

Interactive comment on “Modelling forest plantations for carbon uptake with the LPJmL dynamic global vegetation model” by Maarten C. Braakhekke et al.

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Received and published: 12 May 2019

Extension of LPJmL DGVM to assess the C sequestration potential of forest plantations is a useful development that helps in considering forest plantation as a global warming mitigation option. Parameterization of forests is challenging, as forest systems are complex entities and there exist vital information/knowledge gaps. The present effort to model the global forests under three broad categories (tropical, temperate and boreal forests) and not including certain factors (natural hazards, drought, fire disturbance, biomass removals etc.) simplifies such complexity. The effort to make use of field observations and comparison with equivalent natural forest to calibrate the model with

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regard to biomass productivity has enhanced the value of the study results. The extended model is able to simulate observation-consistent results like plantations showing higher growth rates at least during the first 50 years. Despite major limitations such as only 3 species PFT, one each for tropical, temperate and boreal forests selected to simulate carbon uptake, harvest set to zero and omitting CO₂ fertilization, the study still presents an opportunity to advance our capability to assess forestry-based options to mitigate climate change. The limitations quoted by the study bring focus on the areas for future advancement; most important among which is the characterization of PFTs for more number of common plantation species from the three zones. This study reports substantial work in the field of modeling for assessing attributes of forest plantation such as biomass (Carbon) accumulation. I find the methodology appropriate and results useful for publication. Study is likely to encourage more research work pertaining to forests as land use in general and plantations in particular. Authors may however consider revising the zone and carbon density color-coding in figure-1 for easy comprehension. Supplementary information may include methodology steps pertaining to selection of the representative species for the three zones and details of the location and source of observation data Recommended for publication.

Interactive comment on Earth Syst. Dynam. Discuss., <https://doi.org/10.5194/esd-2019-13>, 2019.

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