

# ***Interactive comment on “Prescribed-burning vs. wildfire: management implications for annual carbon emissions along a latitudinal gradient of *Calluna vulgaris*-dominated vegetation” by V. M. Santana et al.***

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We thank the reviewers for their comments and suggestions because they are going to improve significantly the manuscript. However, we would like to state our general opinion about the most criticized points. The three referees put their emphasis in three arguments as the main weakness of our manuscript: (1) that consumptions of 100% of aboveground biomass are unrealistic, (2) that peat burning is not considered, and (3) that wildfires are not considered as stochastic events but deterministic. Firstly, as we explain in our answer to the referees, consumptions of 100% are not very com-

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mon in our systems but they sometimes occur. Secondly, peat burning and vegetation burning rarely occur at the same time and can be difficultly considered within the same modelling. In addition, peat burning follows different processes in relation with those experienced by vegetation, with different scales in time, space and C emitted. Therefore, we think peat burning modelling should be performed following a different calculation to that used on this paper. Finally, it is true that stochastic simulations of wildfires can be more realistic, but the interpretation of their outcomes can be incredibly complex, especially when comparing with fixed fire intervals. We think that deterministic simulations used in this paper can be clearer for the comparison of different return intervals (as used in this manuscript), and they will not change the essentials of results and conclusions finally obtained. For all these reasons, and because we give valuable information about how designing future management strategies for reducing C losses in ecosystems with high conservation value as *Calluna vulgaris* dominated heathlands-moorlands from northern Europe, we think our manuscript has a great interest and is highly indicated for publication in Biogeosciences.

Dr. Santana on behalf of all coauthors.

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