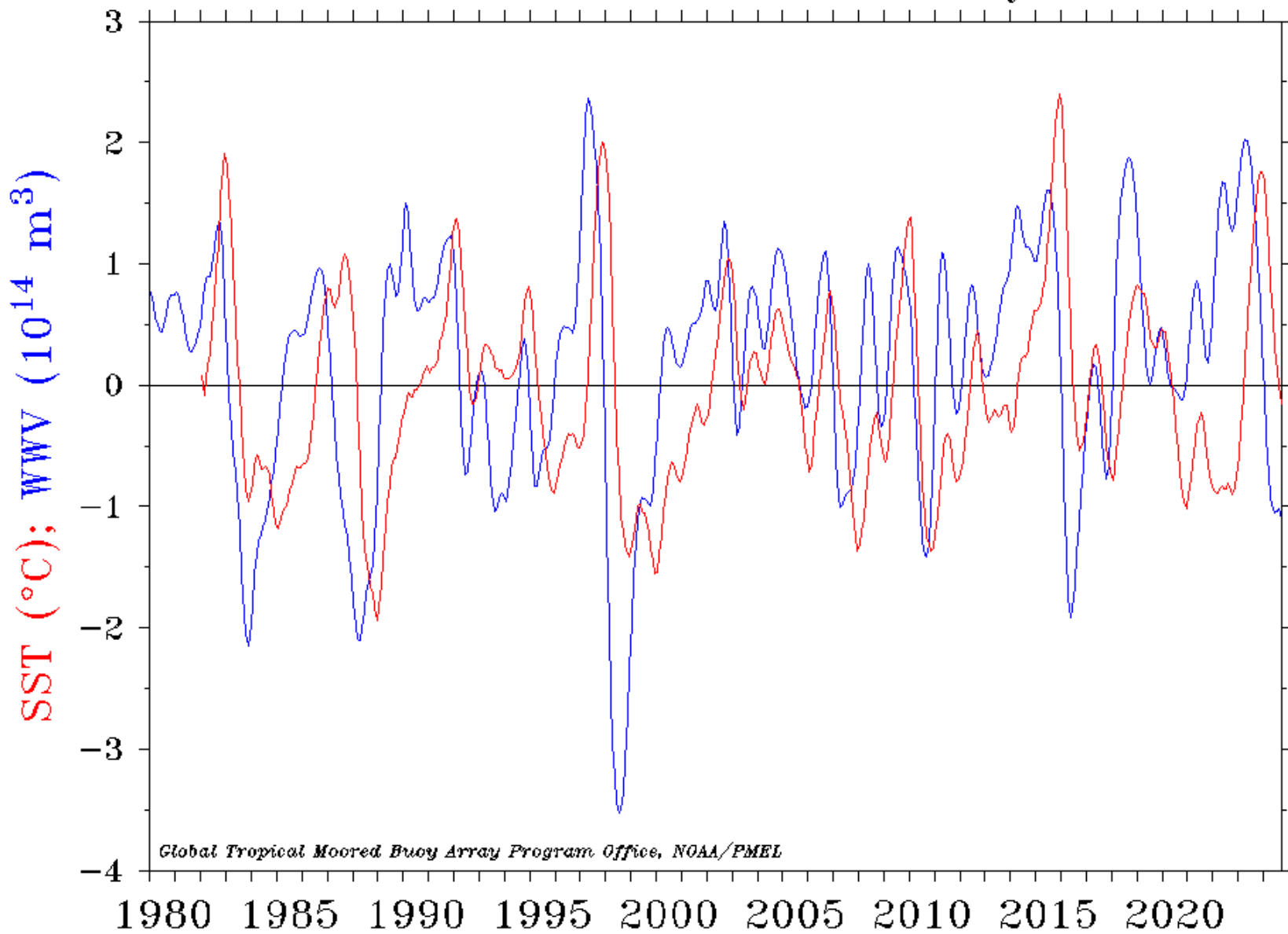
The latest weekly SST departures are:

Niño 4	0.2°C
Niño 3.4	-0.3°C
Niño 3	0.0°C
Niño 1+2	-0.4°C



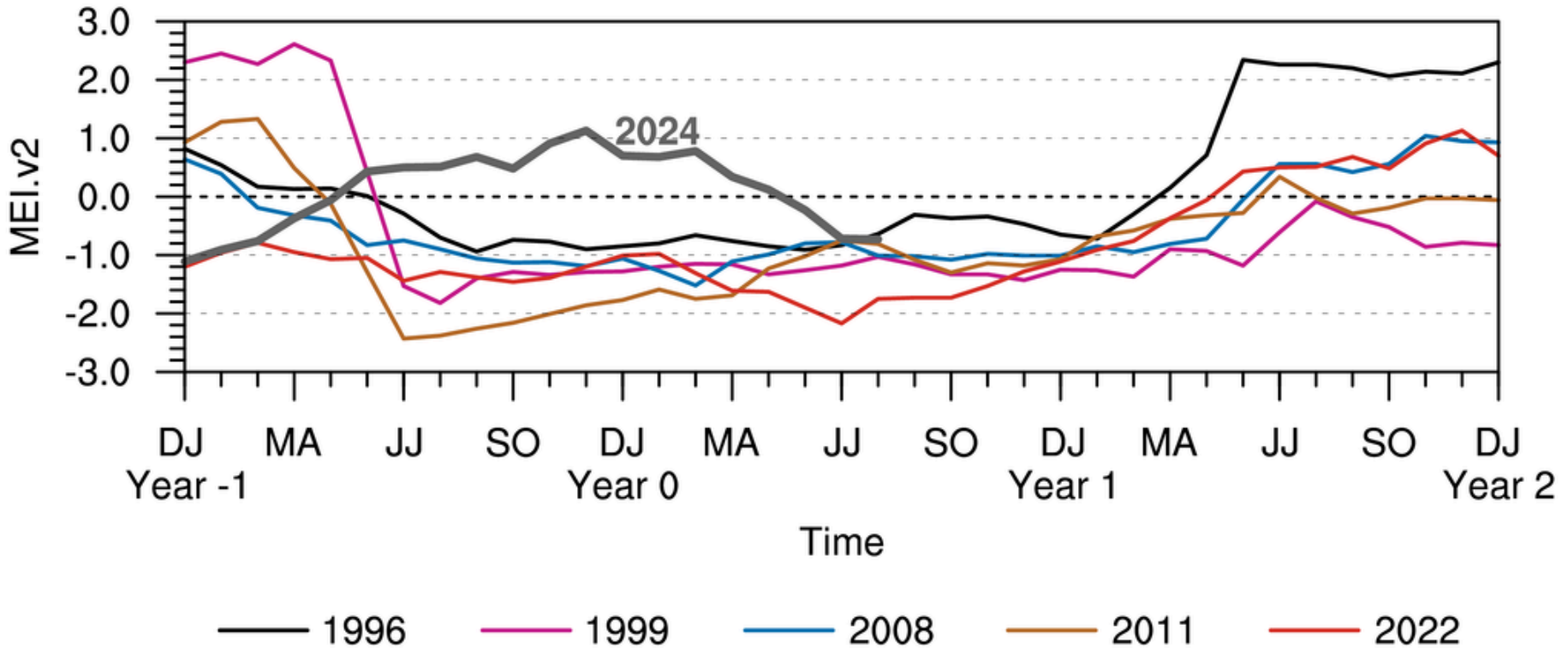
This weekly sea surface temperature data is based on OISSTv2.1 (Huang et al., 2021).

# Warm Water Volume (5°N–5°S, 120°E–80°W) and NINO 3.4 SST Anomaly





## MEI.v2 Evolution of Current ENSO Event in Historical Context



*\*The JRA-55 dataset used for the MEI V2 has been discontinued by the Japanese Meteorological Agency as of January 2024. We have switched to using the JRA3Q reanalysis which yields very similar results.*

# 2024 Tropical Outlook

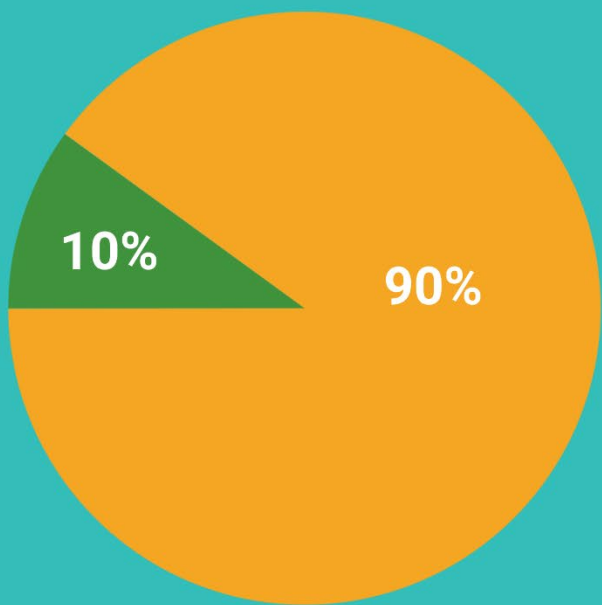






# 2024 Atlantic Hurricane Season Outlook

## AUGUST 8 UPDATE



■ Above normal   ■ Near normal   ■ Below normal

Season probability

**Named storms**

17 - 24

**Hurricanes**

8 - 13

**Major hurricanes**

4 - 7

Be prepared: Visit [hurricanes.gov](https://hurricanes.gov) and follow @NWS and @NHC\_Atlantic on X.

August 2024

Source: National Hurricane Center

**COLORADO STATE UNIVERSITY FORECAST OF ATLANTIC HURRICANE  
ACTIVITY FROM OCTOBER 1–14, 2024 AND OUTLOOK FOR OCTOBER-  
NOVEMBER CARIBBEAN ACCUMULATED CYCLONE ENERGY**

We believe with virtual certainty that Atlantic hurricane activity in the next two weeks will be above normal (99% chance), with a nominal chance of near-normal activity (1%). We anticipate well above average October–November Caribbean Accumulated Cyclone Energy.

(as of 1 October 2024)

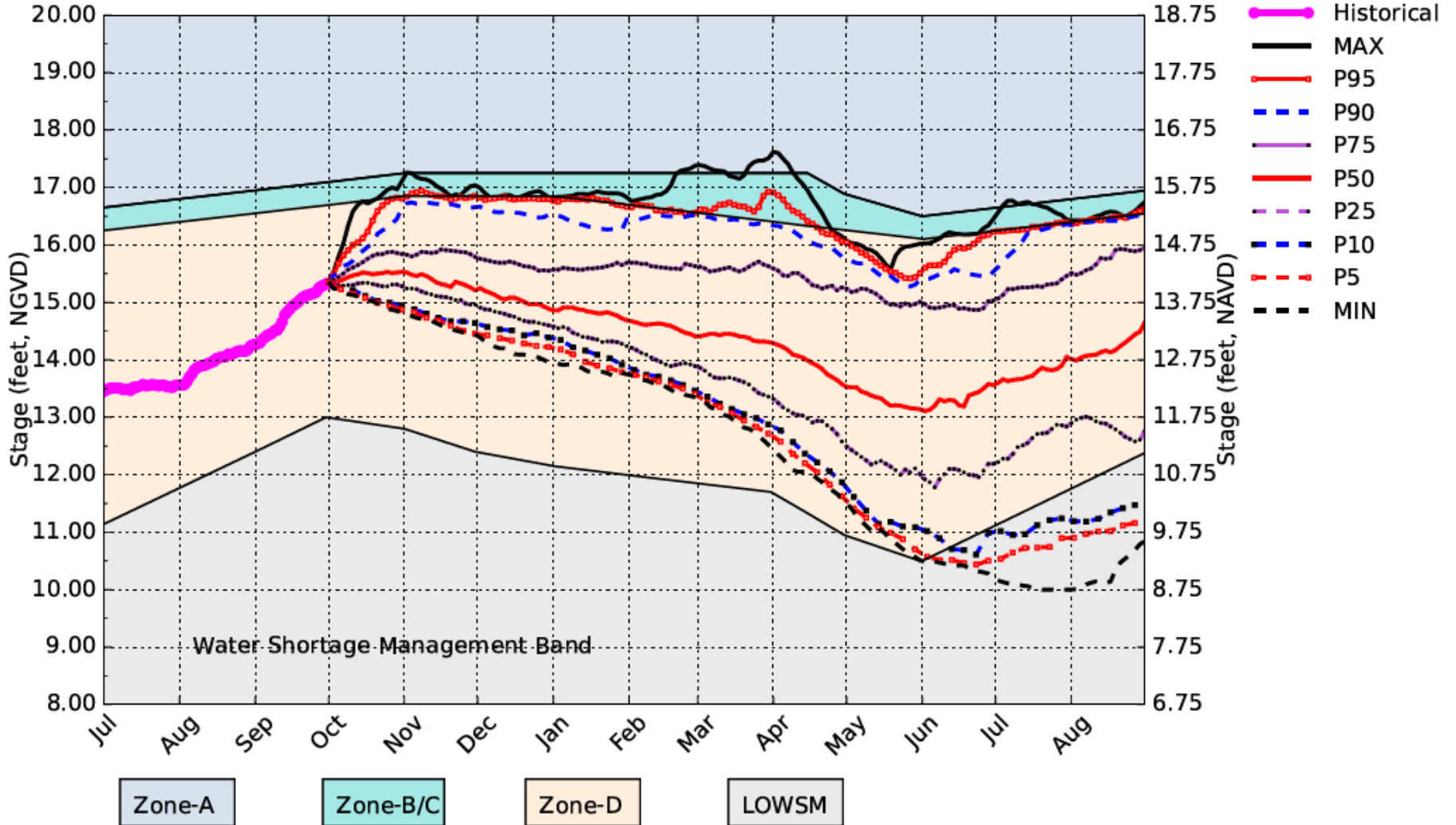
**Next Update: October 15, 2024**

# October 2024 DPA Assumptions

- The October 1, 2024 Dynamic Position Analysis (DPA) simulation is based on historical climatic conditions spanning the period 1965-2016. This DPA posting is made with the South Florida Water Management Model (SFWMM) v7.3.3.
- The October 1, 2024 DPA resets the initial stages for Lake Okeechobee (LOK) and the Water Conservation Areas (WCAs) on September 1st of each year of the DPA simulation and conditions the simulation to real time data during September to achieve real time stages on October 1st for LOK and WCAs.
- The Lake Okeechobee operations follow the Lake Okeechobee System Operating Manual (LOSOM). Modeling assumptions are consistent with modeling performed for LOSOM Supplemental Environmental Impact Statement (SEIS).
- LOK Temporary Forward Pump operations will be in place, whenever necessary, to improve water supply deliveries from LOK under low LOK stages.
- STA surface area values are modified to reflect current flowways under operation. STA depths are maintained to a minimum of 6 inches using Lake Okeechobee releases.
- Lake Okeechobee Water Shortage Management (LOWSM) is included in the simulation which reflects the currently approved 40E-21 and 40E-22 water shortage rules.

# Lake Okeechobee SFWMM October 2024 Position Analysis

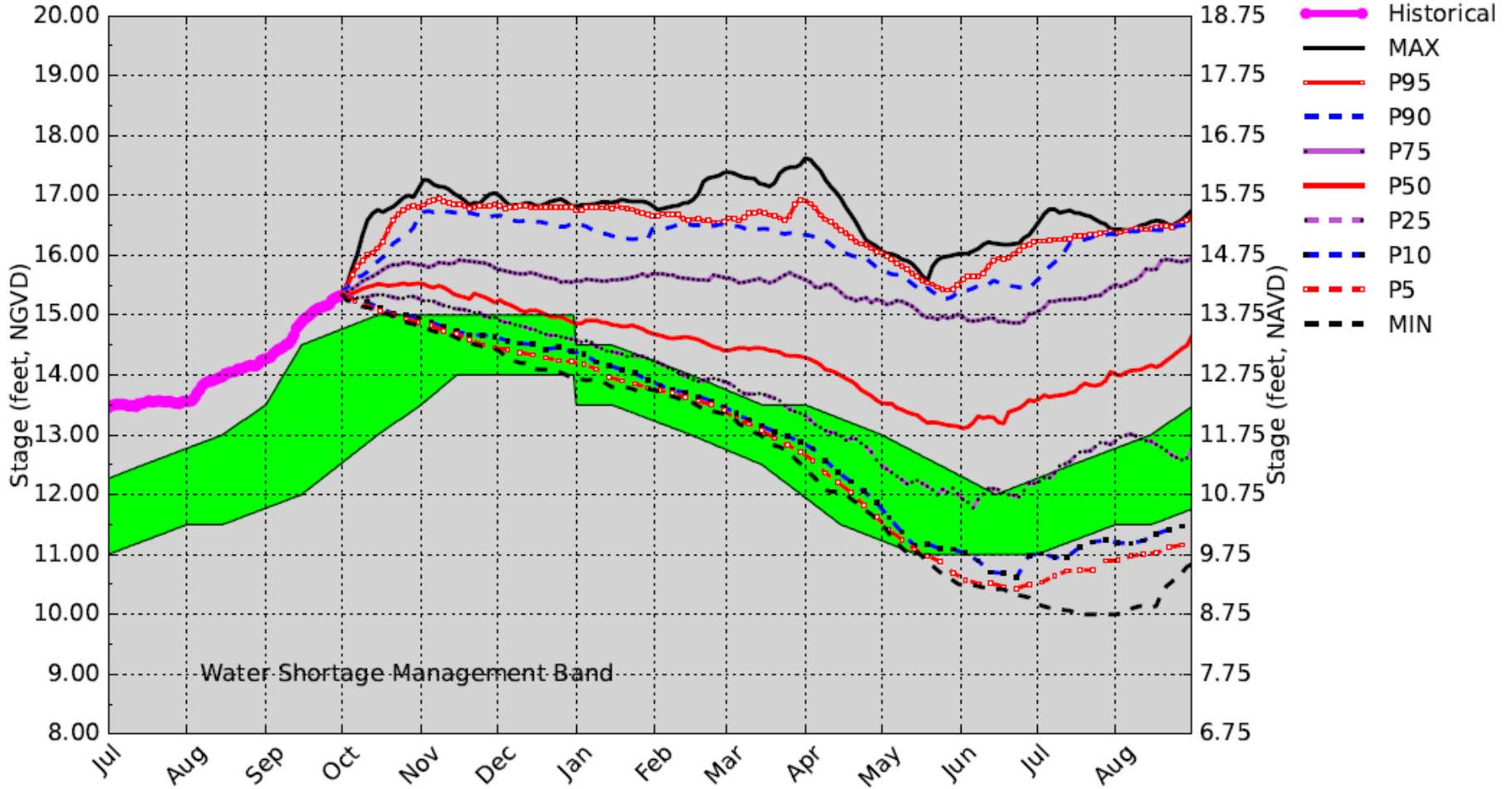
## Percentiles PA



(See assumptions on the Position Analysis Results website)

# Lake Okeechobee SFWMM October 2024 Position Analysis

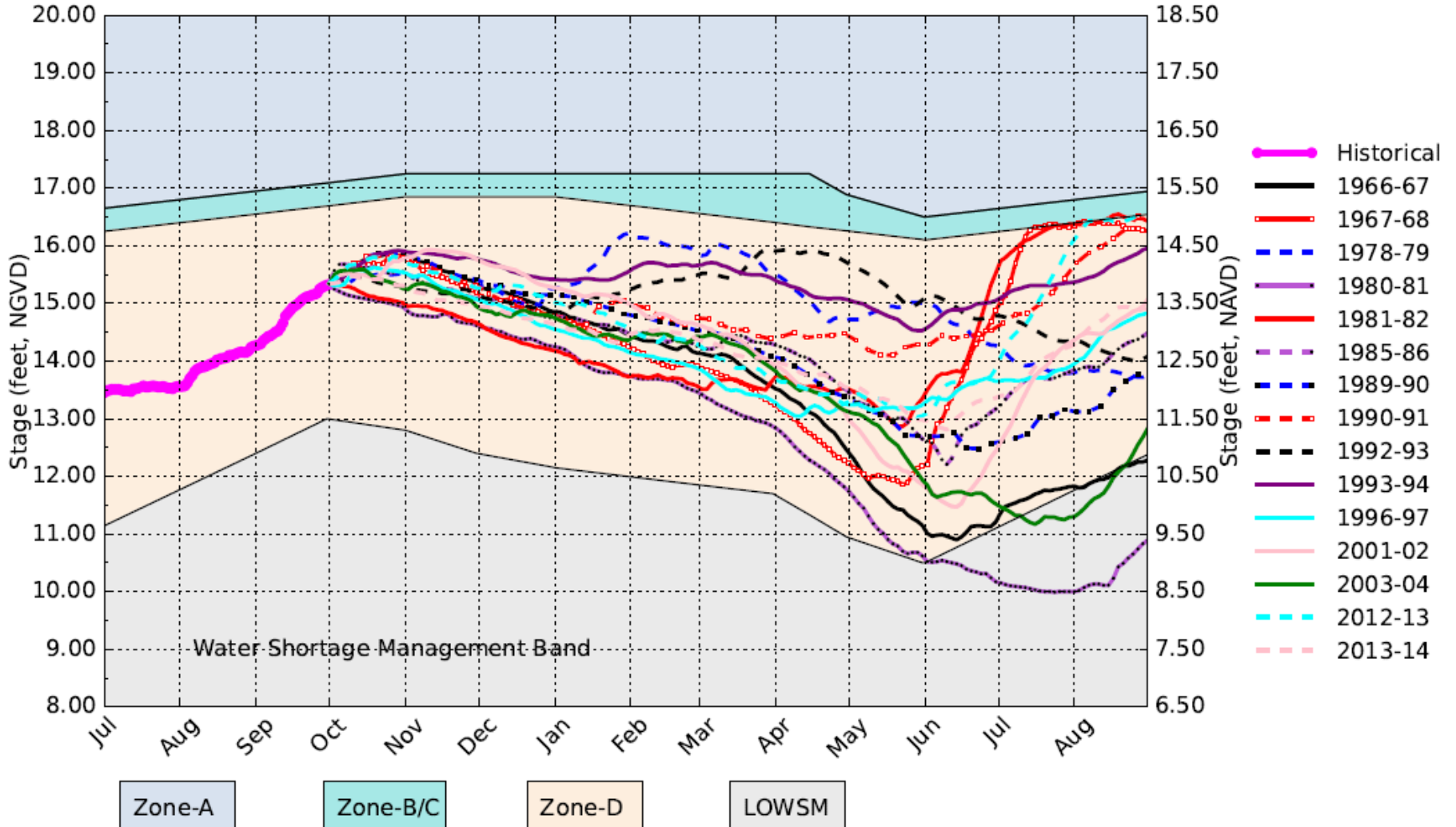
## Percentiles PA



(See assumptions on the Position Analysis Results website)

# Lake Okeechobee SFWMM October 2024 Position Analysis

## All ENSO Neutral Years Plot PA

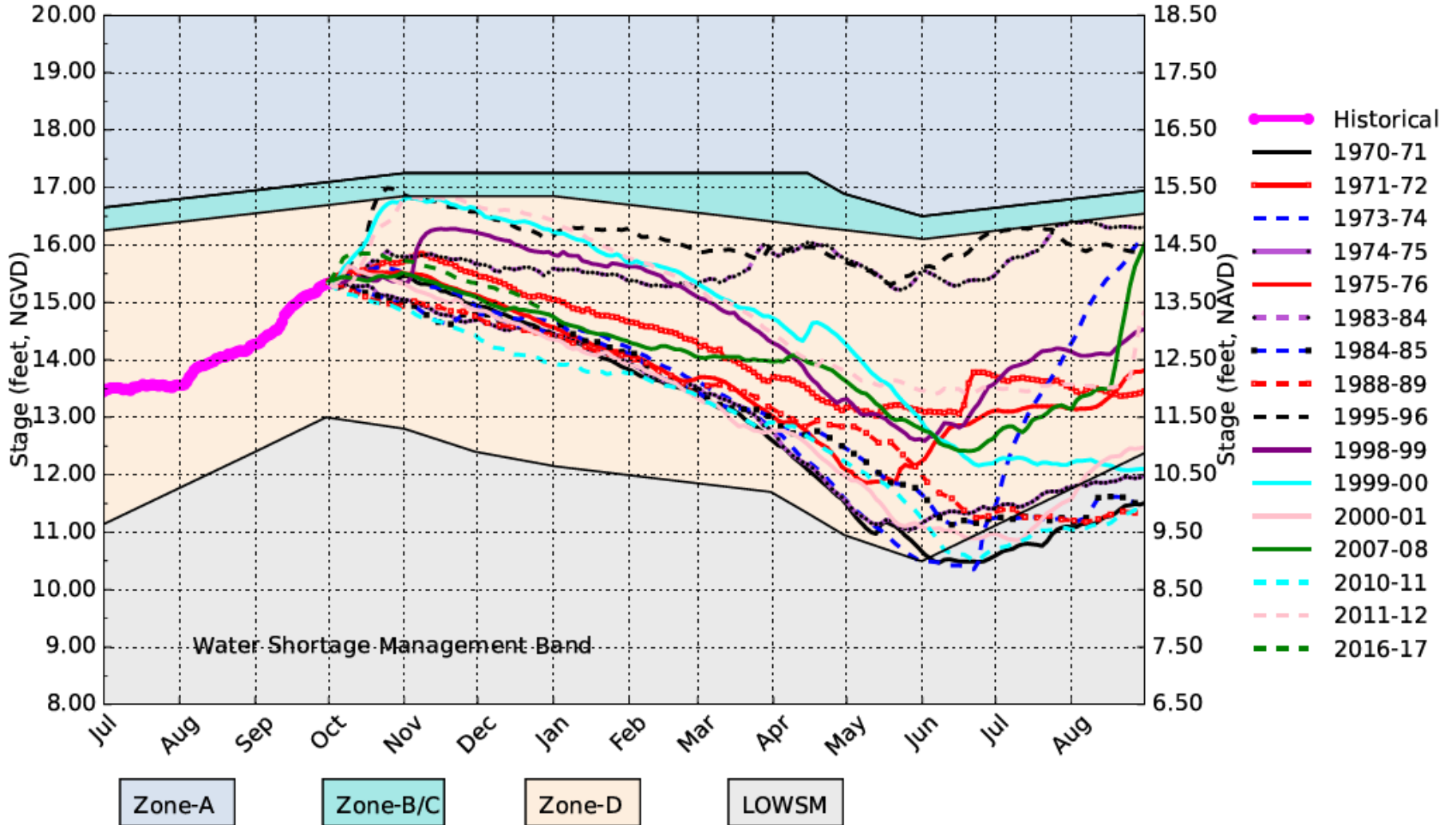


(See assumptions on the Position Analysis Results website)



# Lake Okeechobee SFWMM October 2024 Position Analysis

All La Nina Years Plot PA



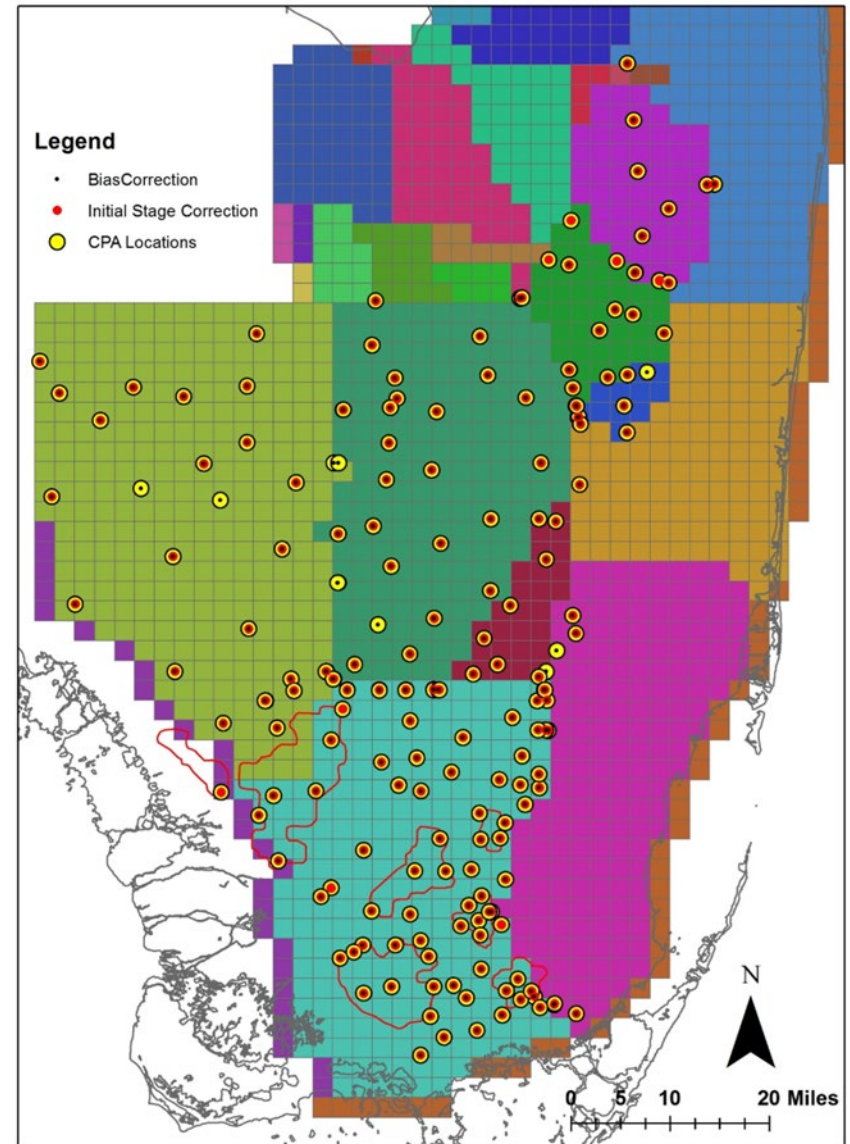
(See assumptions on the Position Analysis Results website)



# Conditional Position Analysis Overview

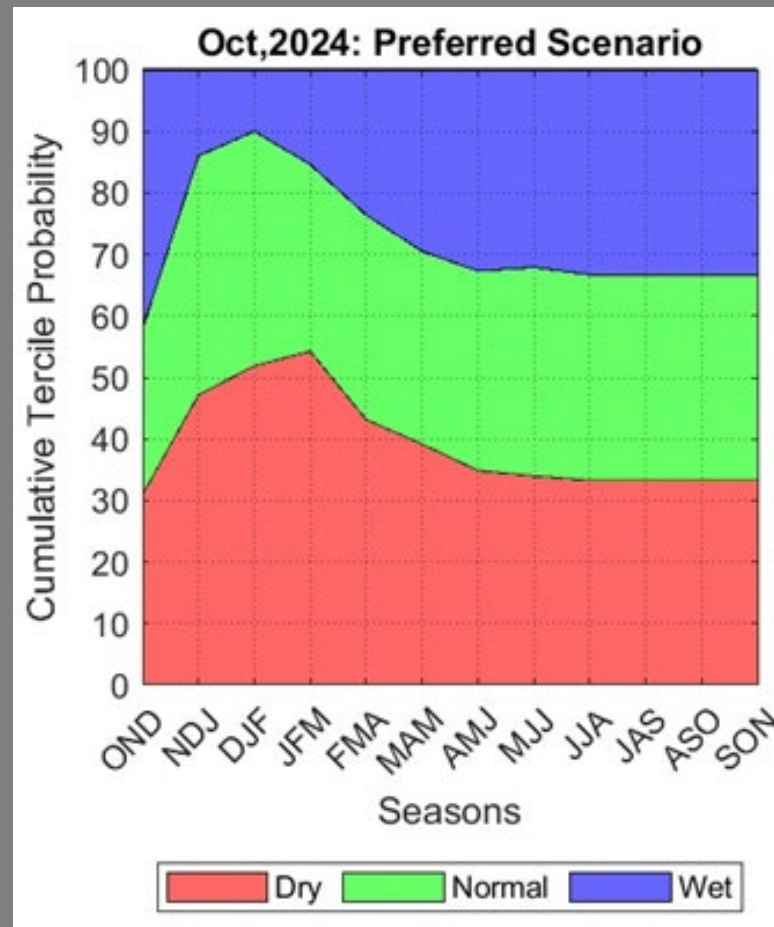
- CPA is a stochastic framework that transforms stages obtained from Dynamic Position Analysis (DPA) based on forecasted rainfall conditions over the next twelve months (Ali, 2016).
- DPA stage outputs are used as inputs to CPA.
- CPA is implemented for Lake Okeechobee and 200+ locations in the Everglades.

Conditional Position Analysis (CPA) Gage Locations



# October 2024 CPA: Rainfall Scenarios

Rainfall probabilities are calculated based on historical data and projected Niño-3.4 Index (Climate Prediction Center - El Niño Southern Oscillation (noaa.gov) published by CPC.



Lake Okeechobee – LOSOM CPA implementation shows the percentile lines slightly shift upward until March 2025, though the stage recession rate are slightly higher from November 2024 compared to climatological percentile lines.

