

## ***Interactive comment on “Convergent modeling of past soil organic carbon stocks but divergent projections” by Z. Luo et al.***

**Z. Luo et al.**

zhongkui.luo@csiro.au

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We appreciate the positive comments and the suggestions on microbial biomass from H. Ibrahim. The response to each of the three points described by H. Ibrahim follows:

1. In this study, we did not directly compare the ASPIM model to other models. As mentioned in Page4250 Line5, we stated that the APSIM is “. . . similar to other SOM models like RothC and Century. . .”. The following sentence described that each pool is “. . . treated as first-order decay process. . .”. As the first-order decay process is commonly used in soil carbon models, and is generally well-known and accepted by carbon modelling community, we did not go to the details about the equation.

2. Thanks for this question. Actually, incorporating microbial processes into soil carbon

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modelling is very hot topic in the literature (as mentioned in the comment point 3). We also discussed this issue in several places of the manuscript (e.g., P4258L5, P4261L3). In our new coming revision of the manuscript, we will further emphasize this.

3.Thanks for these suggestions. Mature techniques exist to determine microbial biomass. In this study, however, we did not describe the relevant methods much as our paper focuses on modelling and the relevant uncertainty. The second question is important, and relies on our understanding of the underlying microbial processes under different environmental conditions. The modelling results in our manuscript emphasize the importance of microbial processes.

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