Seasonal Winter Forecasts for Florida

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January 18, 2022

Disclaimer: This is an experimental seasonal forecast. The forecasts are solely of the individuals and do not reflect the views, information or the opinion of the affiliated institutions. The affiliated institutions and the associated personnel producing these forecasts bear no responsibilities for the decisions you make based on these forecasts.

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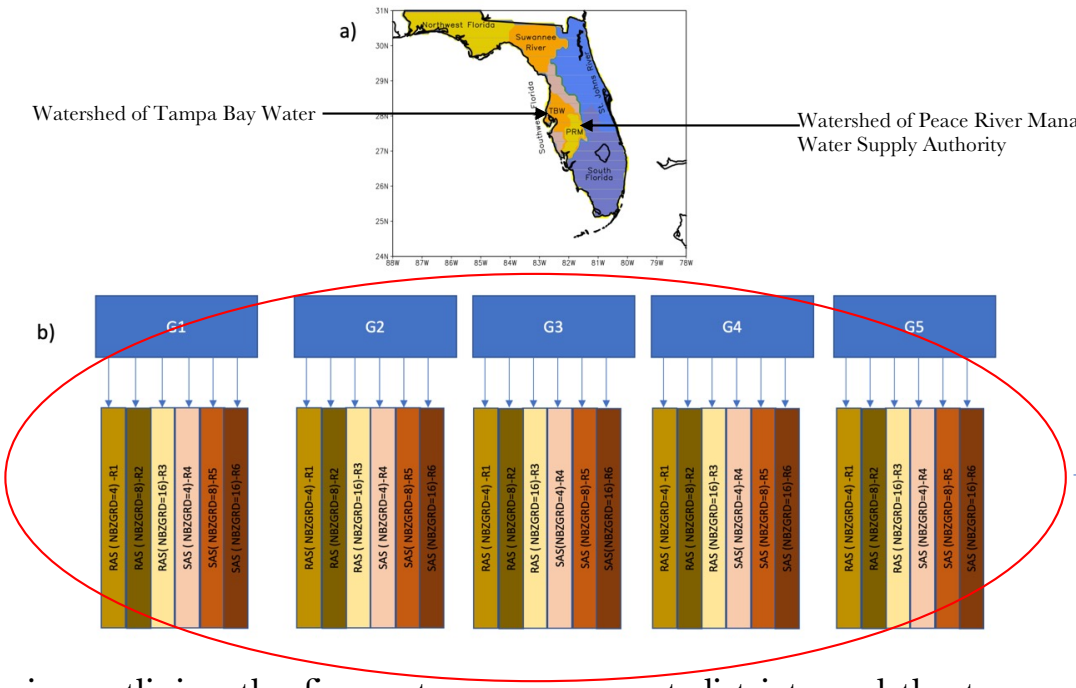
Experimental Seasonal **CLI**mate **F**orecasts for **F**lorida (CLIFF)



30 ensemble member regional seasonal climate forecasts at 10km grid spacing with a focus over the five water management Districts of Florida

a) The sub-domains outlining the five water management districts and the two water utilities (TBW and PRM) in the Southwest Florida water management district. b) A schematic of the setup of the high resolution experimental seasonal **CLI**mate re**F**orecasts for **F**lorida (CLIFF). G1 through G5 are the five global model seasonal reforecasts with November 1 start that differ in model physics (convection scheme) and perturbations to the initial conditions of the atmosphere. R1 through R6 are the RSM reforecasts conducted for each global seasonal reforecast, which differ in the width of the sponge zone (number of grid points in the sponge zone [NBZGRD]) and the convection scheme.

Retrospective CLIFF skills

Reported in Weather and Forecasting, 2021, Vol. 36, pages 1169-1182

Experimental High-Resolution Winter Seasonal Climate Reforecasts for Florida

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(Manuscript received 11 December 2020, in final form 10 March 2021)

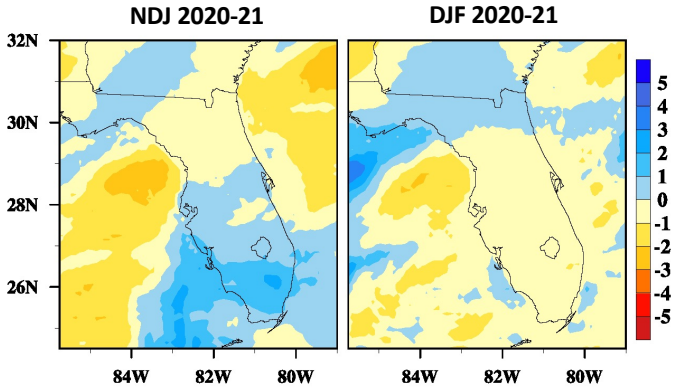
Operational forecast for 2020-2021 winter

CLIFF

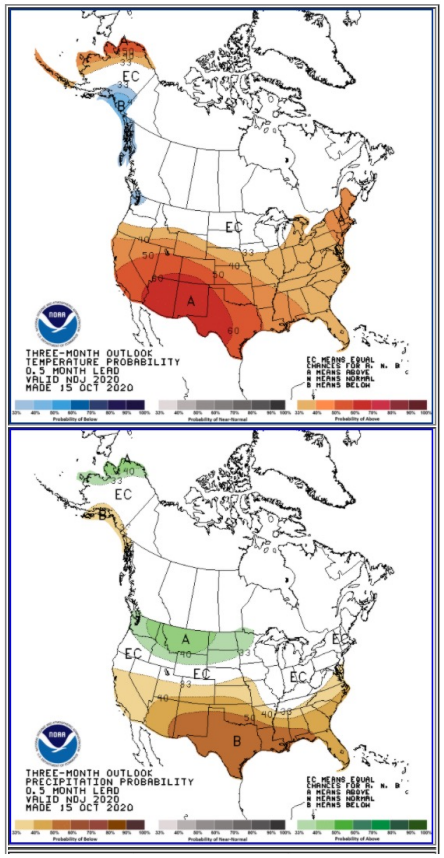
➢CLIFF calls for increased likelihood for **wetter winter** and anomalously higher freshwater flux (Precipitation-Evaporation) than normal over **South Florida Water Management District**. In the remaining **four water management districts of Florida** the likelihood is that **winter precipitation**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

➢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**

Precipitation Observations



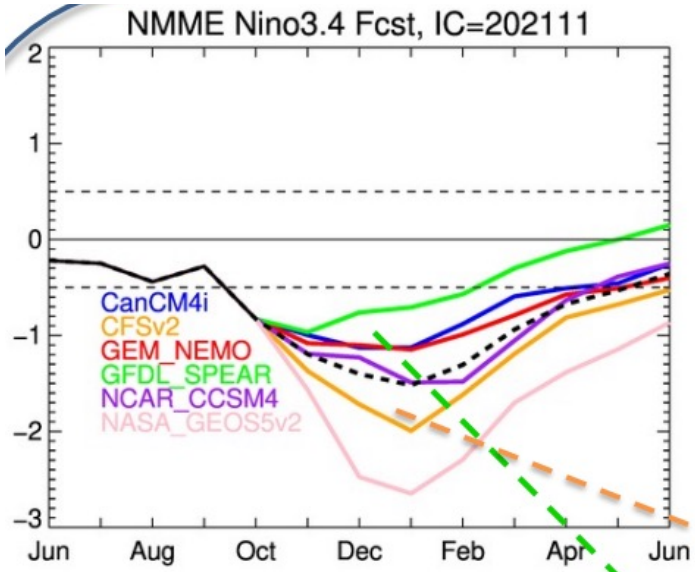
NOAA CPC OUTLOOK



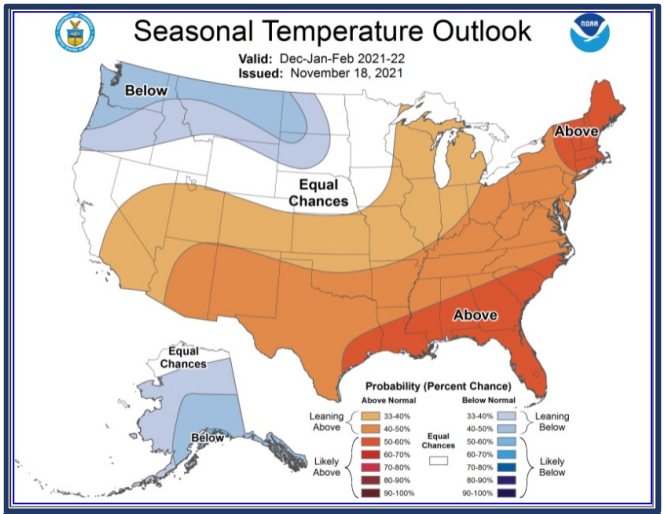
Outlook suggests that there is **33-40%** likelihood of above normal surface temperature over Florida

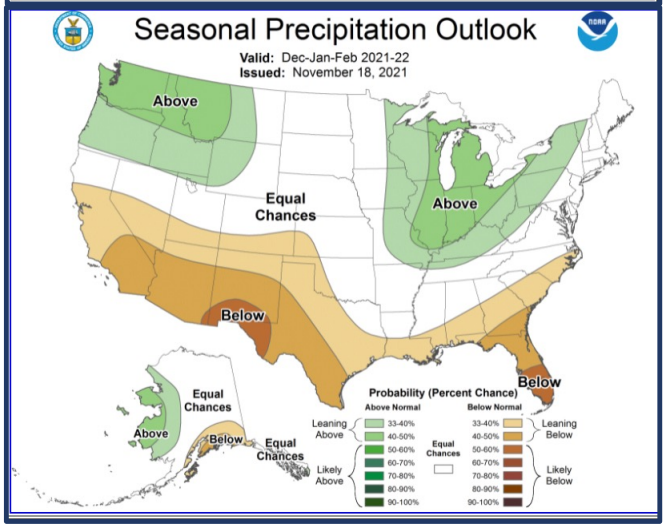
Outlook suggests that there is **40-50%** likelihood of below normal precipitation over Florida

NOAA Outlook for the Nov 2021-Feb 2022 season

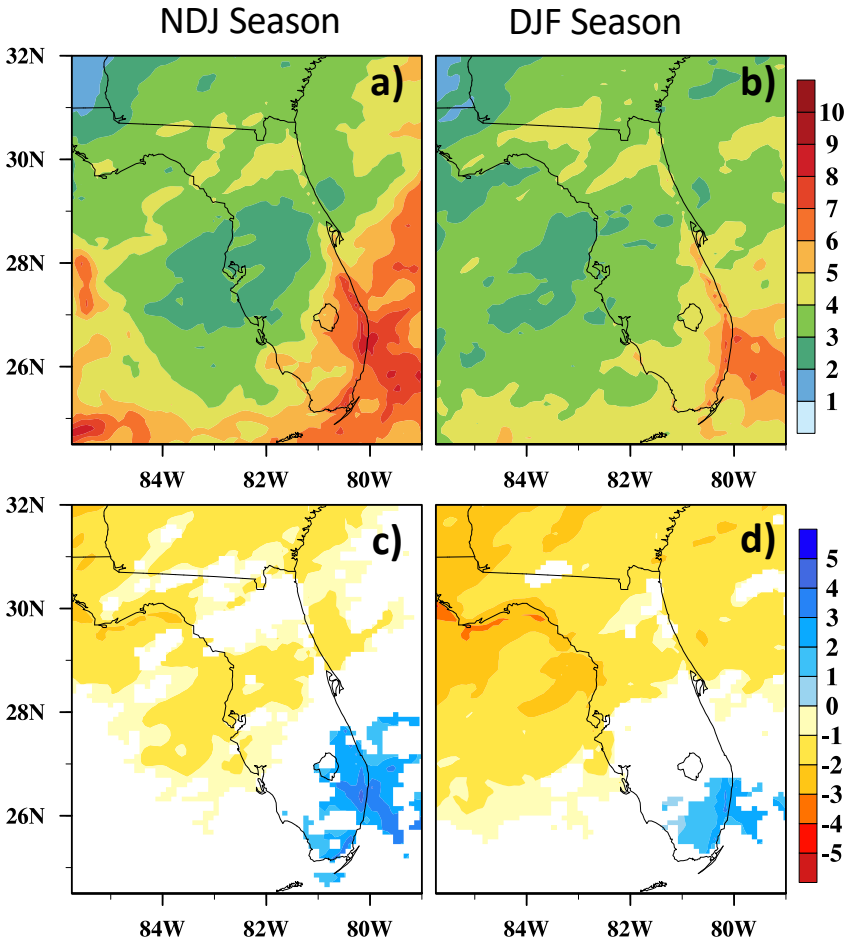


- A Majority of the models predict the continuation of La Niña through the Northern Hemisphere winter 2021-22.
- NOAA "ENSO Diagnostics Discussion" on 12 November stated that "La Niña conditions are likely to continue through the Northern Hemisphere winter(~90% chance) and into spring (~50% chance)".

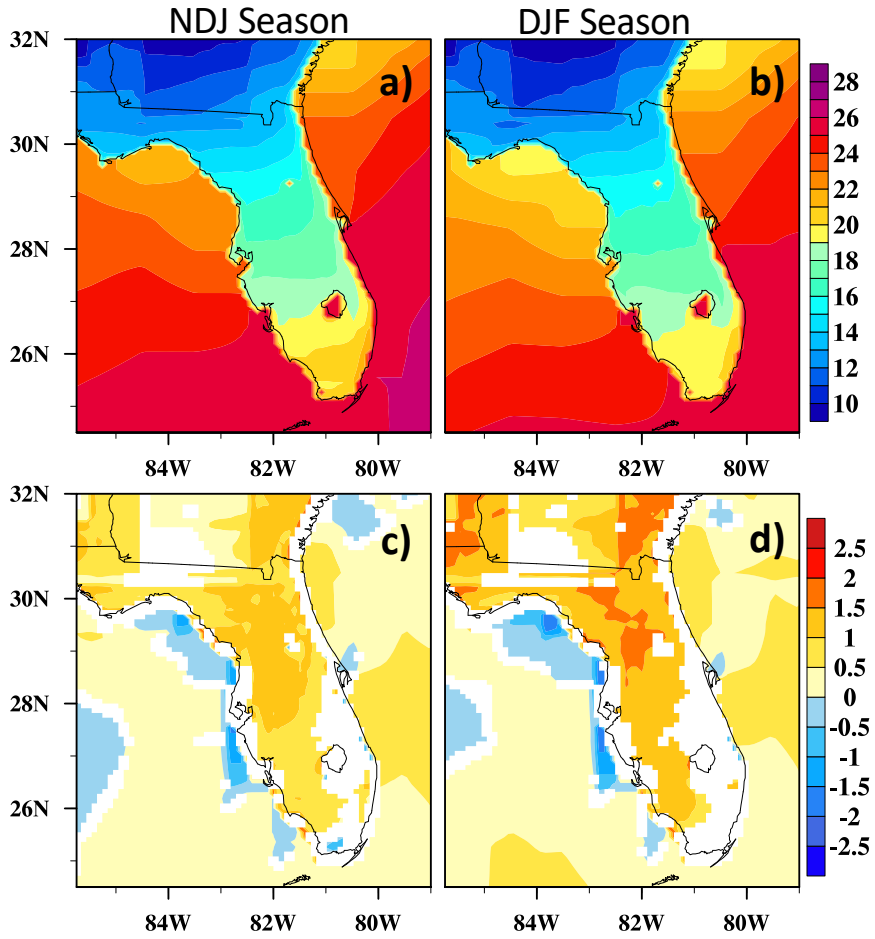




NOAA calls for above normal surface temperature across Florida and below normal rainfall over South Florida.



The forecasted rainfall (in mm) for a) NDJ (0-month lead) and b) DJF season (1-month lead) for the year 2021-2022. The corresponding difference from the CLIFF 20year climatology for c) NDJ (0-month lead) and d) DJF season. The shading in panels (c) and (d) is done only if 70% of the ensemble members of CLIFF agree on the sign of the anomalies.



The forecasted surface temperature (in °C) for a) NDJ (0-month lead) and b) DJF season (1-month lead) for the year 2021-2022. The corresponding difference from the CLIFF 20year climatology for for c) NDJ (0-month lead) and d) DJF season. The shading in panels (c) and (d) is done only if 70% of the ensemble members of CLIFF agree on the sign of the anomalies.

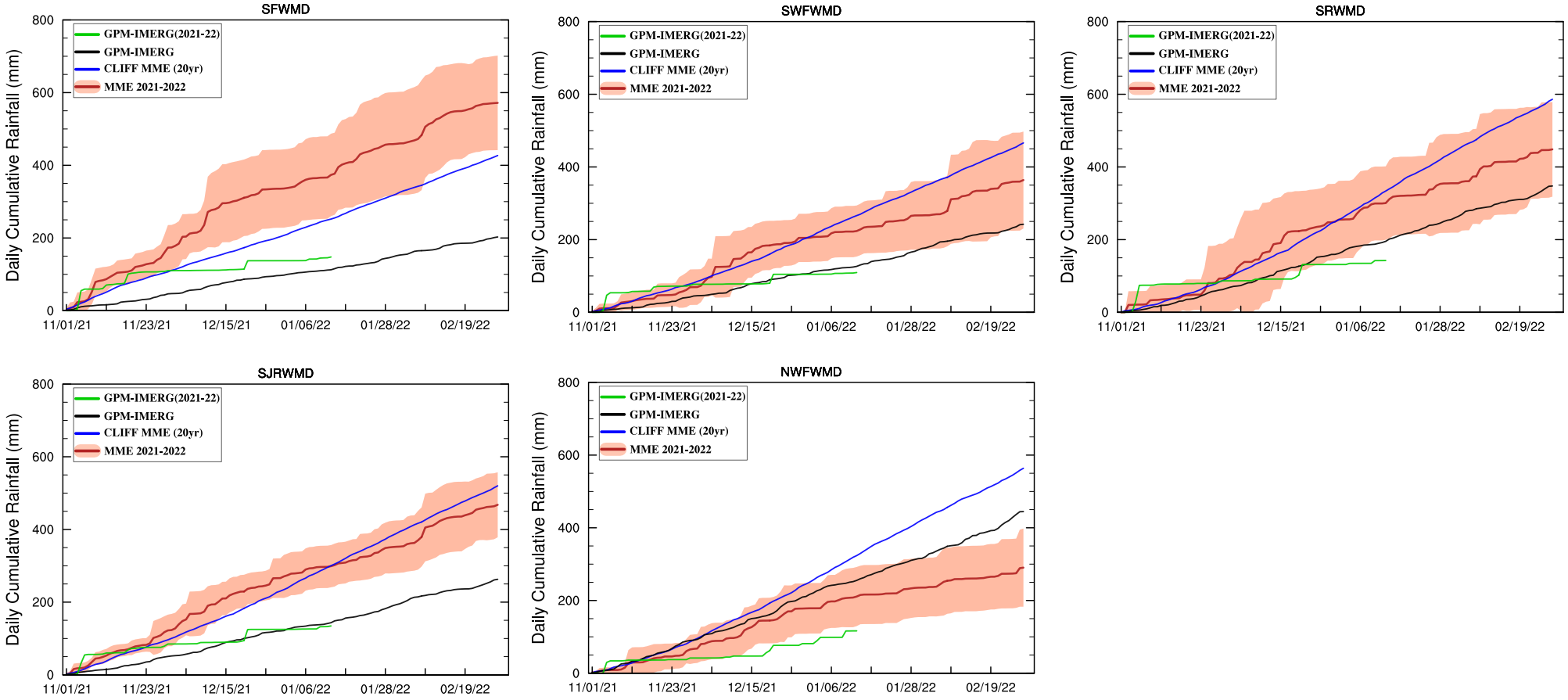


Figure: The cumulative rainfall (in mm) over a) SFWMD, b) SWFWMD, c) SRWMD, d) SJRWMD, and d) NWFWMD from 1 November 2021 to 28 February 2022 of the following year for the ensemble mean (red line) and the individual ensemble members (shaded) of CLIFF. The solid blue line is the corresponding model climatological cumulative rainfall for the season, and the black line is the observed climatology. The solid green line is observation for the 2021-2022.

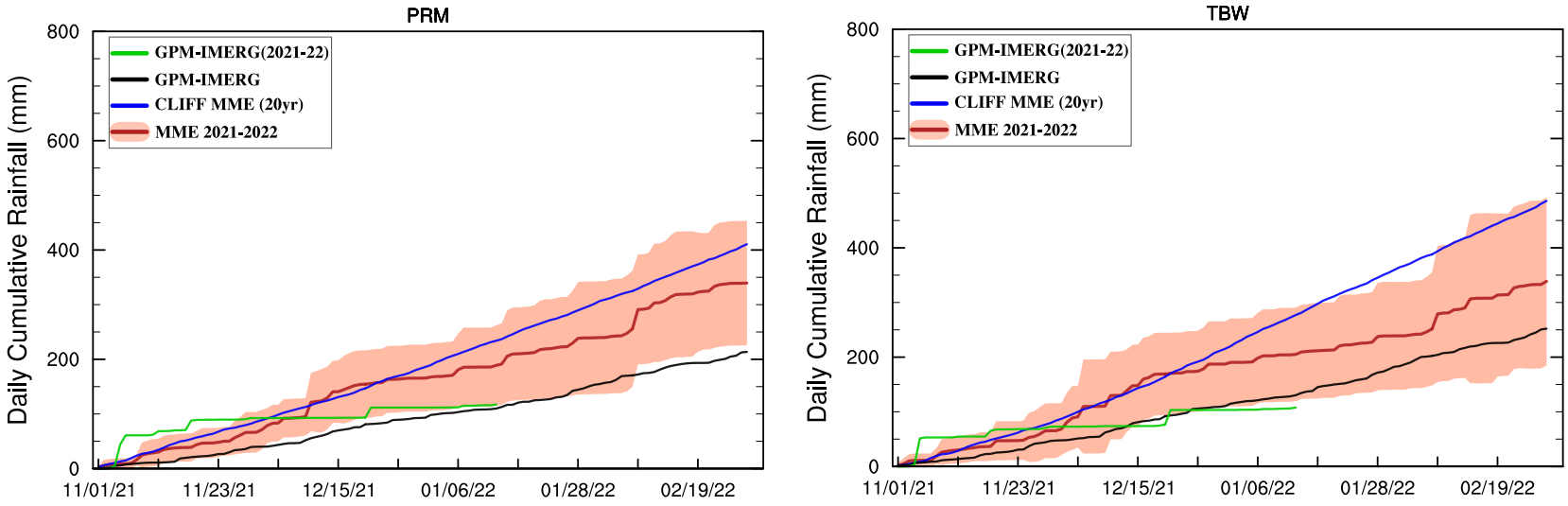


Figure: The cumulative rainfall (in mm) over a) PRM and b) TBW from 1 November 2021 to 28 February 2022 for the ensemble mean (red line) and the individual ensemble members (shaded) of CLIFF. The solid blue line is the corresponding model climatological cumulative rainfall for the season, and the black line is the observed climatology.

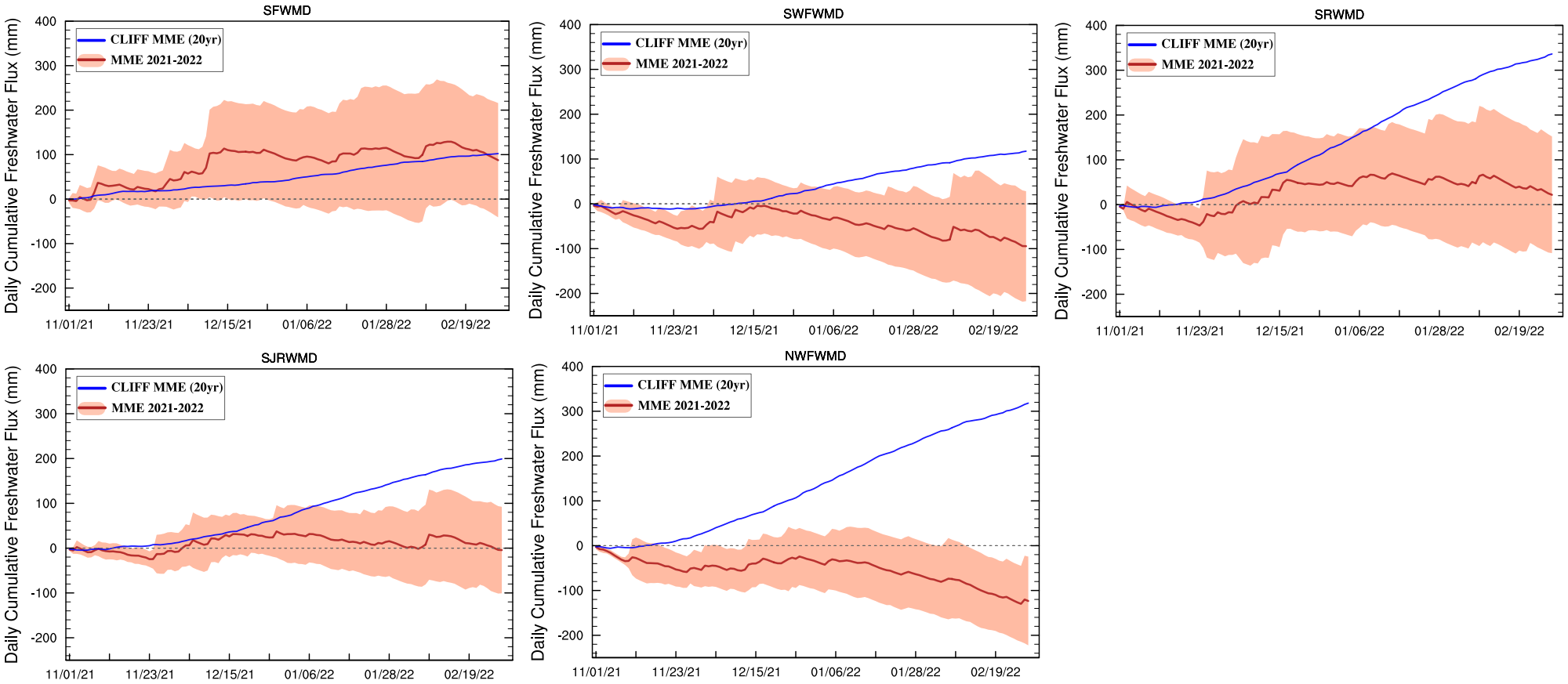


Figure: The cumulative freshwater flux (in mm) over a) SFWMD, b) SWFWMD, c) SRWMD, d) SJRWMD, and d) NWFWMD from 1 November 2021 to 28 February 2022 of the following year for the ensemble mean (red line) and the individual ensemble members (shaded) of CLIFF. The solid blue line is the corresponding model climatological (20-years) cumulative rainfall for the season.

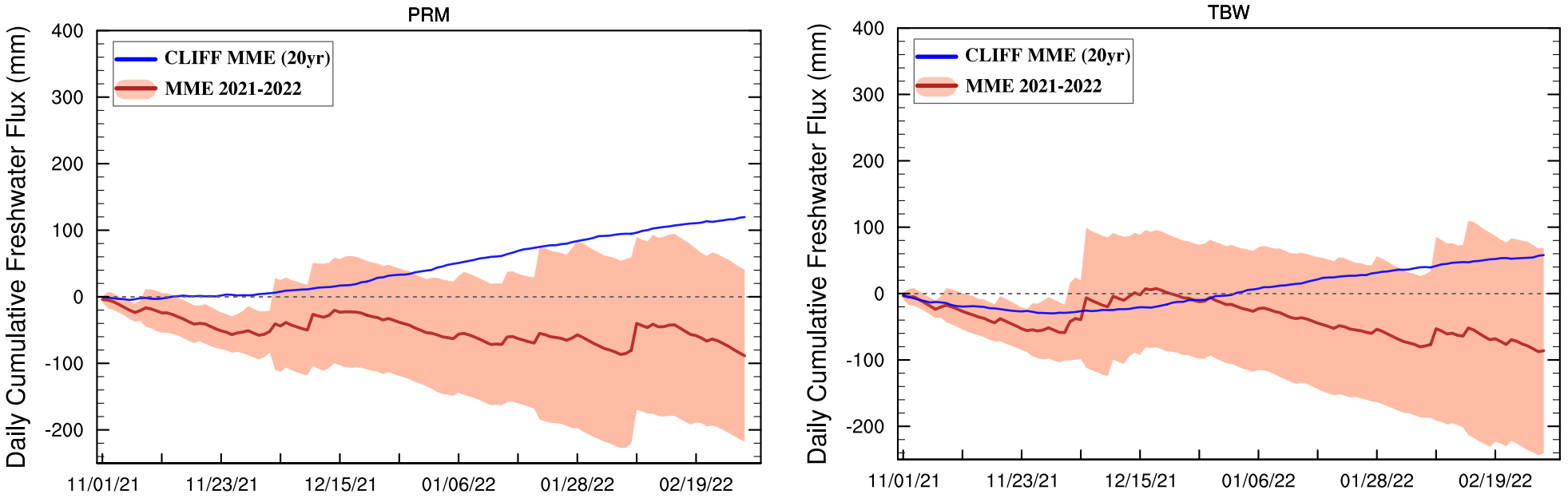


Figure: The cumulative freshwater flux (in mm) over a) PRM and b) TBW from 1 November 2021 to 28 February 2022 of the following year for the ensemble mean (red line) and the individual ensemble members (shaded) of CLIFF. The solid blue line is the corresponding model climatological (20-years) cumulative rainfall for the season.

Conclusions

- NOAA forecasts call for a warm and dry winter, with South Florida being anomalously dry.
- 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. The observations of rainfall seem to seem to suggest a wetter November than normal across Florida except NWFWMD and then tracking near climatology, suggesting a near normal winter so far (except NWFWMD where it is drier than normal so far). 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.