Biogeosciences Discussions

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Comment on bg-2021-132

Anonymous Referee #2

Referee comment on "Modelling long-term alluvial-peatland dynamics in temperate river floodplains" by Ward Swinnen et al., Biogeosciences Discuss., https://doi.org/10.5194/bg-2021-132-RC2, 2021

Overall comments

The authors investigate the use of a newly coupled accumulation model (Digibog) and a simple hydrological model (Stream) to simulate alluvial peatland development over Holocene timescales in relation to changes in both local and regional environmental conditions. A scenario-based approach was used to assess the sensitivity of alluvial peat growth to environmental changes under a wide range of settings. The results demonstrate that the alluvial peatland dynamics appear to be strongly determined by the setting and dynamics of the local river network, rather than by internal peatland dynamics or regional environmental changes.

This is an excellent paper. It is highly descriptive and well written. Technicalities about the model are well described. As already mentioned by the other reviewer, I believe that the authors should include an overview at the very beginning of the methods that primes the reader for all the various methodological steps and how they fit together. Apart from that and minor corrections (listed below) I believe that the article should be accepted subject to technical corrections.

Technical corrections

On line 229 it is written that “This indicates that the increased biomass productivity due to higher temperatures does not compensate the temperature effects”. Do the authors mean “This indicates that the increased biomass productivity due to higher precipitation does not compensate the temperature effects”?

Figure 4 - Could you provide more information about what means scaled parameter? To

my point of view, the x-axis should be graduated.