

Extended Hydrologic Outlook

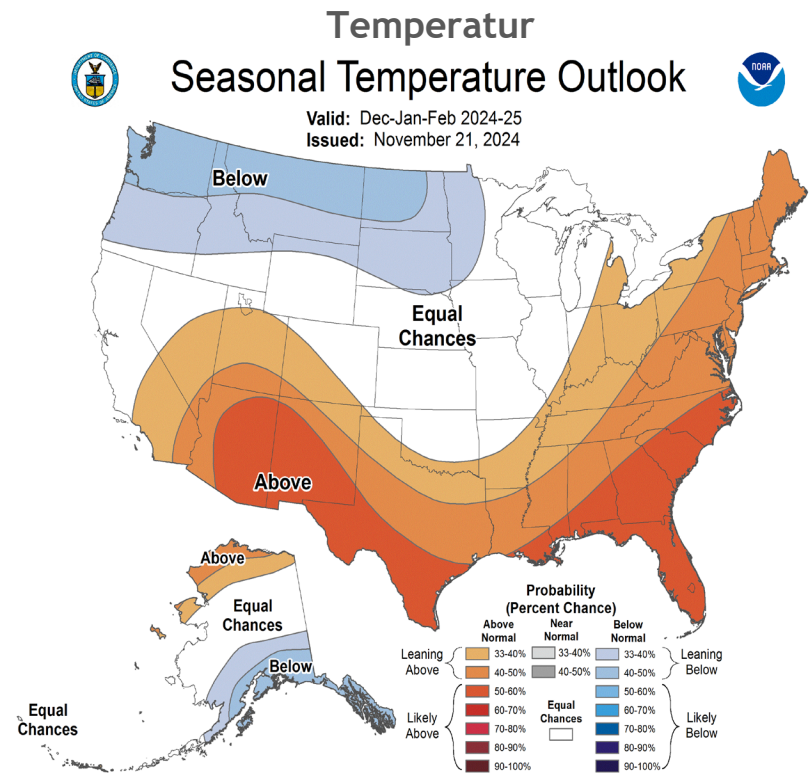
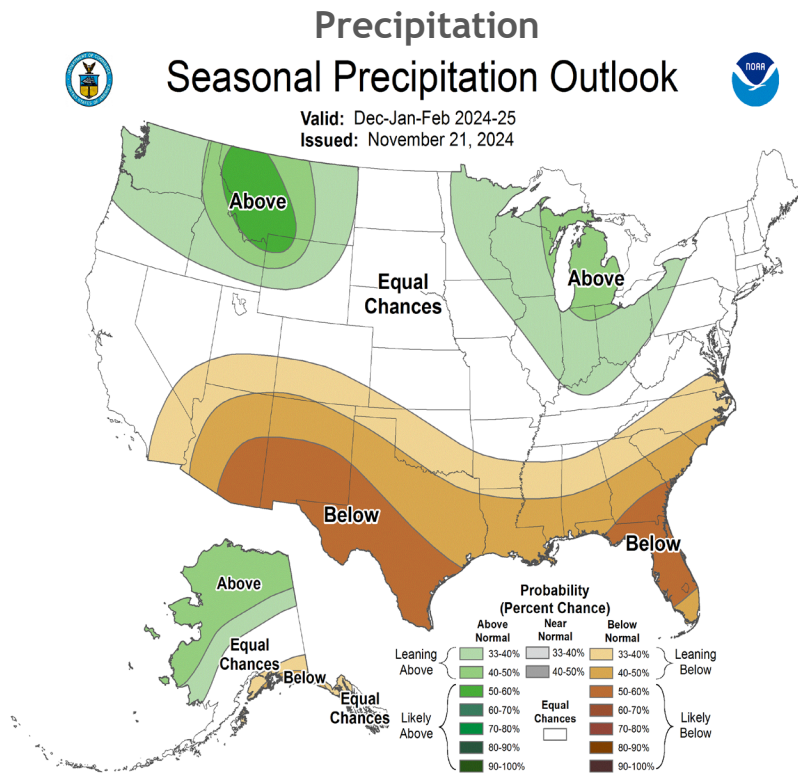
December 10, 2024

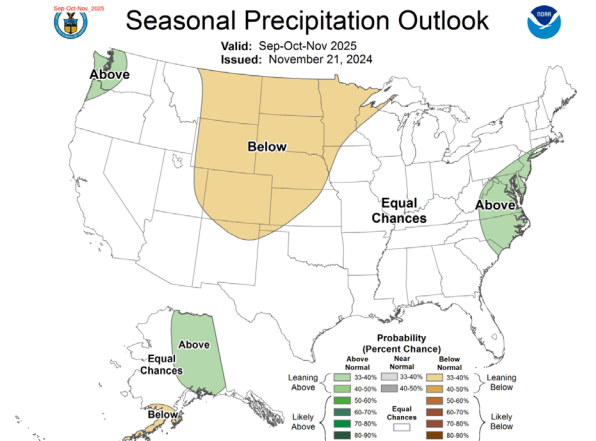
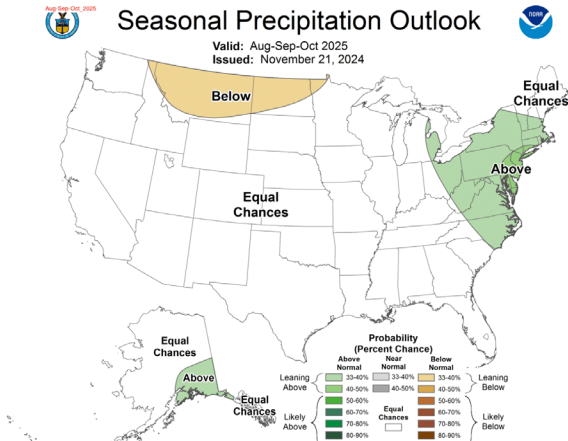
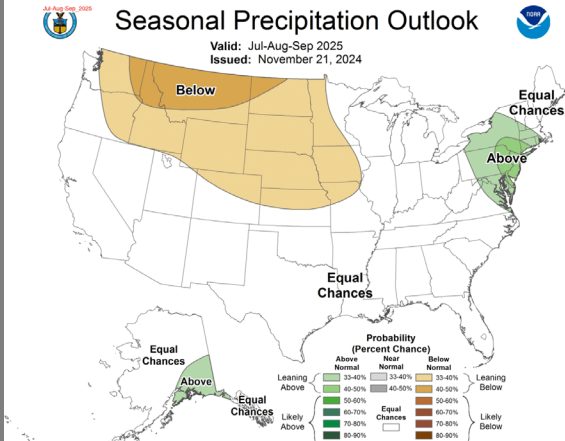
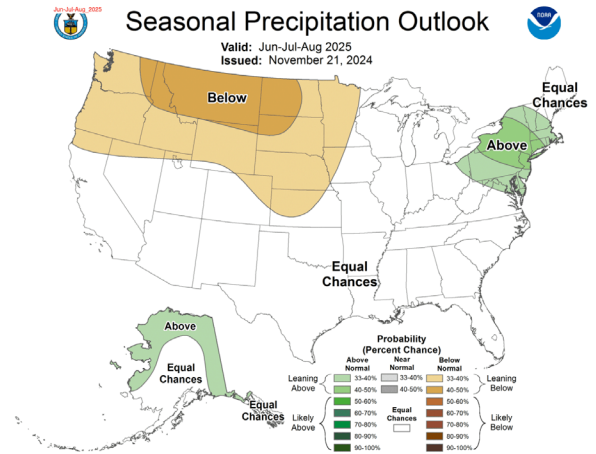
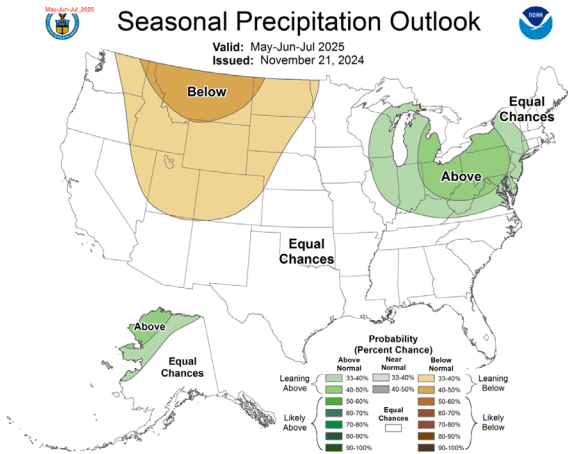
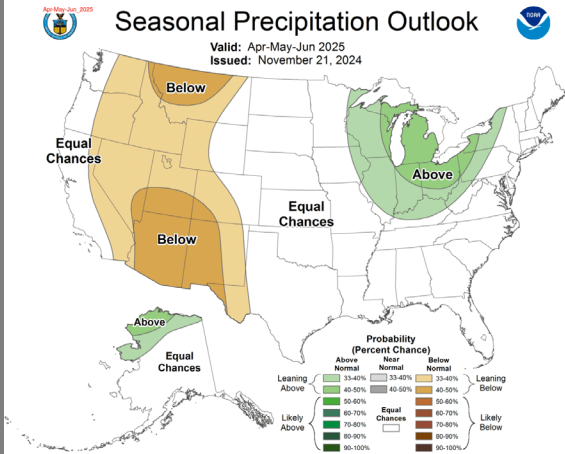
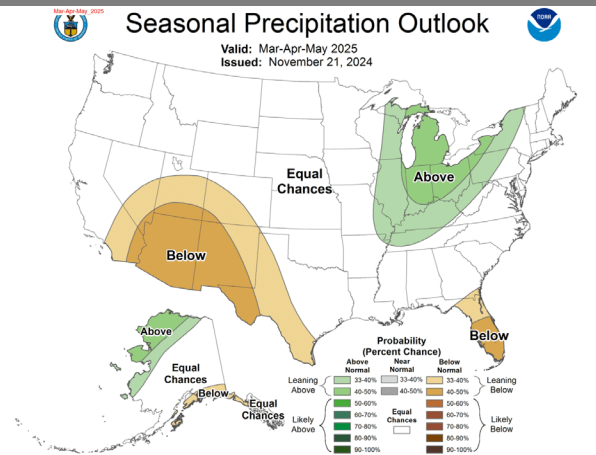
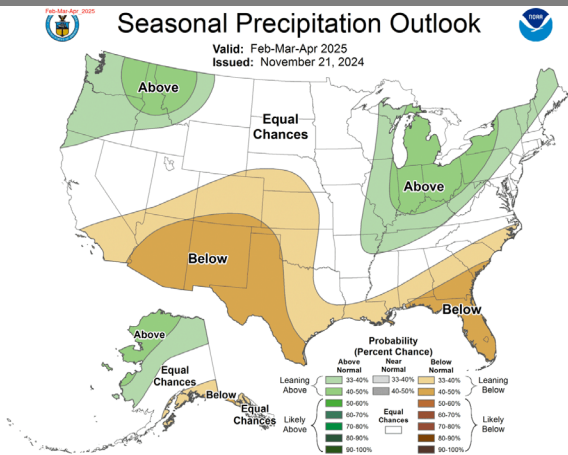
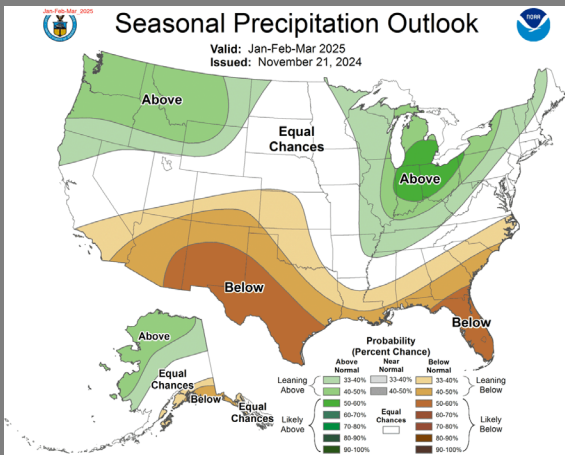
- The Climate Prediction Center (CPC) is forecasting below normal rainfall for December through February.
- ENSO Neutral conditions are present. La Niña is most likely to emerge in October-December 2024 (57% chance) and is expected to persist through January-March 2025.
- Atlantic Multidecadal Oscillation (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

December 2024 - February 2025

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

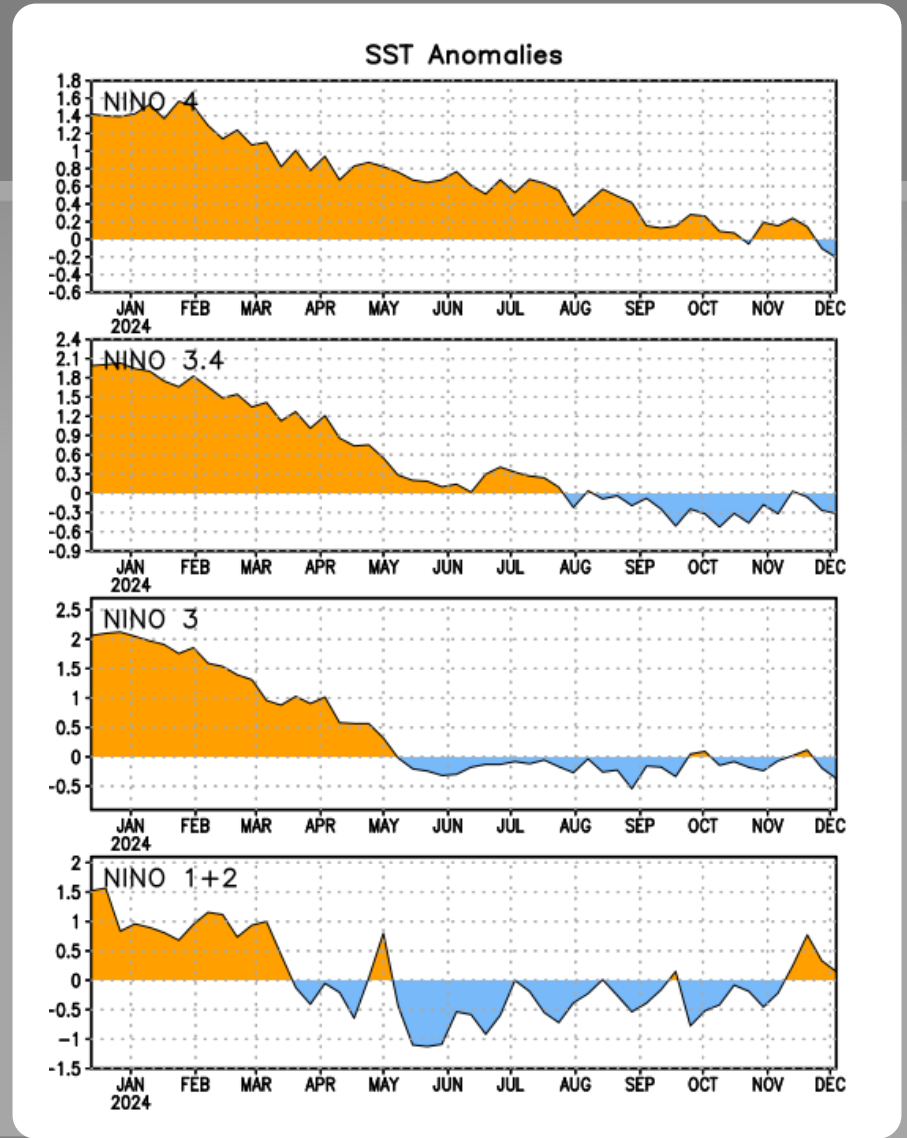
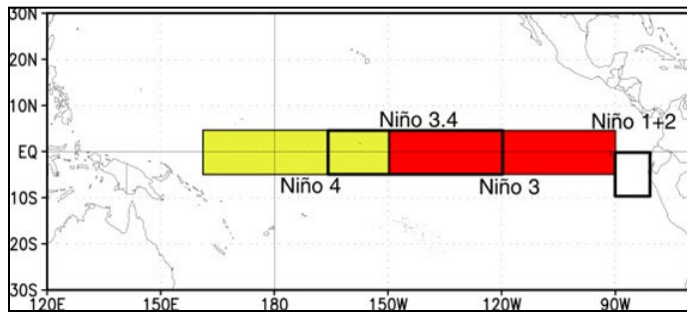
Atlantic Multidecadal Oscillation (AMO)

- 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

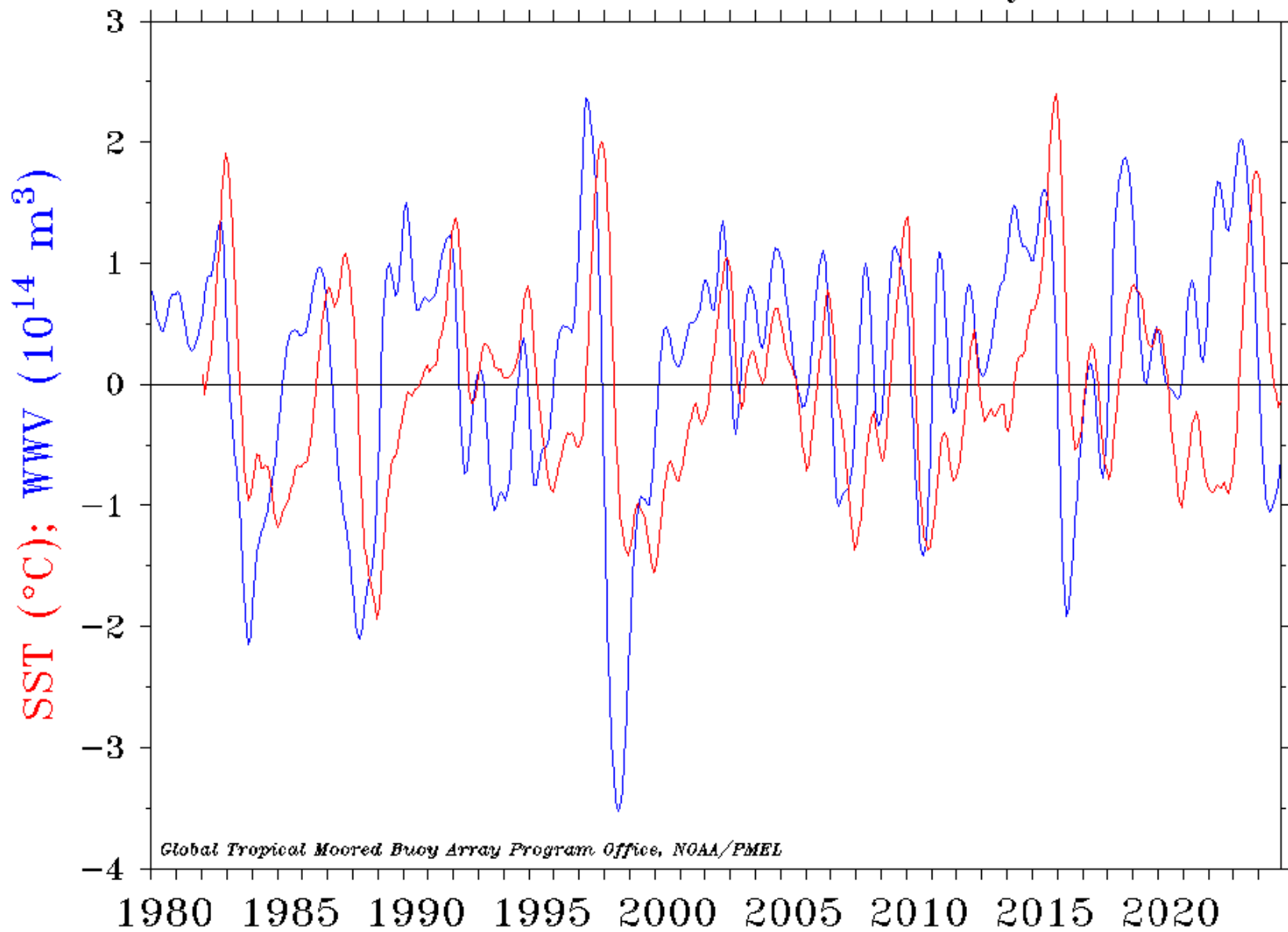
The latest weekly SST departures are:

| | |
|----------|--------|
| Niño 4 | -0.2°C |
| Niño 3.4 | -0.3°C |
| Niño 3 | -0.4°C |
| Niño 1+2 | 0.1°C |

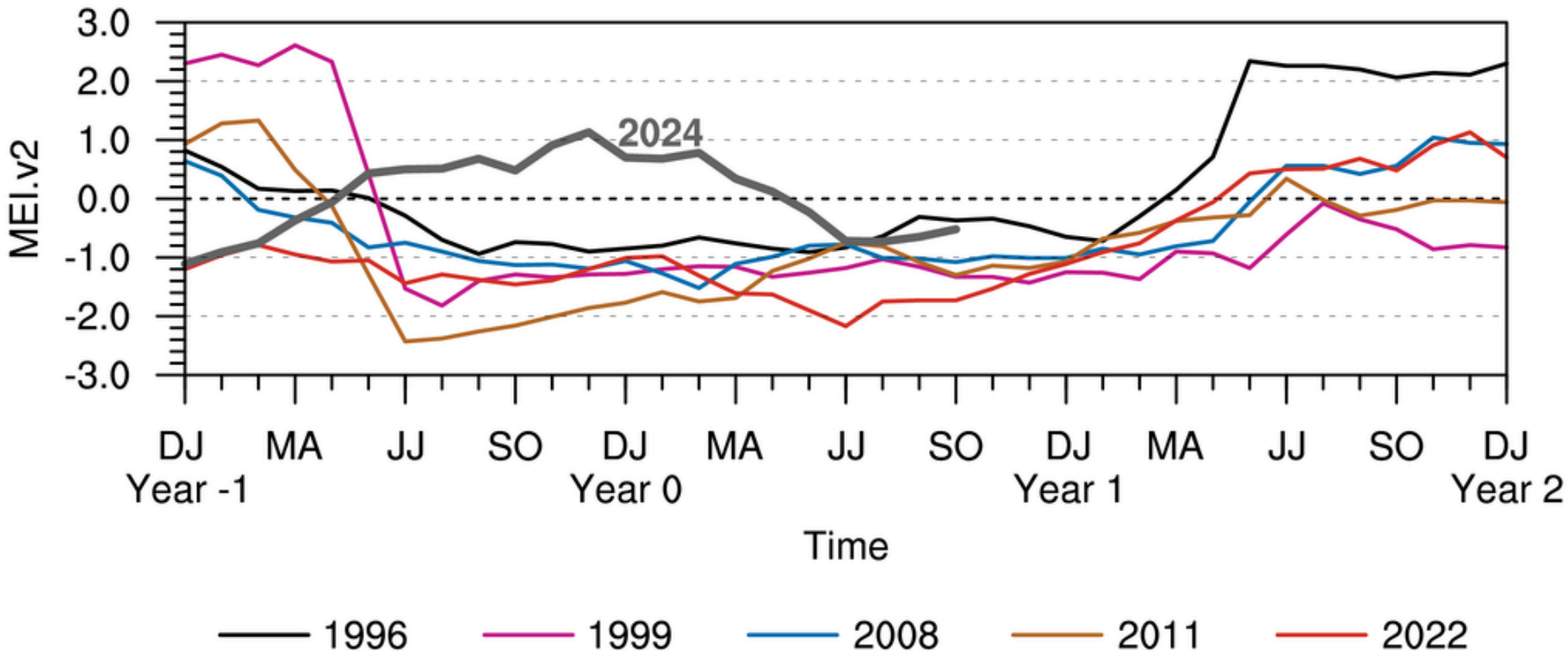


This weekly sea surface temperature data is based on OISSTv2.1 (Huang et al., 2021).

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 Winter Outlook





U.S. Winter Outlook: Warmer and drier South, wetter North

Drought relief likely in the Ohio River Valley and Great Lakes regions due to La Nina

Focus areas: Weather Topics: winter, climate outlooks

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October 17, 2024

Temperature

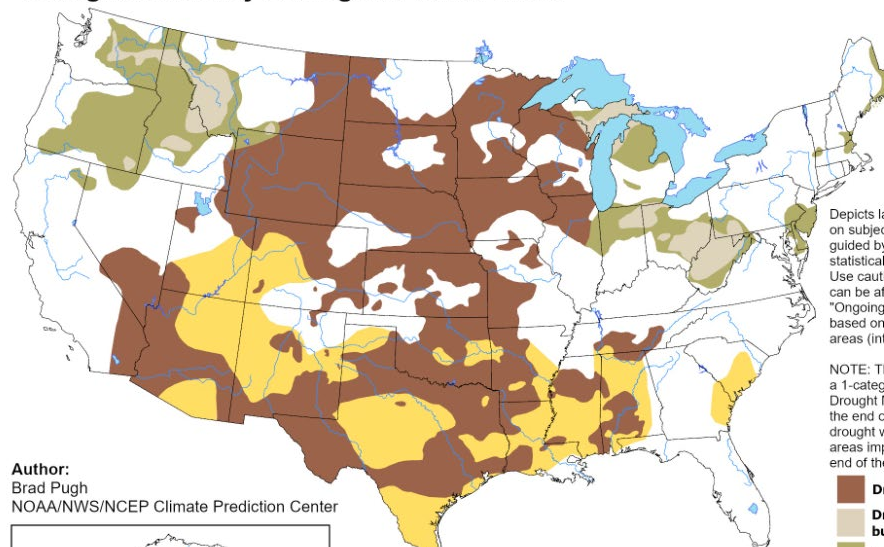
Warmer-than-average temperatures are favored from the southern tier of the U.S. to the eastern Great Lakes, eastern seaboard, New England and northern Alaska.

Precipitation

The greatest likelihood for drier-than-average conditions are in states bordering the Gulf of Mexico, as well as in Texas and southern New Mexico.

U.S. Seasonal Drought Outlook Drought Tendency During the Valid Period

Valid for October 17, 2024 - January 31, 2025
Released October 17, 2024

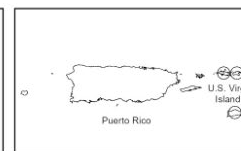
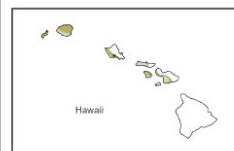


Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

- Drought persists
- Drought remains, but improves
- Drought removal likely
- Drought development likely
- No drought

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December 2024 DPA Assumptions

- The December 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 December 1, 2024 DPA resets the initial stages for Lake Okeechobee (LOK) and the Water Conservation Areas (WCAs) on November 1st of each year of the DPA simulation and conditions the simulation to real time data during November to achieve real time stages on December 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 Recovery Operations

Starting December 7 the U.S. Army Corps of Engineers (USACE) -Jacksonville District will begin releases under Lake Okeechobee Recovery Operations. The goal of recovery is to lower lake levels before the onset of the wet season to allow for recovery of lake ecology.

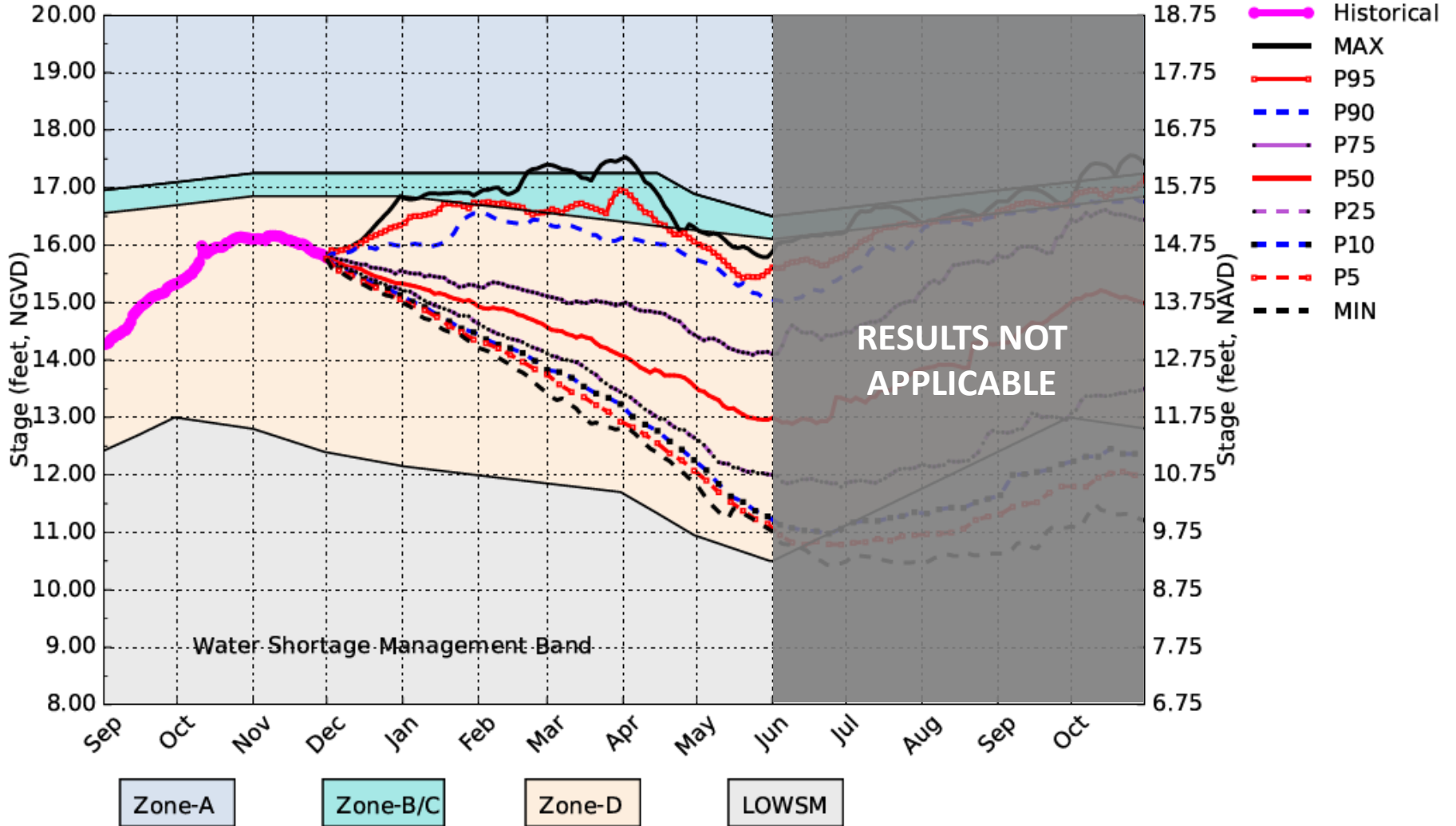
- SFWMM model assumptions for the December 1, 2024 DPA
 - Lake Okeechobee releases
 - 2100 cfs at S-79 to the Caloosahatchee River Estuary (CRE)
 - 750 cfs at S-80 to the St. Lucie Estuary (SLE)
 - 750 cfs is a regulatory release from Lake Okeechobee and therefore does not account for flow at S-97, S-49, or Gordy Road
 - Maximum practicable releases south

NOTE:

The above flow assumptions were applied to the entire simulation period and not just dry season, unlike the intention of RO. Hence, DPA-CPA results after June 1 are not applicable and masked for LO and downstream locations.

Lake Okeechobee SFWMM December 2024 Position Analysis

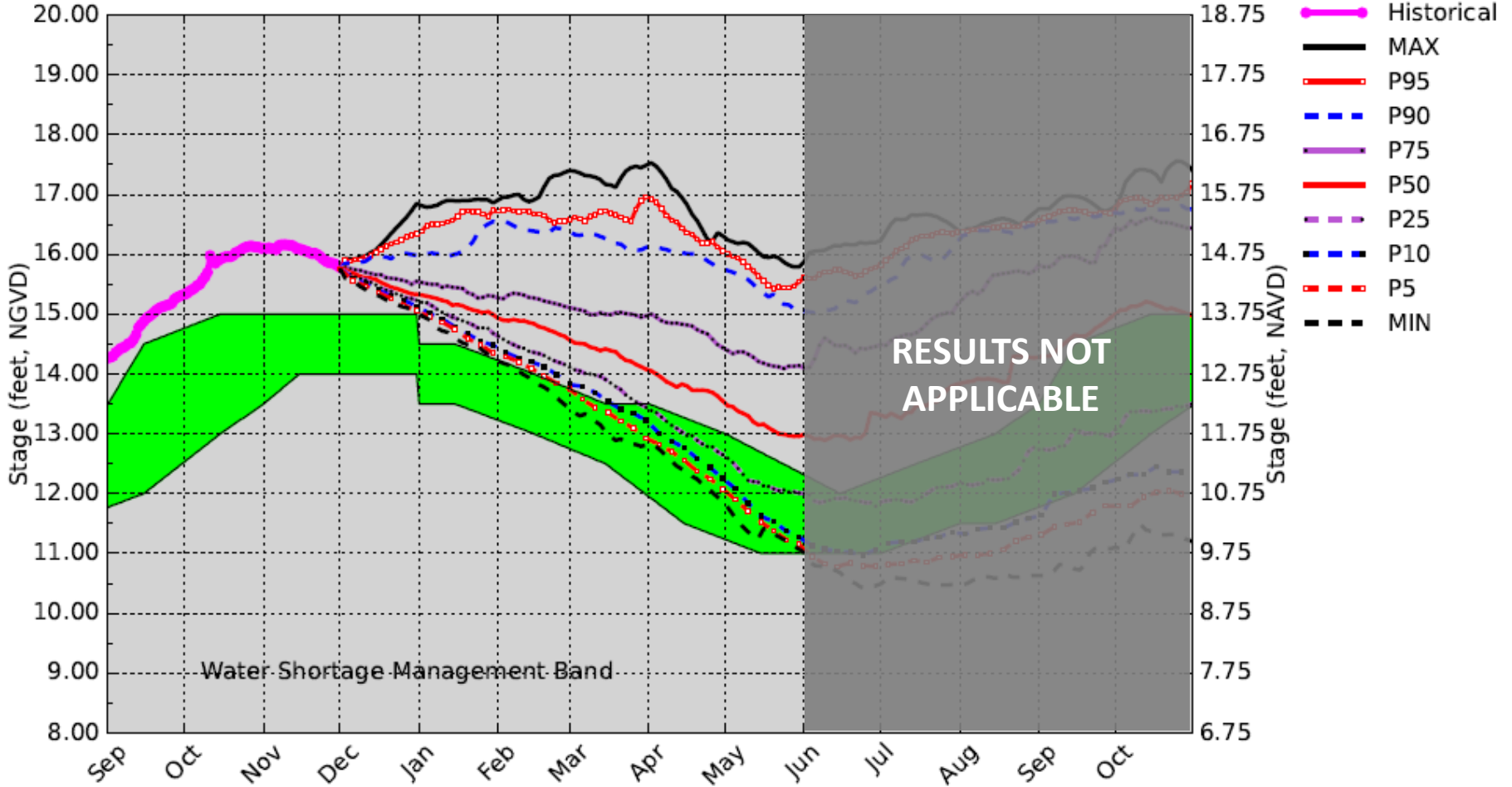
Percentiles PA



(See assumptions on the Position Analysis Results website)

Lake Okeechobee SFWMM December 2024 Position Analysis

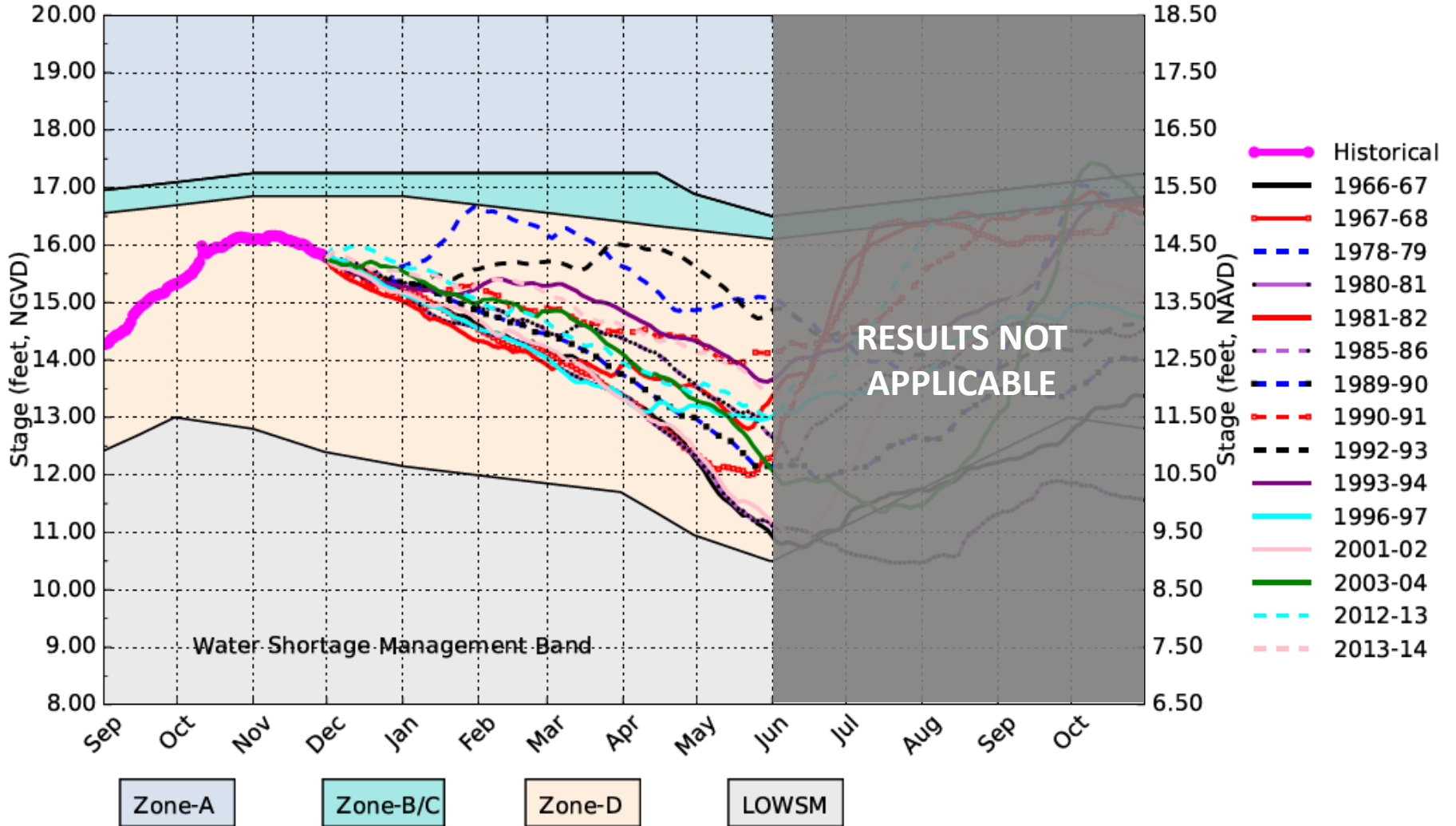
Percentiles PA



(See assumptions on the Position Analysis Results website)

Lake Okeechobee SFWMM December 2024 Position Analysis

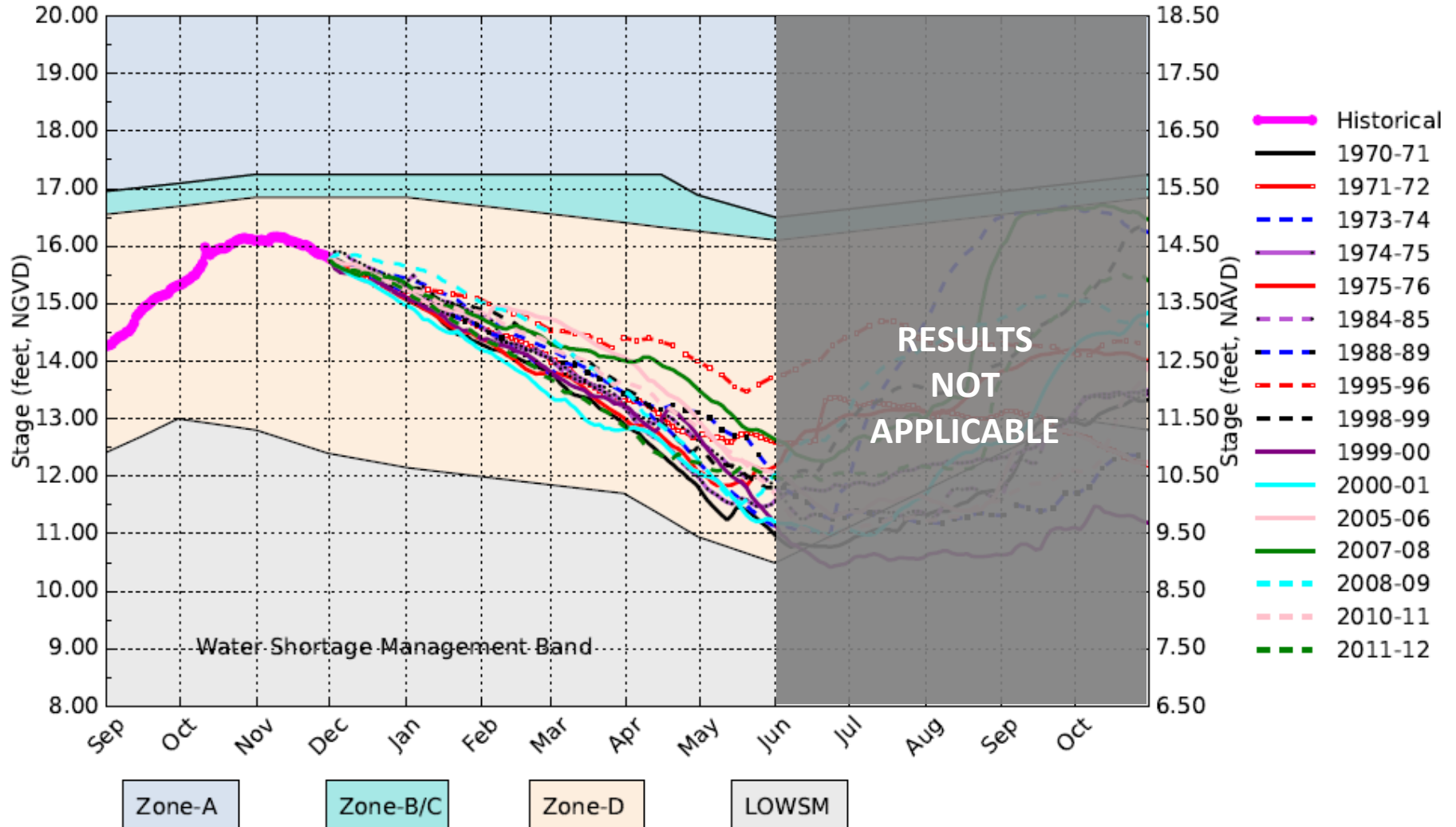
All ENSO Neutral Years Plot PA



(See assumptions on the Position Analysis Results website)

Lake Okeechobee SFWMM December 2024 Position Analysis

All La Nina Years Plot PA

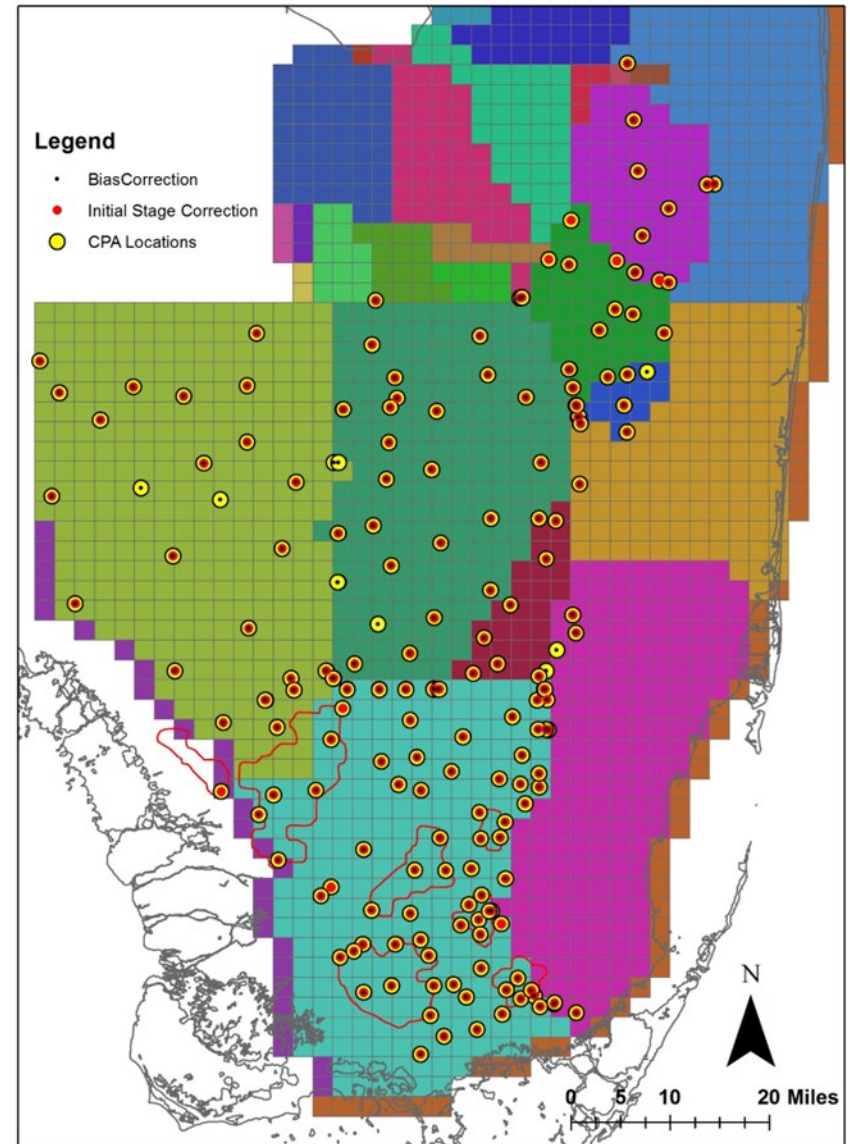


(See assumptions on the Position Analysis Results website)

Conditional Position Analysis Overview

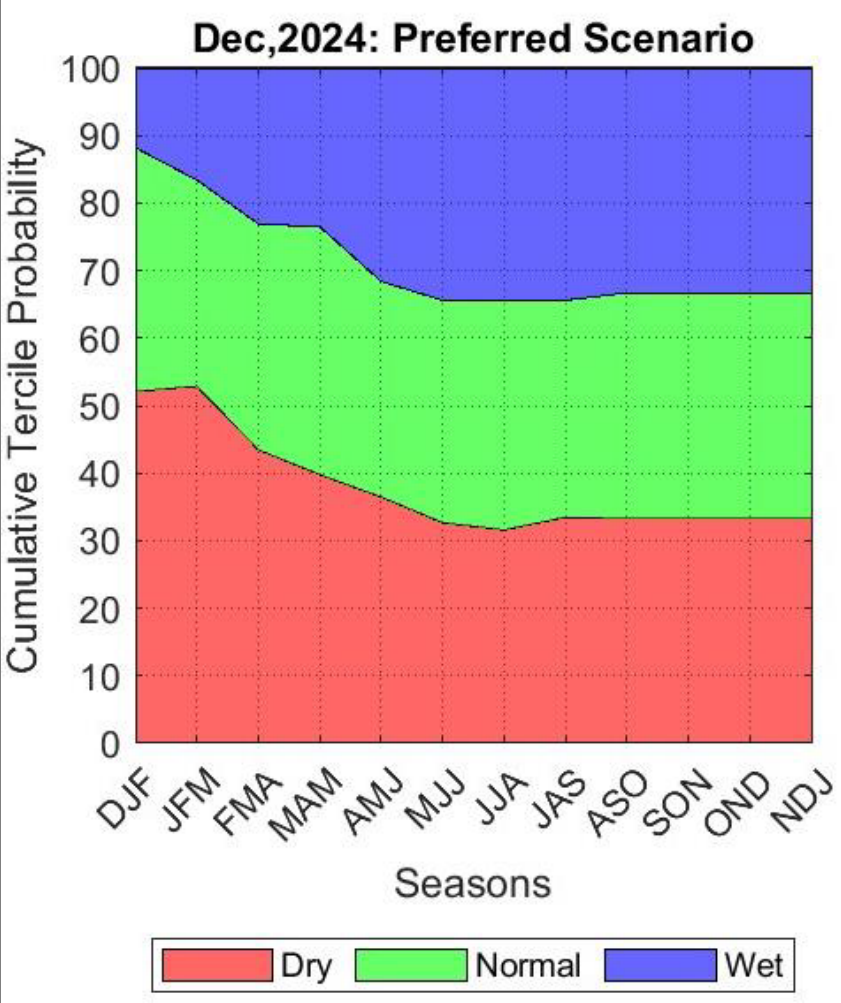
- CPA is a stochastic framework that transforms stages obtained from Dynamic Position Analysis (DPA) based on forecasted rainfall conditions over the next twelve months (Ali, 2016).
- DPA stage outputs are used as inputs to CPA.
- CPA is implemented for Lake Okeechobee and 200+ locations in the Everglades.

Conditional Position Analysis (CPA) Gage Locations



December 2024 CPA: Preferred Rainfall Scenario

Seasonal rainfall tercile probabilities are calculated using a transition coefficient matrix that is based on historical rainfall data (1914 – 2022). Projected Niño-3.4 published by CPC is then used to calculate rainfall tercile probability projections.



Lake Okeechobee – LOSOM CPA implementation shows Recovery Operations CPA implementation shows that all percentile lines shift down from the respective DPA percentile lines by ~ 0.3 to 0.6 ft by the end of May 2024. Under PrefScenario median trace projected stage is at ~12.3 ft NGVD, a 0.5 ft downward shift from LOSOM Recovery Operations DPA and ~1.3 ft downward shift from LOSOM regular DPA.

