Geosci. Model Dev. Discuss.,
https://doi.org/10.5194/gmd-2017-146-RC2, 2017

Geoscientific Model Development Discussions

Interactive comment on "LPJmL4 – a dynamic global vegetation model with managed land: Part II – Model evaluation" *by* Sibyll Schaphoff et al.

Anonymous Referee #2

Received and published: 21 September 2017

Comments on "LPJmL4 – a dynamic global vegetation model with managed land: Part II – Model evaluation"

General comments

In this manuscript, the authors presented results of model benchmarking of their newly developed model, LPJmL4. They used many contemporary observational (then independent) data for the benchmarking, spanning a wide range of model aspects such as productivity, hydrology, and agriculture. Through this attempt, they clarified characteristics of LPJmL4 in comparison with other models and previous versions. This benchmarking focused on site to global features and so did not go into details of ecological vegetation dynamics, plant physiology, soil biogeochemistry, and human management. Nevertheless, such benchmarking is an increasingly important task for model intercom-

parison, and this study is a good attempt.

The manuscript is, frankly speaking, quite long, although this is the second part of the full length of their work. Result description of each examined variable may be shortened to some extent (not mandatory). Overall, as a benchmarking paper, this manuscript is reasonably organized, and I found no logical fault.

Specific comments

1. Line 40: I agree that benchmarking became more and more important and several standardized systems have been proposed. As an example, I suggest referring the iLAMB (https://www.ilamb.org/) as a representative system.

2. Line 61: Harris (2015) does not appear in References.

3. Line 65: Please give full words for NCEP.

4. Line 64: As long as I know, all meteorological forcing variables are available from ERA-interim (or other appropriate dataset). By using the single dataset, you could conduct more comprehensive simulations with higher integrity. Why did you use different datasets?

5. Line 141: This sentence could be removed or merged to other sentences.

6. Line 208: Please add a reference to the FLUXNET data base.

7. Line 231: Just confirmation. You did not use any data of solar-induced chlorophyll fluorescence (SIF) for benchmarking FAPAR and GPP. OK? Because SIF is increasingly used in such benchmarking, I suggest at least referring the use of SIF in your forthcoming study.

8. Line 310: "For" to "for"

9. Line 324: What do you mean for "observed mean" of vegetation distribution?

10. Line 336: Remove "call". OK?

11. Line 389: SI-Fig.87 should be SI-Fig.66.

12. Line 393: Can you explain why such overestimation occurred in vegetation biomass of Carvalhuis et al. (2014)?

13. Line 418: Why did not you provide global values of GPP and NPP? You did so for irrigation and biomass burning emission.

14. Line 435: Figure 6. Please add a title and units for x-axis.

15. Line 546: “Pg C p.a.” to “Pg C yr-1”

16. Line 562: Units and numbers of each color scale are difficult to read.

17. Line 564: “form” to “from”.

18. Line 619: Maybe, “beans” is more popular than “pulses” (if correct).

Interactive comment on Geosci. Model Dev. Discuss., https://doi.org/10.5194/gmd-2017-146, 2017.