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Interactive comment on “Biogeochemical factors affecting mercury methylation rate in two contaminated floodplain soils” by T. Frohne et al.

Anonymous Referee #1

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The strength of the manuscript is the methodology or microcosm system for studying mercury methylation. The study does not adequately show how the results relate to actual field condition of the two floodplain soils studied. The measured redox data presented was nominalized to pH 5 (since the average pH during the experiment was 5.3). Table 2 showed pH ranged from 4.12 to 7.17 however, upon reduction most soil pH values are generally near pH 7.0. Under strongly reducing conditions pH 7 is where most methylation occurs. Normalizing to pH 5 may not be the best approach. Authors should include a graph showing changes in Eh and pH with time (total days of the study). Methyl mercury production vs Eh over time should also be presented. It is difficult to evaluate the paper with most data being condensed or summarized. Should perhaps concentrate on the pH-Eh values where changes in methyl mercury occur rather than using an average pH over the complete time period. Table 1 should include

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pH of the soils (aerobic and anaerobic pH values) used in the study. Such would better tie the data presented to actual field conditions from which the sediment was collected.

Manuscript is publishable if the above issues are addressed.

Interactive comment on Biogeosciences Discuss., 8, 8925, 2011.

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