Biogeosciences
Discussions

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Interactive comment on "Spatial distribution and sources of organic carbon in the surface sediment of the Bosten Lake, China" *by* Z. T. Yu et al.

Anonymous Referee #1

Received and published: 19 October 2015

The manuscript by Yu et al. presents a detailed study about spatial distribution of sediment organic matter in Bosten Lake, based on which they calculated the contributions of terrestrial plant, soil and lake plankton and evaluate the potential factors responsible for their spatial variability. I think this study address an important issue about widely used geochemical proxies (C/N and $\delta13C$). Many studies applied C/N and $\delta13C$ as organic matter source indicators without consideration of other factors such as hydrodynamic and mineral contents. Meanwhile, this manuscript is well written and its topic is suitable for Biogeosciences. I have several concerns, which should be addressed before publish. 1. Page 7: The authors attributed sediment organic matter to three endmember, high plant, soil and lake plankton. I think it is better to say "terrestrial plants" instead of high plant. High plant (or higher plant) is not an accurate definition because many higher plants such as emerged, floating and submerged plants can be

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quite abundant in some lakes. In this manuscript, the endmember value for high plant is apparently from land plants. 2. Page 7: for end member values, the authors cited the data from Zhang et al. (2013). I did not check their raw data, but it is kind strange they only provided average values. I believe there are different types of land plants and soils, and therefore, the C/N and $\delta13C$ should vary with species and sampling sites. In my opinion, those data should be reported with standard errors. Otherwise, the readers can not estimate how much uncertainty of their three end member mixing model. A similar problem exists for the concentrations of POC and PON and $\delta13C$ values in different seasons. Without SE, we can't judge if those seasonal differences are significant or not. 3. Page 11: delete "as known" since this phrase does not provide any useful information 4. Figure 2 and other figures: the font size is too small.

Interactive comment on Biogeosciences Discuss., 12, 13793, 2015.