Geosci. Model Dev. Discuss.,
doi:10.5194/gmd-2016-22-RC2, 2016

Geoscientific Model Development Discussions

Interactive comment on "Improved representation of plant functional types and physiology in the Joint UK Land Environment Simulator (JULES v4.2) using plant trait information" *by* Anna Harper et al.

Anonymous Referee #2

Received and published: 8 March 2016

The authors present a version of the JULES land surface model with a more detailed dynamic vegetation model and show that this gives more accurate carbon fluxes than the traditional version of JULES. It is of great interest and should be published.

My only question is whether you could you have got the same answer by tuning the old version of JULES? Adding extra PFTs will cause greater complication than tuning parameters, especially when competition between PFTs is turned on. You say you corrected known biases in the model. Did these same biases get corrected in the original, 5 PFT version, or just the new version? If not, I think you should have added

an extra experiment to assess the relative impact on the flux from adding the additional PFTs and the tuning. Would just correcting the 5 PFT JULES have had the same impact as adding extra PFTs? I think that some discussion of this, and ideally an extra experiment, is needed.

Experiments 4+ are discussed before experiments 1 to 3 in the text. It would be easier to follow if all the experiments were described in the same way and in the same order. Perhaps move the method around line 515 from the results section to before the first mention of experiment 4?

Table SM 2 gives tuned parameters for the tuned 5 PFT JULES, but I cannot find a reference to that in the text. Is there a missing section?

"and updated the model phenology to include a trade-off between leaf lifespan and leaf mass per unit area." - Does your improvement not just change the leaf turnover rate and its impact on the carbon flux rather than the phenology, which is still controlled in the same way as traditional JULES?

Interactive comment on Geosci. Model Dev. Discuss., doi:10.5194/gmd-2016-22, 2016.