

Interactive comment on “Carbon cycling at the aquatic-terrestrial interface is linked to parafluvial hyporheic zone inundation history” by Amy E. Goldman et al.

Anonymous Referee #1

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Review comments on bg-2017-28-manuscript-version2.pdf Dear Editor, While I found this paper of interest, generally well written with data well presented, I have several main concerns. First of all, the authors should use such unusual setting (anthropogenic driven soil saturation which occur on very limited areas of emerged Earth to allow the better understanding of the relationship between soil water content and soil saturation by water and major biogeochemical cycles. This is not performed and when done, it should greatly enhance the impact of the performed research. In their acknowledgment of the existing literature the authors should present quantitative information, trends from studies having investigated the impact of soil inundation of the cycles of elements and discuss the trends for further identification of gaps. While for instance water satura-

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tion by water bodies leads in many cases to denitrification in sediments, Grimaldi and Chaplot (Water, Air, and Soil Pollution, 2000) showed that in some cases exchange processes between streamwater, the hyporheic and riparian zones forbid that process. The second issue concerns the interpretation of the results. Not only are the study variables of interest (microbial biomass, . . .) affected by inundation but also by multiple factors such as inerrant soil type, vegetation type and its impact on rooting, organic matter quality, soil temperature, . . . This is a major which by itself nullifies all conclusions. Moreover, how can the authors convince on the observed trends is no temporal evaluation has been performed? The third issue concerns the study objectives. The authors should decide about their objectives. Is it about process understanding or about modeling?. Authors have to choice. I suggest to move all the conceptual results to the discussion part of the paper. Figure 2 is too simplistic. Other comments Figure 1 can not be presented with not true colors or pictures taken under constant light. In figure 2 why having a legend with distance from water? Why colors into the figure? This “distance to water” is not really adequate as the water level always changes.

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