Hydrol. Earth Syst. Sci. Discuss.,
https://doi.org/10.5194/hess-2019-298-RC2, 2019

Hydrology and Earth System Sciences
Discussions

Interactive comment on "Technical Note: Evaluation of the Skill in Monthly-to-Seasonal Soil Moisture Forecasting Based on SMAP Satellite Observations over the Southeast US" *by* Amirhossein Mazrooei et al.

Raghavendra Jana (Referee)

r.jana@skoltech.ru

Received and published: 20 September 2019

Review of Technical Note titled "Evaluation of the Skill in Monthly-to-Seasonal Soil Moisture Forecasting Based on SMAP Satellite Observations over the Southeast US"

Recommendation: Minor revision. The manuscript presents a look into generating soil moisture forecasts on a monthly-to-seasonal basis, validated with SMAP data. The topic is interesting and suitable for HESS. The manuscript is well written for the most part. I have a few concerns that I lay out below: 1. P1, L15: Should be "terrestrial",

Printer-friendly version

Discussion paper

and “primarily”. 2. P2, L1-2: Efforts to develop SM forecasts through LSMs have been compared with simulated SM from LSMs? Not sure what the authors intend to state here. Right now, it reads as if the simulated SM is compared with itself. 3. P2, L3-4: Are there not many published studies comparing simulated SM with remotely sensed data? Would they not count as “systematic evaluations”? 4. P2, L31: NLDAS-2 is a comprehensive dataset of what properties? 5. P3, L10: ECHAM forecasts are more “skillful”? I am not sure how forecasts can be skillful. They may be more accurate. The ECHAM algorithm may be more skillful at generating more accurate forecasts. 6. P4, L3: SST forecasts “constructed” from what? 7. P6, L1-6: This is surprising. It has been shown many times in the past that the spatial variability of SM reduces significantly at the wet end of the curve. Hence, I would expect the performance to be better over the wetlands. Any thoughts as to why this phenomenon is observed in your study? 8. I would prefer it if the Results and Discussion sections were merged, with the discussion happening immediately after each result is presented. The current split format makes me skip ahead to the Discussion after each result is presented, just to see what the authors make of it. 9. I am not really convinced that the drought section fits into this study. a. The rest of the study uses SMAP as the benchmark, this portion uses USDM data, which are probably not at the same resolution as the simulations. b. Further, no numbers are presented for this comparison. I am not sure the spatial patterns really match that well. For example, the Florida panhandle is shown to be extremely dry in the Noah plot, but USDM says different. At the very least, another map showing the difference between the Noah and USDM values would’ve given a better picture. c. Thirdly, using surface SM to forecast drought is making things too simplistic. There are various other factors that need to be taken into account. These thoughts lead me to recommend that the authors remove the drought study from this note.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2019-298, 2019.