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Interactive comment on "Soil carbon response to land-use change: Evaluation of a global vegetation model using meta-data" *by* Sylvia S. Nyawira et al.

B. Guenet (Referee)

bertrand.guenet@lsce.ipsl.fr

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The study by Nyawira et al., it is nice attempt to evaluate a large-scale model using meta-data. This study focus of LUC effect on SOC dynamic but the methodology presented here might probably use in another context (compare long term and short term effect of atmospheric CO2 increase on NPP for instance).

The paper is generally well written but the methods section needs to be a bit more detailed to be useful to any modeller interested in applying the method. In particular, how the idealized simulations were sampled for non-equilibrium cases. Another missing point is how tillage is represented in the model and in particular its effect on SOC.

The take home message I found in the paper is that using observed GPP and with harvest representation the model fits better with the data. These results are not very surprising except if different approaches has been tested but not presented. Nevertheless, the main interest of the paper to my opinion is methodological. Therefore I suggest to add the scripts used in supplementary material to facilitate the use of the method by other.

Finally I suggest accepting the paper with minor revisions.

Minor comments: P4 l4: I don't understand this part. If you did idealized simulation using one vegetation type per grid, why give those details about grid cells with more than one vegetation type?

P4 l16: If this is the case here the word "usually" is not necessary.

P4 l29: When LUC is performed it is not very clear how the new vegetation type is split into the different PFTs?

P5 l6: The product of degradation of this new pool goes back to litter (to simulate composting for instance) or is this OM totally exported?

P6 l4: It is quite a big assumption to fix this ß value since it is likely controlled by several factors (Matthieu et al., 2015). A sensitivity analysis to this parameter might be useful in the supplementary materials.

Fig. 2: In the title: it is not "equilibrium" anymore right?

Tab. 4: It seems that to force the model with observed GPP and to better reproduce harvest improved the model-data agreement, what about doing both?

Tab. 5: Comparison with data might be useful in particular to see the error associated to autotrophic respiration in the model.