

Interactive comment on “Appraising the capability of a land biosphere model as a tool in modelling land surface interactions: results from its validation at selected European ecosystems” by M. R. North et al.

Anonymous Referee #1

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This manuscript validates a land-biosphere model SimSphere by referring eddy flux data of seven EUROFLUX sites. For this validation, authors evaluated the reproducibility of daily fluxes of the net-radiation (Rnet), latent heat (LE), sensible heat (H), air temperature at 1.3m height (Tair_1.3m), and air temperature at 50m height (Tair_50m) by employing six statistical measures. Overall, authors successfully demonstrate that the model reproduces physical and dynamic processes in the soil-land-atmosphere system.

Authors emphasize importance of "generality" for such models, and hence they con-

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ducted validation on multiple ecosystems in Europe, then tried to relate model behaviors to ecosystem properties of these ecosystems (eg. P239 L16~28). However, still this study lacks generality, because it only evaluates (a) a single model during (b) daytime of (c) cloud free and (d) stable atmospheric condition days within (e) growing season of 2011. As it is now, this manuscript is only a technical assessment report, and I do not think it can be a scientific paper even after a major revision.

Other major concern is the defectiveness for description of the simulation method. Specifically, descriptions for how authors forced the model (P229 L20~P230 L8) are far from enough to provide repeatability of experiments, which is required for scientific papers. Also, authors should present list of estimated parameters and some abstract of forcing data somewhere in the manuscript (such as in Supplementary Information)

_____ Minor Concerns _____

- (1) P220 L10~13: Some references would be required in this sentence.
- (2) P221 L12~13: Some references would be required in this sentence.
- (3) P225 L12~24: Which parameterization for stomata resistance was employed in this study?
- (4) P227 L3 and throughout the manuscript: Through my professional experience, I sense term "parameter" usually refers to a fixed-value for forcing models. But, in this manuscript, it also refers to simulation outputs. I suggest to employ different terms (e.g., outputs) for the latter case.
- (5) P237 25~: What is the major differences among the current and earlier versions of the model?

_____ Technical Concerns _____

- (1) Throughout the manuscript: Discordance of table numbers between the main text and tables.

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(2) Assuming values in the tables are correct, authors need following revisions at least.

P218 L17: 3.54 -> 3.56

P232 L5: 68.19 W m⁻² (IT_Col) -> 68.49 W m⁻² (FR_Pue)

P234 L1: -5.11 -> -3.45

P234 L20: 80.41 -> 71.93

P235 L2: -25.88 -> -16.29

P235 L17: 3.33 -> 2.30

P235 L18: 2.30 -> 3.33

(3) Tables 4~8: These tables have to contain R2 values. "Bias" would be replaced by "Bias/MBA". "Scatter" would be replaced by "Scatter/MSD".

(4) Table 2: A word "PFT" would be replaced by "Ecosystem Type Abbreviation".

Interactive comment on Earth Syst. Dynam. Discuss., 6, 217, 2015.

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