**Biogeosciences
Discussions**

Interactive comment on "The Unified North American Soil Map and its implication on the soil organic carbon stock in North America" *by* S. Liu et al.

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Dear editor, Thanks very much for your comments and good suggestions. Our Unified North American Soil Map is the first complete attempt to couple the latest national soil surveys of the U.S. and Canada with the most comprehensive soil pedon data. There are not many similar attempts so far, which makes the detailed review of previous studies difficult. However, we will try to provide a more detailed review about the previously developed soil data sets and the ecological model requirements for soil parameters as suggested by the first reviewer.

Before we developed this data set, we have thoroughly examined the available data

sets and our priorities given to different data sets are based on whether the data set is up-to-date. We didn't provide more details about the development of our data set because we thought the specific details about data examination, reanalysis, and harmonization would distract readers from the scientific significance of this data set. In the revised version, we will provide more details about the data development, especially data selection, so that the readers of this paper can apply the similar approach to developing soil map in other regions.

In terms of the estimate of soil organic carbon, although there are estimates for various subregions of the North America domain, our estimate is the first and the most up-to-date estimate of soil organic carbon in North America based on the observed soil type distribution, combining the latest national soil surveys of the U.S. and Canada. The advantage of our estimate is illustrated in this paper by comparing with the soil organic carbon derived from Harmonized World Soil Database (HWSD). The comparison shows that our estimate provides more details of the distribution of soil organic carbon especially in the high-latitude region, and therefore our estimate can be used as a benchmark to validate ecological model simulation.

The method described in this paper to develop the regional soil map based on soil survey data can be applied to developing soil maps for ecological modeling in other regions of the world. We will strengthen the significance and our improvements of this approach in the revised version of this paper.

We would really appreciate if this paper can be given the opportunity for major revision. We are looking forward to good news from Biogeosciences.

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