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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Multi-site calibration and validation of SWAT with satellite-based evapotranspiration in a data sparse catchment in southwestern Nigeria" *by* Abolanle E. Odusanya et al.

Anonymous Referee #1

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This paper calibrates the SWAT model using 2 available ET global products, a simple remote sensing ET equation (MOD16) and a more complex water balance model forced by remote sensing data (GLEAM).

Major comments: MOD16 does not explicitly account for transient water stress (as, say, derived from TIR data); how does this impact the results ? It is unclear to me whether the SWAT model used here uses the plant growth model. How is the vegetation taken into account ? Two additional important performance metrics are needed as a reference for the six calibrations: 1- A reference run with default (uncalibrated)

parameters – this is needed absolutely! 2- A focus on stressed/unstressed periods as defined by the GLEAM ET product, with metrics specific for each period; this would help analyse whether model improvement comes from a better ETP formulation or a better simulation of stress (S in GLEAM).

The description of the calibrated parameters (which, I assume, follow the SWAT terminology) is lacking: there is only a Table; equations showing where those paramterers appear should be provided in, say , an annex, to improve the paper standalone readability.

Minor comments:

Figure 2: why use an half-half split sample for MOD16 but only a 1/11 split sample for GLEAM ? Equation 5: the square root should extend to the third quadratic term. Page 10 Line 18: use the term "ratio" Page 13 Line 22: predicted > predict Page 15 Line 11: Runoff > Ruhoff ? Page 15 Line 33: "Therefore, the Heargraves ...periods": I don't understand this sentence

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