Dear respected Referee #2 (R#2),

Your guiding comments and suggestions are highly appreciated. Our responses are listed below.

R#2: The authors conducted a meta-analysis to examine the impact of straw incorporation on SOC sequestration in China. Their analysis identified the best combination of straw incorporation strategy and quantified the impact of different approaches. They also provided a general timeline for the response of SOC and crop productivity respectively.

The collected dataset has many missing values and the authors have made multiple assumptions to fill in the blanks, including using empirical functions and coefficients, it would be better if the authors can provide some kind of uncertainty analysis to ensure their results still holds under these noisy extrapolations.

[Responses]: We agree with the reviewer that these assumptions indeed decrease the robustness and certainty of our study. Actually, during the MS preparation, we conducted an uncertainty analysis to test whether these estimations by using different empirical functions and coefficients would affect our results. We listed our results in the table below, which reported the comparison results of SOC responses with different BD (Table 1) and straw-C (Table 2) estimation approaches. The overall SOC response was 0.35 (95% CI, 0.31~0.40) Mg C ha^{-1} yr^{-1} in the Current scenario of BD estimation, while the SOC response was 0.33 (0.29~0.42), 0.35 (0.29~0.40), 0.35 (0.31~0.40) Mg C ha^{-1} yr^{-1} in scenario A, B and C, respectively. The relationship between SOC response and straw-C input in Current scenario was y=0.162x+0.067 (R^2=0.30 n=120 *P*<0.01), while the relationship was y=0.170x+0.059 (R^2=0.30 n=120 *P*<0.01) in scenario I of straw-C estimation. We did not report the findings in the 1st version of MS because the estimation approaches gave very similar results without significant differences (P >0.05). However, as the reviewer suggested, in the revised manuscript we will add the uncertainty analysis in the M&M and Discussion Sections.

Table 1. Comparison of the SOC responses using different BD estimation approaches.

Scenario	BD estimation approach	Annual SOC sequestration rate (Mg C ha^{-1} yr^{-1})			
		All	Upland	Paddy	Paddy-Upland
Current	Eq. (1) for paddy or paddy–upland soil BD, Eq (2) for upland;	0.35 (0.31~0.40)	0.34 (0.28~0.41)	0.30 (0.19~0.42)	0.41 (0.33~0.51)
A	All the missed BD was estimated by Eq (1)	0.33 (0.29~0.42)	0.32 (0.26~0.38)	0.30 (0.18~0.42)	0.37 (0.26~0.51)
B	All the missed BD was estimated by Eq (2)	0.35 (0.29~0.40)	0.33 (0.26~0.40)	0.32 (0.21~0.50)	0.41 (0.27~0.54)
C	All the missed BD was estimated by Eq (3)	0.35 (0.31~0.40)	0.35 (0.28~0.42)	0.29 (0.18~0.40)	0.39 (0.31~0.49)

Note: the estimation equations for BD:

Eq. (1): $BD = -0.22 \times \ln(SOC) + 1.78$ (Pan et al., 2003)

Eq. (2): $BD = 1.377 \times \text{Exp}(-0.0048 \times SOC)$ (Song et al., 2005)

Eq. (3): $BD = -0.247 \times \ln(SOC) + 1.867$

Eq. (3) was derived from the empirical relationship between SOC content and BD based on 239 analytical samples in our database.

Table 2. Comparison of the SOC responses to straw-C input from different straw-C estimation approaches.

Scenario	Carbon concentration (%) of crop straw	Relationship between SOC responses (y; Mg C ha^{-1} yr^{-1}) and straw carbon input (x; Mg C ha^{-1} yr^{-1}) for national scale
Current	Wheat: 39.9%; Maize: 44.4%; Rice: 41.8%; (NATEC, 1999)	y=0.162x+0.067, R^2=0.30 n=120 P<0.01
I	40% for all the straw type; (Liu et al., 2014)	y=0.170x+0.059, R^2=0.30 n=120 P<0.01

Liu, C., Lu, M., Cui, J., Li, B., and Fang, C.: Effects of straw carbon input on carbon dynamics in agricultural soils: a meta-analysis, Glob Change Biol, 20, 1366-1381, doi:10.1111/gcb.12517, 2014.

National Agro-Tech Extension Center (NATEC): Chinese Organic Fertilizer Handbook, Chinese Agricultural Press, Beijing, China, 1999 (in Chinese).

Pan, G., Li, L., Wu, L., and Zhang, X.: Storage and sequestration potential of topsoil organic carbon in China's paddy soils, Glob Change Biol, 10, 79–92, doi:10.1111/j.1365-2486.2003.00717.x, 2003.

Song, G. H., Li, L. Q., Pan, G. X., and Zhang, Q.: Topsoil organic carbon storage of China and its loss by cultivation, Biogeochemistry, 74, 47−62, doi:10.1007/s10533-004-2222-3, 2005.

R#2: The study focused on SOC changes in the top 20 cm soil, does this include organic horizon or is mineral soil only? Please make the distinction. Also it would be curious to see data for SOC below this depth.

[Responses]: In our database, the SOC content of the top 20 cm ranged from 0.16% to 3.21%, i.e., mostly mineral soils. Even in northeast China, the studies adopted in our study are on agricultural soils which have been reclaimed more than 5 years, and with SOM low than 5%. We'll clarify this in the revised MS. Previous experiments conducted in China mostly are on 0-20 cm, although there several good studies revealing the significant value of deeper SOC. We will also address this in the revised MS.

R#2: The language can be improved as well, and the text can be shortened and be more succinct if collapsing some of the results and discussions that are repetitive.

[Responses]: Thank you for this good advice. Our revised MS will also be further refined by our authors of Jennifer Dungait and Roland Bol, considering of your advice.

R#2: Overall, the study explores an interesting topic and provided quantitative proof of the impact of straw incorporation on SOC sequestration of soils. The analysis approach is appropriate. Some implications of these findings are lacking in the current version, it would be good to expand on.

[Responses]: Agreed. The important implications will be added to the Discussion and Conclusion Sections.