

Geosci. Model Dev. Discuss., referee comment RC2
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Comment on gmd-2021-116

Anonymous Referee #2

Referee comment on "Modeling the short-term fire effects on vegetation dynamics and surface energy in southern Africa using the improved SSiB4/TRIFFID-Fire model" by Huilin Huang et al., Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2021-116-RC2>, 2021

The authors modified the DGVM model in order to evaluate carbon emissions, vegetation and flux changes by fire in south Africa.

The simulation design, and the results are very clear and understandable, and the manuscript is basically well written. I little bit concern about description of the improved model.

1. The authors should describe parameterizations and modification of model more concretely. Especially, following the parts:

"we have calibrated the parameters of fire spread, fuel combustibility, 180 and carbon combustion to reproduce the observed magnitude and temporal variations of burned area and carbon emission in satellite data."

How did the authors calibrate?

"we optimize photosynthesis-related parameters according to the observed GPP magnitude in both wet seasons and dry seasons as follows."

How did the authors optimize?

"Therefore, we adjusted the 205 coefficients c_1 and c_2 for C4 grasses to reflect the effects of soil water deficit on transpiration in a wider range of soil moisture between 0.3 – 0.6 (Fig. 2a). $\theta_{\text{max}}(\theta_{\text{min}})$ for C3 grasses is also adjusted but is designed to be less sensitive to low moisture conditions (compared to C4 grasses) to make it more adaptive in the dry area (Fig. 2b)."

How did the authors adjust?

2. I think it is better to compare the results of improved model and those of previous model and show how the new model became better.