

Interactive comment on “Application of a computationally efficient method to approximate gap model results with a probabilistic approach” by M. Scherstjanoi et al.

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This work adapted GAPPARD approach, which is an approximation method for gap-dynamics models, to a dynamic vegetation model LPJ-GUESS. As the LPJ-GUESS conducts simulations with gap dynamic approach, it requires many replications of simulation unit (a forest patch) to reduce the influence of stochasticity. Therefore, methods like GAPPARD are useful for reducing computation cost for gap models. Actually, with this adapted model, authors successfully simulated dynamics of tree species with a 1 km resolution over the whole Switzerland. As authors stressed, this is the first time to obtain area-wide, detailed high-resolution simulation result with the LPJ-GUESS.

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They also improved the parameters for tree species in the LPJ-GUESS for more appropriate simulations over the Switzerland, and tested how these improvements affects on simulations under the current climate and changing climate during the 21st century.

In the manuscript, simulation protocols are well organized. Results are well presented and discussed. The topic should be within the scope of the GMD, and I believe journal's readers will have interest on this manuscript.

Although authors appropriately revised the first draft to the comments I posed, I would like to express following minor specific concerns.

- (1) P1552, L20, "to forest" What do you mean?
- (2) P1552, L23~24, "the spatial representation of the plot based NFI-data is challenging" How challenging? Why it can be a reason to employ the data?
- (3) P1552, L24~27 I cannot follow the logic of this sentence.
- (4) P1555, L6, "und" It should be replaced by "and".
- (5) P1557~1558, Appendix A Please refer tables A8 and A9.
- (6) P1557, L23 "However" I think this is not an appropriate conjunction here.
- (7) P1558, L3, "pheno(t)" For reader's convenience, I request some more explanations for this variable. Such as "It becomes nearly and 1.0, respectively, when 'tls' is 0.0 and 'dls'".
- (8) P1558, L11~16 Why you changed the establishment function? I want to know the brief reason with some related citations ideally.

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