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Atmospheric Measurement Techniques Discussions

Interactive comment on "Performance evaluation of multiple satellite rainfall products for Dhidhessa River Basin (DRB), Ethiopia" *by* Gizachew Kabite Wedajo et al.

Anonymous Referee #2

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The authors describe the overall usability of satellite rainfall estimates in a catchment in Ethiopia with respect to hydrological modelling. Two approaches were used – comparison with in-situ rain gauges and runoff data via hydrological modelling. The paper is well structured and describe which analyses and how these were done, the tools, results and compares them with other studies. Nevertheless, I miss an interpretation and explanation about the origin of the performance differences in the satellite rainfall estimates. Comments line by line:

41: You forgot Commercial Microwave Links (CML).

43: Radar is also an indirect measurement technique, which needs calibration like

satellites.

46/47: What do you mean with "incomplete measurements"? Please explain this.

62: I assume there is a space missing in "overtime" (-> over time)

211/212: What do you mean with "rain gauges ... were excludes for fair comparison"? Are those stations excluded, which were used to calibrate the satellite data? What is with these stations used in gridded sets, that are used to calibrate the satellite data?

225: Remove "and/or radar precipitation", as radar data were not used in this study.

273: Do you mean "quantity fluxes" instead of "quality fluxes"?

284: Introduce abbreviation "USDA".

338: Remove "numerical" as you have done a statistical analysis here.

341/342: I miss an explanation, why the SREs correlate better at monthly time scales than on annual time scales.

347: I propose to use the same scaling of the axes for all four subfigures in figure 3 and add the 1:1 line.

353: Please explain the intention and what do you mean with "goodness-of-fit criteria".

356: As for figure 3, add also in figure 4 the 1:1 lines.

358: I propose to rescale the y-axes to move the symbol a little bit from the x-axes.

360: Which thresholds were used for figure 6? 1mm/day?

367: I propose to add a description of the seasonal cycle of the precipitation.

385-389: I cannot follow this argumentation. Of course, good precipitation measurements are needed for good hydrological modelling. But different parameters between the data sets shows that the model need different adjustments for the different data sets.

396-404: For me it seems the predictions underestimate the streamflow and do not overestimate it, as the blue line with the observations is especially in the peaks always higher than the orange line with the predictions.

401: I assume an “a” is missing in “stemflow” (-> streamflow).

402-404: What are the criteria for satisfactory estimations of streamflow?

404: Typo in guaged (-> gauged).

405: Is there a time shift between the TAMSAT3 time series and the gauge data in figure 8? It seems there is a constant phase displacement between observation and prediction.

407: What is the P-factor and R-factor in table 5? These were not introduced.

423/424: Regarding the “interannual rainfall variability”, please add a figure with climatological monthly mean precipitation totals for all data sets.

512: Replace “Dhidhessa River basin” with DRB.

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