

Interactive comment on “Advancing land surface model development with satellite-based Earth observations” by Rene Orth et al.

Anonymous Referee #2

Received and published: 15 February 2017

- (1) I prefer "help improve" to "help to improve" - Abstract Line 15 and everywhere
- (2) Introduction Line 18: radiation at high - notice missing 't' in the manuscript
- (3) Section 2.2.1: 1-year spin up is not adequate at all for offline simulations, usually we loop through 10-years at minimum to equilibrate initial states.
- (4) a widely used term for the daily LST range is "Diurnal Temperature Range (DTR)", perhaps authors replace the term "the daily LST range" with DTR
- (5) Section 3.1 Line 11 : acronym WFDEI - define it
- (6) Section 3.1 (Forcing Data): claiming we used "observed meteorological" forcing may be an ambiguous statement. Perhaps you can rephrase the whole line "we used WFDEI bias corrected surface meteorological forcings "

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- (7) Section 3.2 A map showing Locations of soil moisture and streamflow stations will be helpful
- (8) Line 21 the reader is referred to Table S1 in Orth and Seneviratne 2015 for details about soil moisture in-situ data, it would certainly helpful to have that table in this manuscript.
- (9) Line 19: Data "are" available instead Data "is"
- (10) Page 8, Line 15: "And while the ET data help to constrain HTESSEL's energy balance during early years" - Sorry I did not get it, authors are merely using ET data to compute biases and skill in HTESSEL simulations, I believe it is not correct to claim HTESSEL's energy balance is constrained by ET data
- (11) Figure 1: a) white-out the ocean b) what does color gray depict? c) colorbar is very poor, hard to figure out where the tick mark is d) 2 red and 2 blue levels look just the same e) you can say in the caption that the analysis used only northern hemisphere warm months May-Oct f) correlation coefficient or r^2 - it does look like r^2 (square of correlation) g) Instead DYN in Y-axis label used COR or R^2 h) On authors discretion, you can have a 4 panel figure DTR BIAS/COR and LST mean BIAS/COR, because I did not see much value in breakdown analysis based on land cover type. i) also in correlation plots, white out the region where correlation is not statistically significant or (just random) for the confidence level of 95 % or something j) I assume Figure 1 is based on default HTSEESL parameter configuration. It would be interesting to see the same figure for the best set of parameters that your experiment yielded.
- (12) Again colorbar 0.5 to 0.8 look just the same