

***Interactive comment on “Sensitivity analysis of the GEMS soil organic carbon model to land cover land use classification uncertainties under different climate scenarios in Senegal” by A. M. Dieye et al.***

**Anonymous Referee #2**

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The paper of Dieye et al. addresses an important and relevant issue for the biogeoscience modeling community which make heavily use of satellite data input for process based models. The paper is well written and clear although the numerical experiments are rather complex. I have few comments that I hope will be addressed by the authors in a resubmission paper : 1. There is a complete lack of “in situ” validation besides some general broad values assessment by literature. I understand that the goal was to assess the GEMS sensitivity but I would have been more confident if some more evidence of measured SOC and NPP data corroborate the model outputs at different

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spatial scales. 2. The comparison between large scale and pixel based discussion is very limited, although, at least the spatial scale, seems the most sensible to LULC. I would suggest that for agronomic purposes and in general for the stakeholders needs, it would also be very interesting to work with agro-ecological zones in order to provide at that level the assessment of uncertainties. 3. The findings of the paper refer to GMES modeling framework, but how to generalize this finding to other process based models ? 4. The conclusion section needs to be shortened and focused. Most of the text repeat the goals and methods of the paper and not the real conclusions. Such as added value of the findings for the modeling community, large versus pixel scale, possible new space sensors better addressing local scale etc.

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