

Interactive comment on “Analysing Amazonian forest productivity using a new individual and trait-based model (TFS v.1)” by N. M. Fyllas et al.

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The general topic of this paper is highly relevant and I appreciate the model development, which facilitates accounting for detailed biodiversity data in the context of a forest model.

Nevertheless, I think it would be useful to provide a more thorough comparison of the TFS concept to existing individual based vegetation models (e.g., LPJ-GUESS, FORMIND, Scheiter et al. 2013) and ongoing developments to improve the representation of PFTs in DGVMs (e.g., Verheijen et al. 2013, Wang et al. 2012, Pavlick et al. 2012) to better demonstrate the differences and novelty of TFS compared to existing models and concepts.

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The main result of the current application of the TFS model (Page 1415 abstract: ... measures of stand level productivity were positively related to annual precipitation and soil fertility) could probably be directly derived from observed climate, soil and inventory data of the 40 RAINFOR permanent measurement plots, which in the context of this paper had been used to validate the model. However, the motivation of TFS development was an insufficient representation of biodiversity within PFTs in the context of current DGVMs. Given these two aspects it would be interesting to analyse the impact of the more detailed representation of biodiversity on model results, e.g., to which extent is the representation of biodiversity necessary to reproduce the observed pattern of stand level productivity?

I think it would be useful to represent in the model results the (additional) uncertainty introduced by the high degree of modelled detail, which on the other hand is to some extent constrained by observations.

This paper seems to be the first presentation of TFS. Therefore I am surprised that not the whole concept of TFS seems to be presented (e.g., page 1420: “snapshot version”, page 1430: “reported here on the core components”) and that it is highlighted that TFS is work in progress (page 1434: “. . . , TFS represents work in progress”).

References:

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