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Discussions

Interactive comment on "Soil organic carbon in the Sanjiang Plain of China: storage, distribution and controlling factors" *by* D. Mao et al.

Anonymous Referee #2

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This study presented in this paper has a great significance for quantifying the SOC storage and density over the major food production region, the Sanjiang Plain in China. On the whole, the paper was written well. However, its value of practicability is far beyond its creativity in study methods, So some necessary minor revision is needed for further publication.

2. Data and methods

Subsection 2.2

Page14769, Line 21-24: Some detailed information on HJ satellite imagery used in this study should be listed, and one classification accuracy (error matrix) should be added. Alternatively, adding a reference about the data source here is also acceptable.

C6492

Page14769-70, Line 26-27: Same as above, add the data source information of soil data.

Subsection 2.3

When were the soil samples collected? Which year?

Subsection 2.5

Is the unit "kg hm^-2" correct? It should be "Kg ha^-1", right?

Subsection 2.6

Page14772, Line 5: After the phrase "Bemmelen index (0.58)", one reference should be added.

3. Results

Subsection 3.4

Page14774, Line 15: After the phrase "clay content (p<0.01)", add "(Fig. 6c1-c3)"; Line 19: After the phrase ". . . 30 cm of soil", add "(Fig. 6e1-e3)".

Line22: In Table 2, what does the "SS" mean? Give its full name, please.

Page14775, Line 1-2: From Table 2, how can the authors get the finding "precipitation exhibited more significant effects than temperature on SOCD"? Give some explanation, please.

4. Discussions

Subsection 4.1

Line 10-16: The authors compared the approaches of mapping SOC used in this paper with Yang et al.'s, i.e. Geostatistical Kriging interpolation vs. remote sensing VI method. In the following paragraphs, the authors also compared the estimated SOCD results in Sanjiang Plain with that published in some previous studies in Loess Plateau in China,

C6493

as well as that in France. What is the objective of these comparison? What topics do the authors want to discuss here? From these comparison, what are the advantages or disadvantages in this present study?

Likewise, in the last paragraph of this subsection 4.1, the estimated SOC storage (2.324 Pg C) in Sanjiang Plain was compared with SOC in Northeast China and in the whole Country (26.43 Pg C and 69.1 Pg C). The acquisition time of soil data in this present study were very different from that other two studies. So in Line 6-7, how did the authors make such conclusion as "significant underestimation of SOC storage"?

Subsection 4.2

How about is the SOC of forestlands? The authors didn't mention this land cover type here.

Subsections 4.3 and 4.4

Some sentences are some descriptions on results of this study, not discussions. So, they should be moved into the corresponding subsection of "3 Results", e.g. Page14778, Line 16-17; Page14779, Line 10-12 and Line 24-26; and others.

5 Conclusions

Page14782, Line 8-11: "Based on the comparison between our estimate and the previous studies, we demonstrated that the previous report at the Northeast China and the whole country level significantly underestimate the SOC storage in the Sanjiang Plain." This conclusion is questionable because the soil data were acquired in different time/year.

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