Dear Editor and Anonymous Reviewer

We use text **in blue** to respond to the review comments and text **in green** to show revised text. Please review our response below:

Climate forecasts generated by global climate models (GCMs) are valuable for hydrological modelling. In this paper, attention is paid to NOAA's seasonal precipitation forecasts. The skill at different lead times is evaluated. In general, the analysis is useful for West-Central Florida.

There are four comments for further improvements in the paper.

1. Besides the NOAA's forecasts, there are other sets of forecasts available in the NMME (). The authors are suggested to add more GCM forecasts and conduct a more comprehensive evaluation of GCM forecast skill. In the meantime, the multiple GCM forecasts under investigation can be summarized by a table.

   Response:
   We thank the reviewer for this valuable suggestion. We agree that the North American Multi-Model Ensemble (NMME) provides important context for seasonal hydroclimate forecasting and that individual GCM performance is highly relevant when working directly with raw model forecasts. However, the objective of the present study is to evaluate the skill of the NOAA CPC operational probabilistic tercile outlooks at the local basin scale and to develop a framework for translating those outlooks into basin-scale rainfall ensembles. Because CPC outlooks already capture information from multiple dynamical and statistical guidance sources, including NMME-based products, accessing the full intercomparison of the GCM members would therefore require a fundamentally different study design, including raw model output processing, bias correction, and a separate verification framework which lies beyond the scope of the present work.

   But we have meaningfully expanded our manuscript with the NMME literature in direct response to this comment. The literature consistently demonstrates that the NMME multimodel ensemble outperforms any individual constituent model, including in the southeastern United States where the study basins are located. Even among the stronger-performing individual models in this region, namely CCSM4 and CFSv2, the multimodel ensemble still exhibits superior skill (Wang, 2014; Slater et al., 2019). For probabilistic 3-month forecasts specifically, Becker and van den Dool (2016) demonstrated that the NMME generally provides more skillful and reliable probabilistic forecasts than the CFSv2 single-model baseline. So, our approach of working directly with CPC outlooks, which already synthesize NMME-based guidance and operationally practical starting point. A direct comparison of individual NMME member skill against CPC operational outlooks at the basin scale is identified as a valuable direction for future research.

   The following expanded discussion has been added to the Introduction of the revised manuscript:
   The NOAA CPC operationally maintains the NMME, a dynamic multimodel ensemble system comprising NCEP-CFSv2, ECCC-CanESM5, ECCC-GEM5.2-NEMO, NCAR-CESM1, NCAR-CCSM4, and NASA-GEOS-S2S-2 (NOAA CPC, n.d.), which provides more skillful probabilistic seasonal forecasts than single-model systems (Kirtman et al., 2014). Evaluation studies have shown that NMME precipitation skill varies substantially by season, region, and lead time, with the multimodel ensemble generally outperforming individual members, and models such as CCSM4 and CFSv2 showing stronger skill in the southeastern USA (Wang, 2014; Slater et al., 2019; Becker & van den Dool, 2016). When raw GCM precipitation fields are used directly rather than probabilistic outlooks, postprocessing such as quantile mapping is often applied to correct systematic biases, though its effectiveness depends on the forecast objective (Zhao et al., 2017).

In addition, the following sentence has been added to the Conclusion to contextualize the ENSO-driven skill patterns observed in this study within the broader NMME literature:
Peak forecast skill is closely aligned with El Niño winters, during which above-normal precipitation is more likely, a finding consistent with Infanti and Kirtman (2014), who documented elevated NMME skill during El Niño winters in the southeastern United States.

2. In the evaluation of GCM forecasts, the authors are suggested to refer to Slater et al. (2019) that presented a comprehensive of the NMME forecasts across the continental USA.

Response:
We thank the reviewer for this helpful recommendation. We have added Slater et al. (2019) to the revised Introduction section, where it appears alongside Wang (2014) and Becker and van den Dool (2016) in support of the expanded NMME discussion described in our response to Comment 1.

In the revised manuscript, the following text was added in the Introduction:
Evaluation studies have shown that NMME precipitation skill varies substantially by season, region, and lead time, with the multimodel ensemble generally outperforming individual members, and models such as CCSM4 and CFSv2 showing stronger skill in the southeastern USA (Wang, 2014; Slater et al., 2019; Becker & van den Dool, 2016).

3. Given the existence of spatiotemporal biases in GCM forecasts, forecast post-processing plays a key part in exploiting the potential raw GCM forecasts. The quantile mapping is probably the simplest yet effective method to use.

Response:
We agree that post-processing is often important when working with raw quantitative GCM forecasts and appreciate this suggestion. The present study, however, does not work directly with raw GCM precipitation fields. Instead, we use NOAA CPC operational tercile probability outlooks, which are categorical probabilistic products that summarize expected deviations from climatological norms. Because these outlooks have already been subject to multi-model synthesis and expert post-processing within the CPC framework, applying quantile mapping, which requires a continuous quantitative output is not directly applicable in our workflow.

We have nevertheless incorporated this important methodological context into the revised manuscript, acknowledging quantile mapping as a relevant technique when working with raw GCM outputs, and identifying it explicitly as a direction for future work.

In the revised manuscript, the following sentence was added in the Introduction:
When raw GCM precipitation fields are used directly rather than probabilistic outlooks, postprocessing such as quantile mapping is often applied to correct systematic biases, though its effectiveness depends on the forecast objective (Zhao et al., 2017).

4. The Oceanic Niño Index (ONI) is mentioned in the paper. There are statistical forecasts produced from hydroclimatic teleconnections such as ONI. Is it possible to perform some comparisons of GCM forecasts with statistical forecasts?

Response:
We thank the reviewer for this insightful suggestion. While a full ONI-based statistical forecast model is beyond the scope of the current study, we note that our existing ENSO-phase stratification in Section 3.2 provides a meaningful partial comparison. The strong alignment between El Niño conditions and above-normal CPC forecasts in NDJ and DJF suggests that CPC's GCM-based system successfully captures the dominant ONI teleconnection signal. In this sense, CPC's forecasts implicitly encode the ENSO-

precipitation relationship that an ONI-based statistical model would seek to exploit. This interpretation is consistent with Infanti and Kirtman (2014), who demonstrated that the NMME effectively leverages ENSO-driven teleconnections to improve skill in the southeastern United States during El Niño winters.

References

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