

Winter Seasonal Forecasts for Florida's Water Management Districts and Water Suppliers in Central Florida

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Florida
Climate Institute
AT FLORIDA STATE UNIVERSITY



FSU Objectives of the NASA project

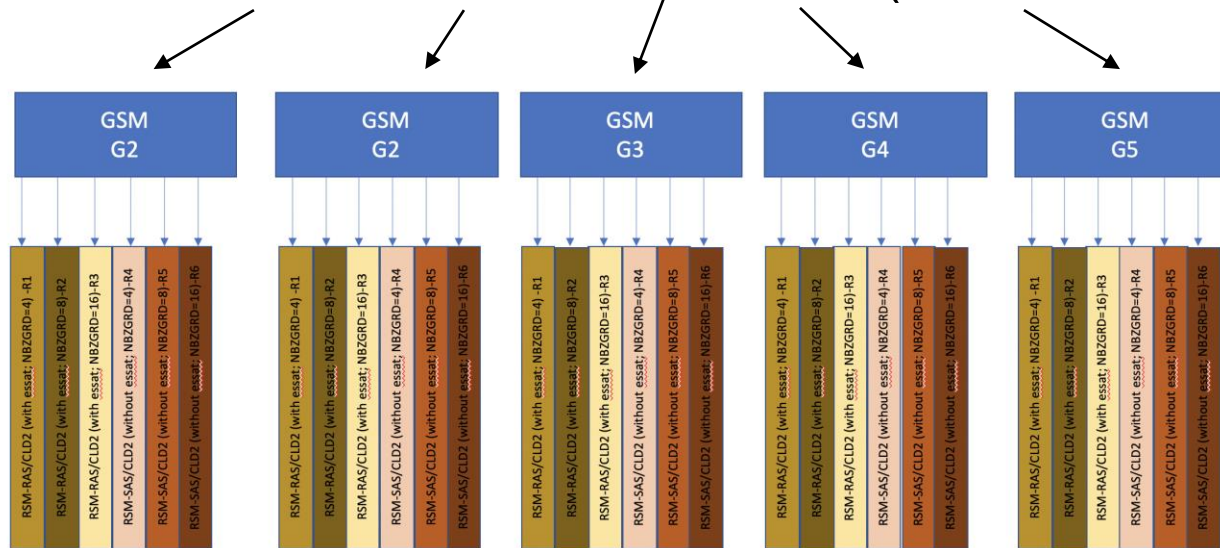


“Customized”: includes high resolution, high forecast skill, specific to water management districts and watersheds of the water suppliers

- Develop “customized” winter seasonal forecasts for Florida; **CLIFF**: experimental seasonal **CL**imate **F**orecasts for **F**lorida
- Develop a real time monitoring and seasonal outlook of the rainy (summer) season for Florida
- Transition of the winter forecasts to operations in Tampa Bay Water and Peace River Manasota Regional Water Supply Authority

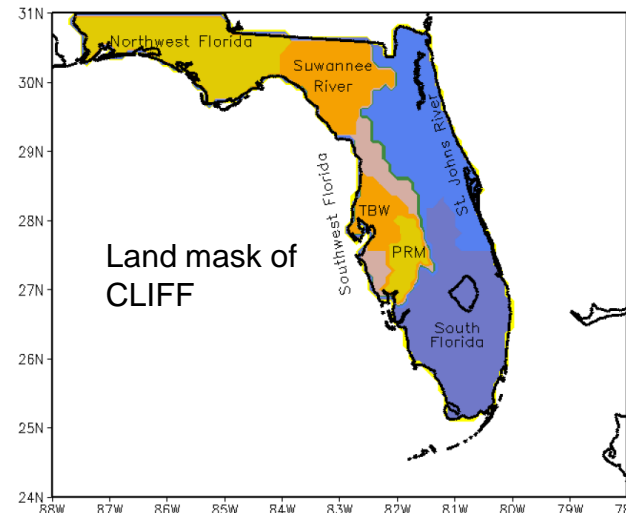
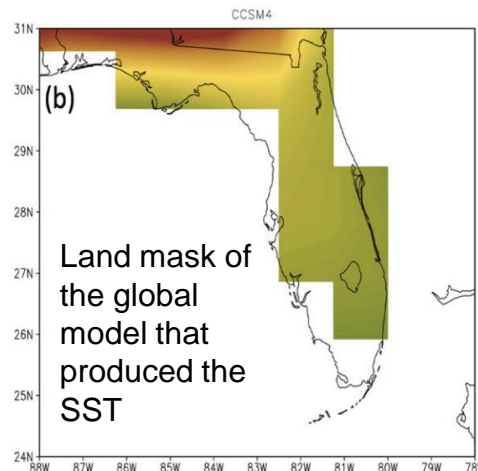
Model winter forecast strategy

SST forecast from U. Miami (Ben Kirtman)

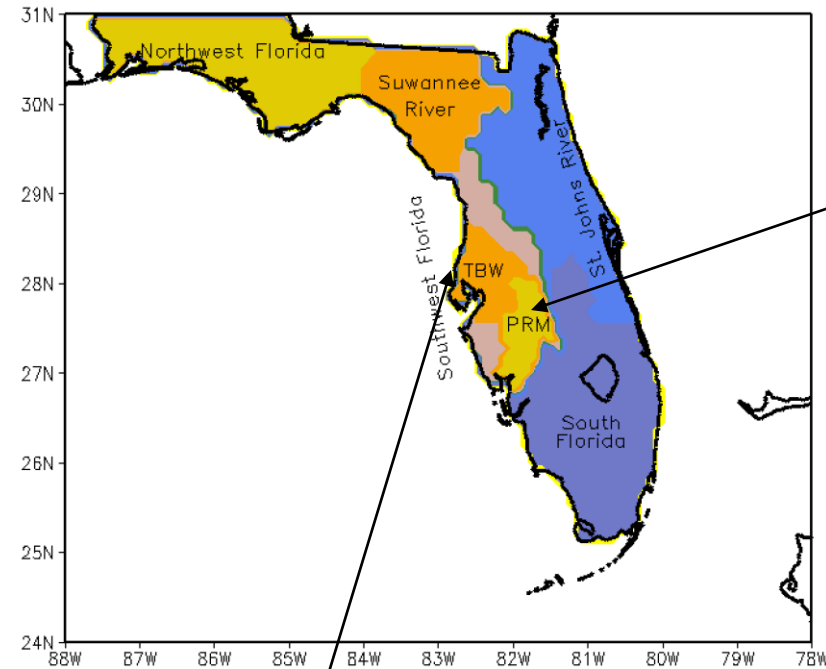
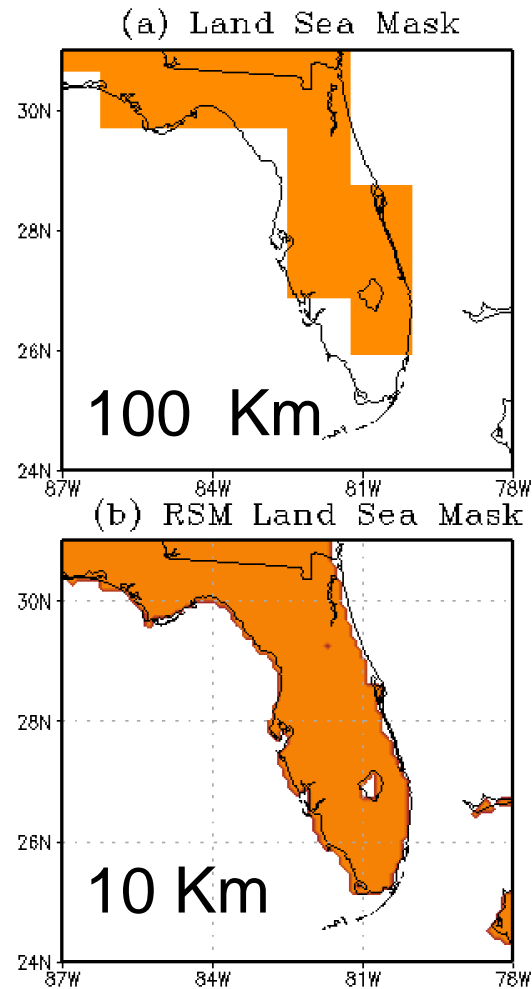


Highlights

1. Model forecast initialized on 1st November
2. Model forecasts for November-December-January (0-month lead) AND December-January-February (1-month lead)
3. 30 ensemble member seasonal re-forecasts at 10km grid resolution completed from 2000 to 2019



10km Vs. 100km



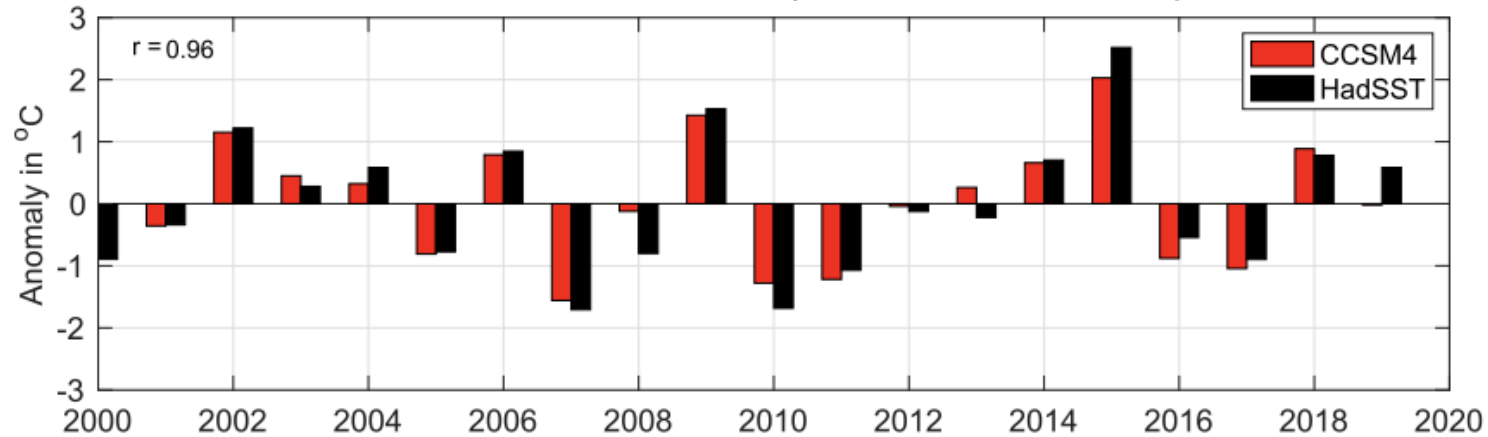
47 grid points

73 grid points

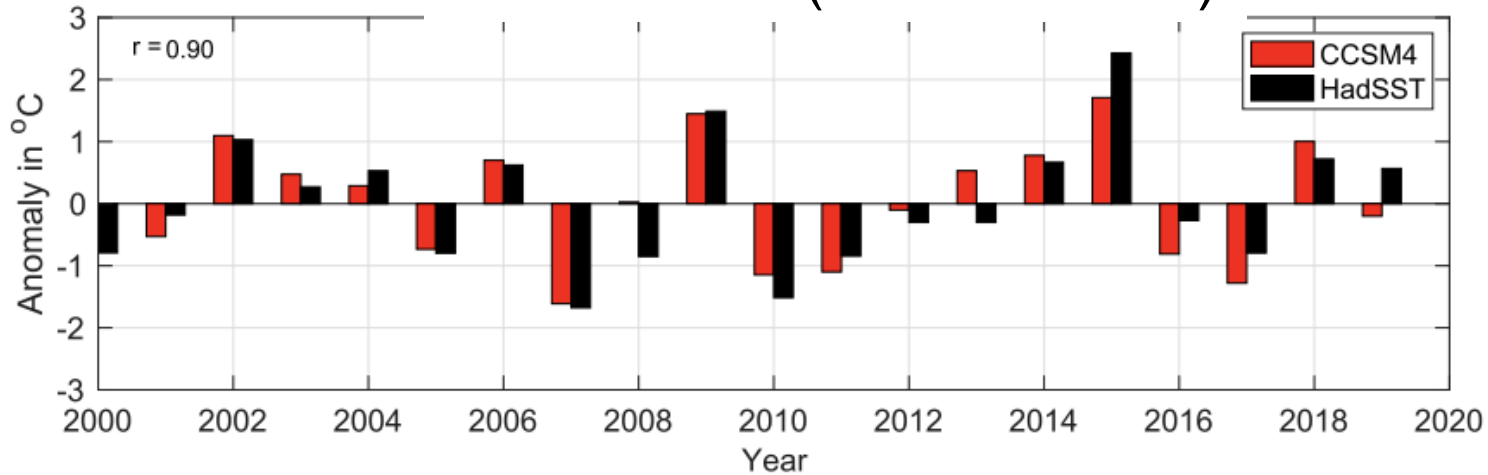
Skill of the forecasted SST used in CLIFF



NDJ season (0-month lead)



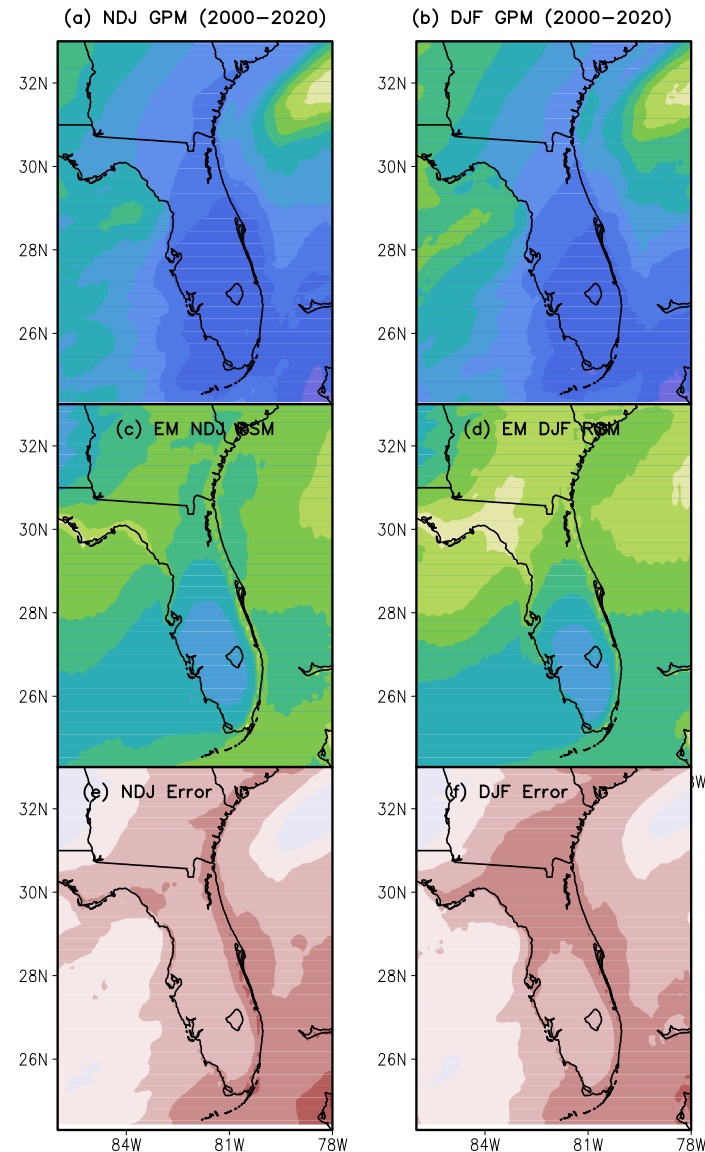
DJF season (1-month lead)



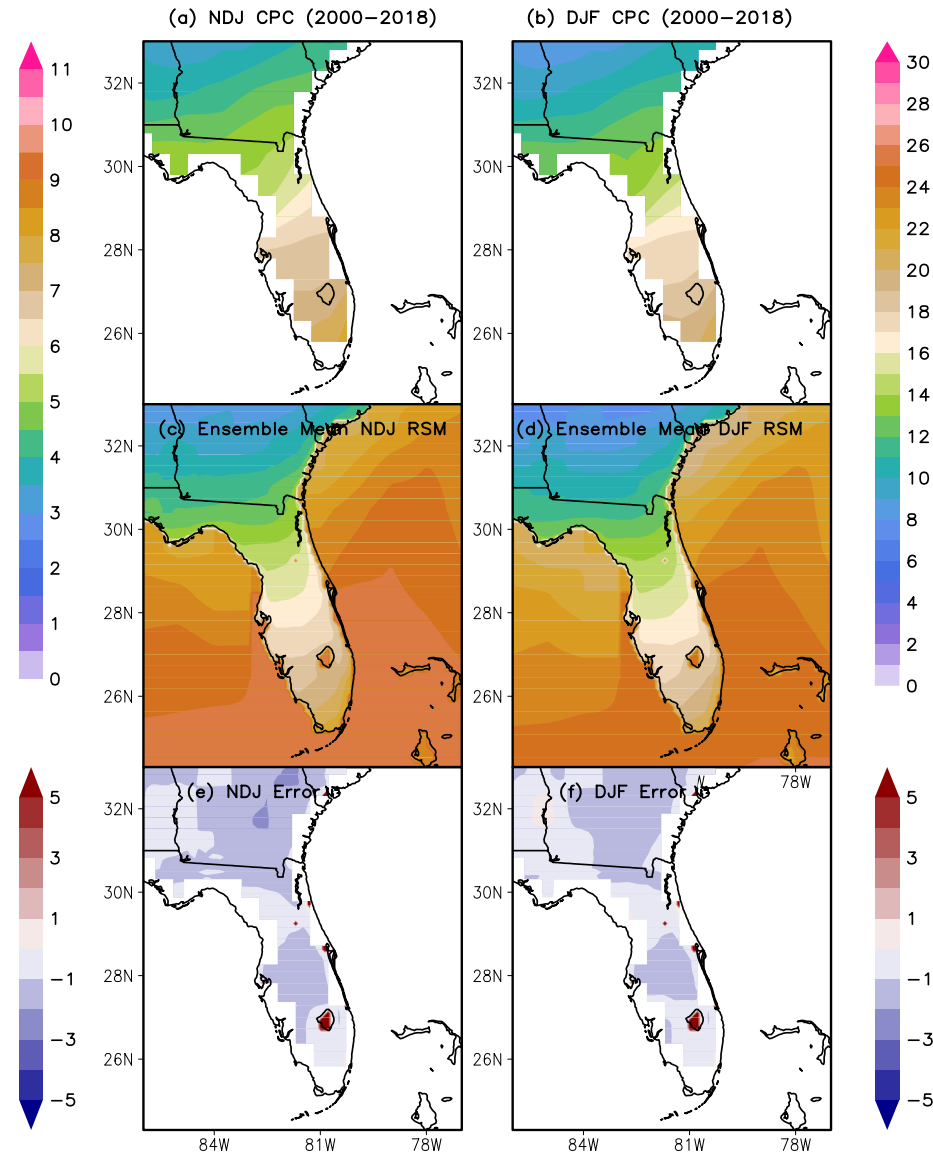
Reforecast verification



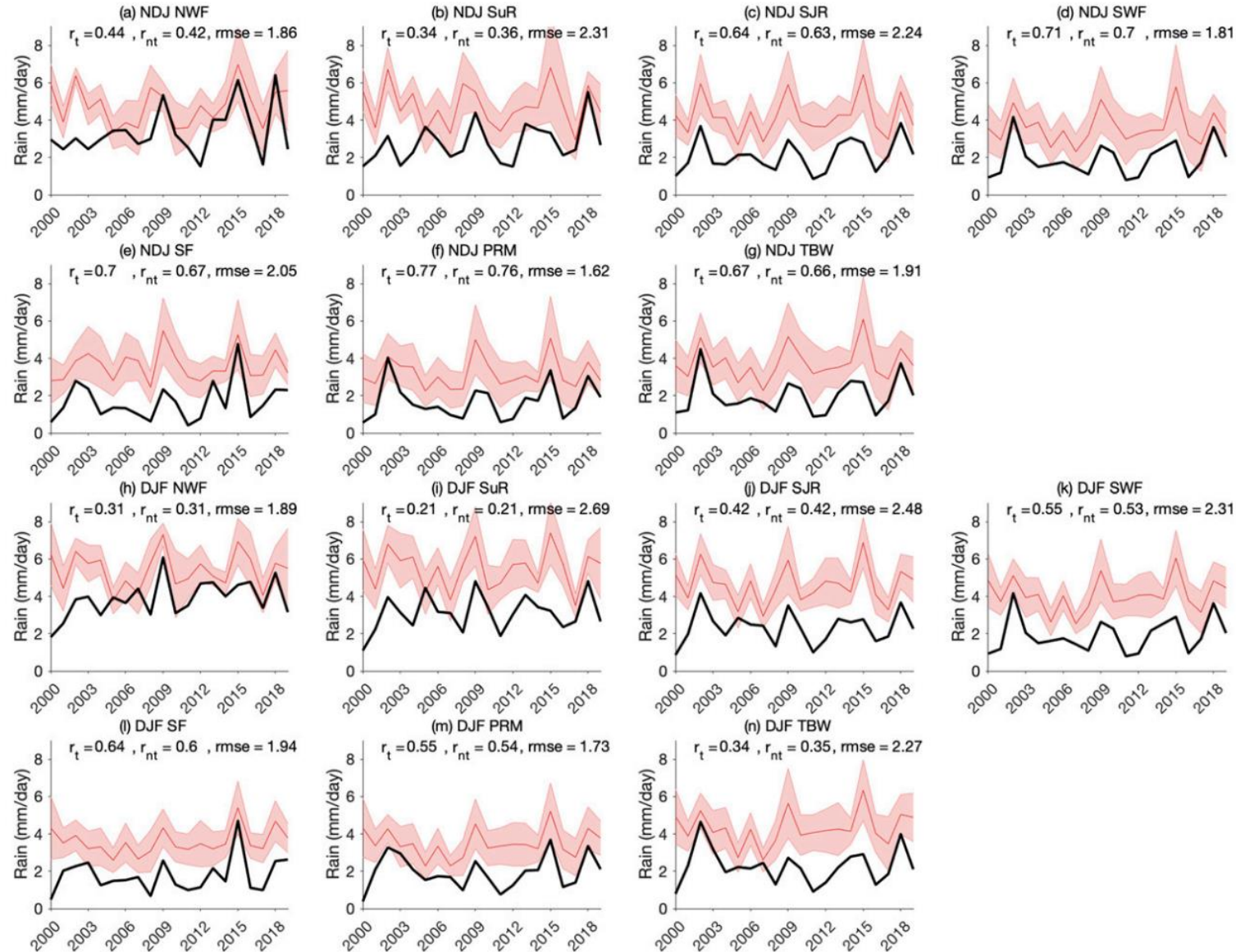
Seasonal Precipitation



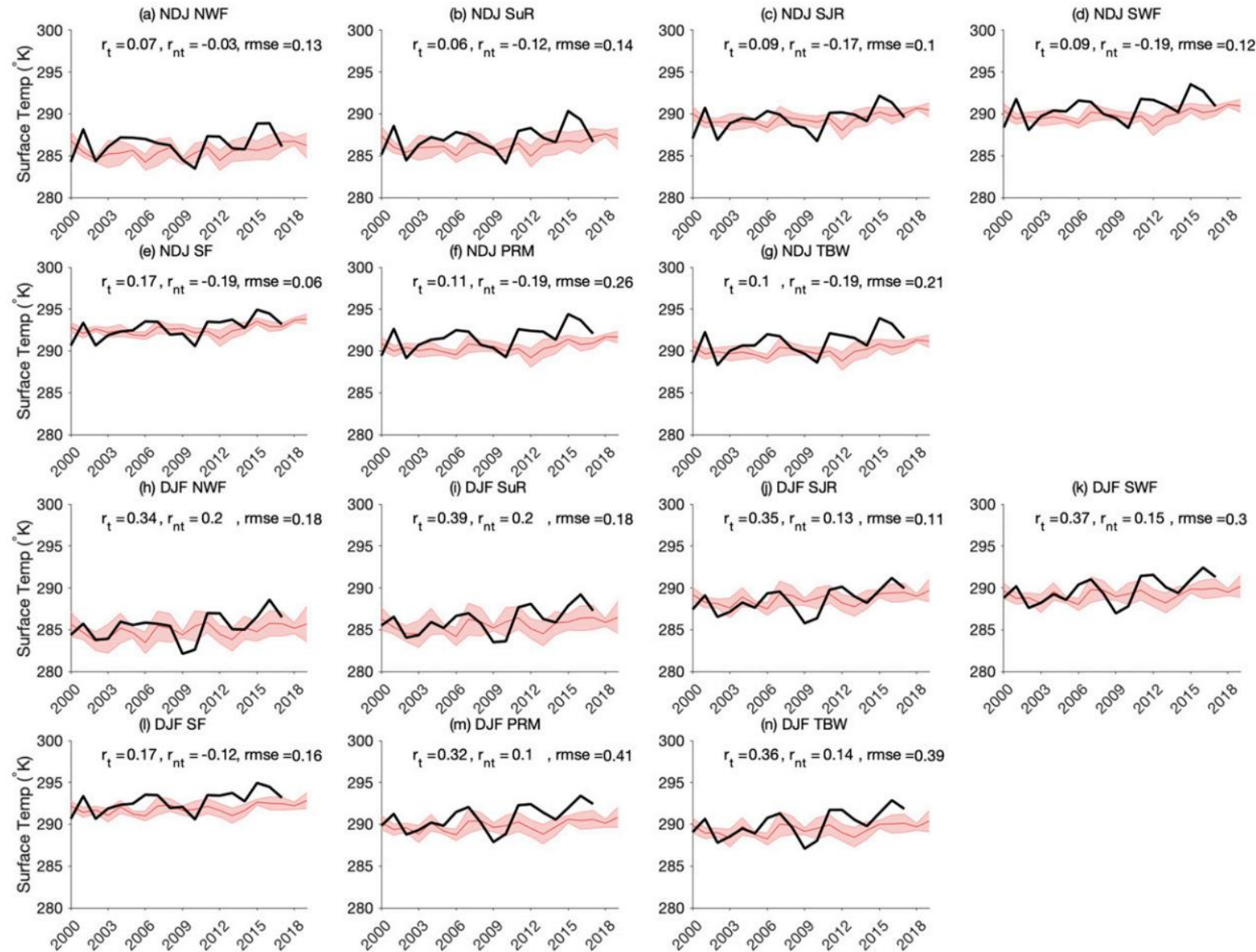
Seasonal Temperature



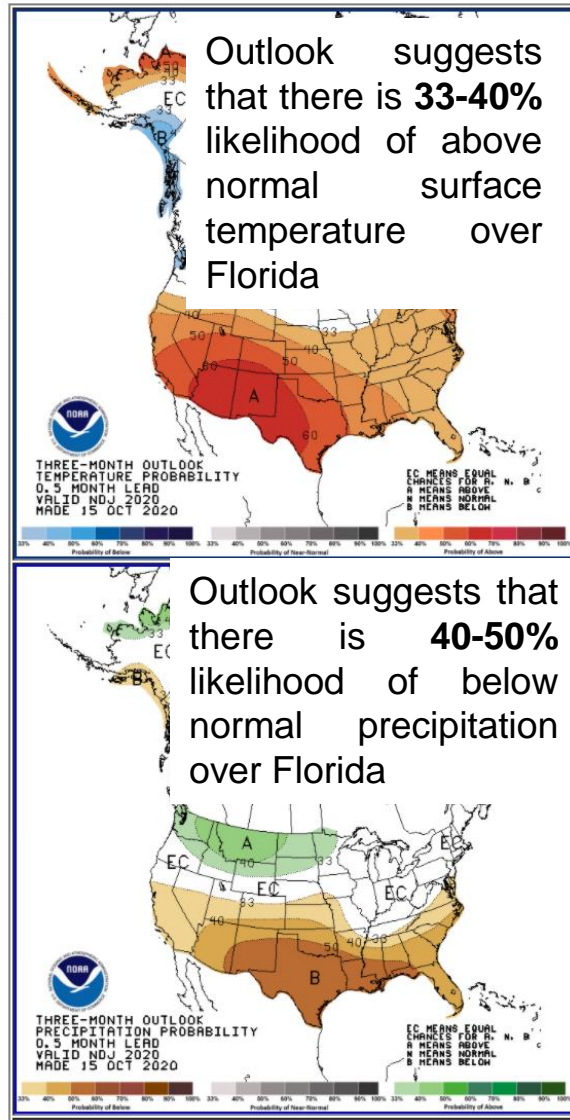
Reforecast (2000-19) precipitation skill of CLIFF



Reforecast (2000-19) surface temperature skill of CLIFF



Real time 2020-21 winter CLIFF



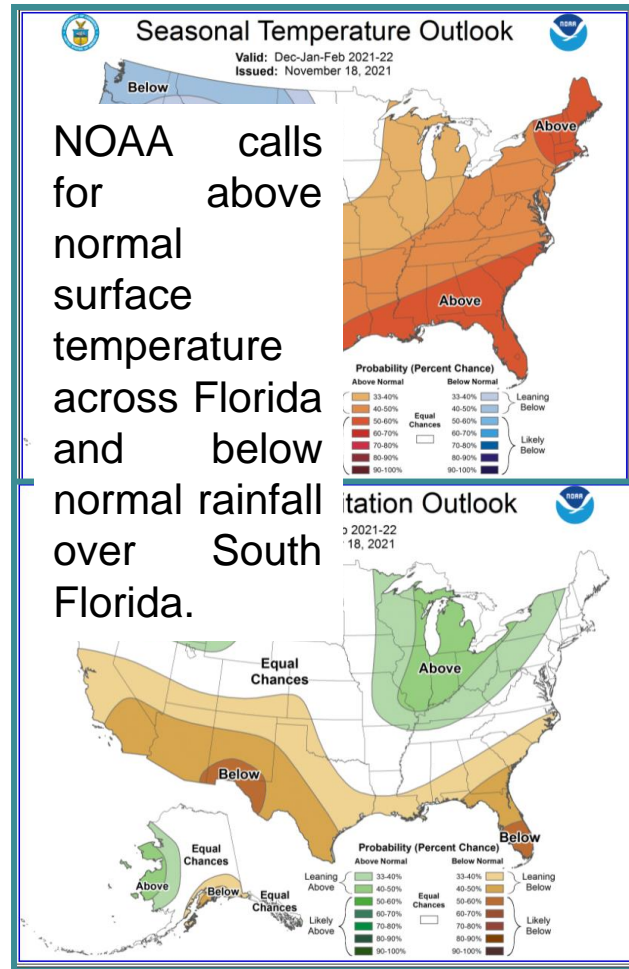
CLIFF issued on Nov 14, 2020

✓ ➤ CLIFF calls for increased likelihood for wetter winter and anomalously higher freshwater flux (Precipitation-Evaporation) than normal over South Florida Water Management District. In the remaining four water management districts of Florida the likelihood is that winter precipitation and freshwater flux are going to be near normal.

✗ **SRWMD and NFWMD had below normal rainfall** but near normal freshwater flux.

✓ ➤ Likewise, CLIFF calls for likelihood of near normal precipitation and freshwater flux in the watershed areas of Tampa Bay Water and Peace River Manasota Regional Water Supply Authority utilities

Real time 2021-22 winter CLIFF



CLIFF issued on Nov 10, 2021

- ✓ CLIFF suggests near normal forecast for rainfall across Florida, with the first half of the winter season likely being slightly wetter than the second half. The model climatological rainfall in CLIFF is within the margins of the ensemble spread of CLIFF for 2021-22. However,.....
- ✗ The freshwater flux (precipitation-evaporation) from CLIFF suggests **significant drying** over Peace River Watershed, Tampa Bay Water regions, **SWFWMD**, **SRWMD**, **SJRWMD**, and **NWFWMD**.
- ✓ Freshwater flux in SFWMD is forecasted as near normal in CLIFF.

Conclusions



- Customized seasonal forecasts like CLIFF show a clear advantage over CPC forecasts.
- Florida winter forecasts don't have to necessarily follow the ENSO forecasts when you get down to the water management district level.
- Surface temperature forecasts are abled by climate change. Removing the climate change signal deteriorates the seasonal forecast skill of CLIFF. This makes forecast of freshwater flux difficult in winter.
- Real time monitoring of wet season in 2020-21 and 2021-22 from CLIFF is encouraging.