

Interactive comment on “Agricultural induced impacts on soil carbon cycling and sequestration in a seasonally saturated wetland” by J. J. Maynard et al.

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General comments:

This paper addresses a critical issue in carbon budgets: the role of sedimentation in wetlands that receive agricultural runoff. While there is evidence that such wetlands receive amounts of carbon derived from eroding soils; the amounts appear to be large enough to be a significant component of the global carbon cycle. However, the ultimate fate of this carbon is not known, and thus the role of these wetlands in carbon sequestration is uncertain. Studies like this are thus of great importance, and BGD is an appropriate forum for this paper. The title and abstract are informative. The setting,

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methods, and data seem to be very thoroughly and clearly described. The conclusions are well justified by the data. This is a valuable contribution to the literature on an important topic.

While the study is based on data from a single impoundment and extension to other settings is difficult, the paper does an excellent job of placing the observations from this impoundment in the larger context of agricultural erosion and wetland C sequestration. That the data are drawn from two contrasting years increases their value.

Specific comment:

P. 6041, lines 15-24 conclude that C retention efficiency is greater than that indicated by loads alone. While the decline in C loads between inflow and outflow is retention from the standpoint of the water, it may not be so from the standpoint of the atmosphere. Thus it is probably not correct to characterize this as “retention” (see also Table 1), because some of this C is likely released to the atmosphere. From the budget, and the conclusion that “. . . there was no significant additional long-term storage of endogenous C” (p. 6055, lines 25-26) it might be possible to make a rough estimate of that outgassing, if an assumption were made regarding the DOC concentration in seepage.

Technical correction:

P. 6052, Line 15. “. . .distribution of C in 2004 was lowest. . .” should probably be “. . .concentration of C in 2004 was lowest. . .”

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