

Interactive comment on “Nitrous oxide emissions from riparian forest buffers, warm-season and cool-season grass filters, and crop fields” by D.-G. Kim et al.

Anonymous Referee #4

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This is a generally well written manuscript and referenced manuscript that certainly falls within the scope of Biogeosciences. There are passages where as a reader the text feels lengthy with regard to the point being made and occasionally in the discussion a repeat of the results - already presented - are made e.g. 1st sentence. Figures and tables are satisfactory. The authors change between using N₂O flux and N₂O emission - perhaps some consistency here would be good but it's a matter of semantics. Please see the attached pdf for minor typos.

The title does not reflect the findings of the paper nor the rationale i.e. the issues dealing with measured emissions vs IPCC calculated emissions. The major finding is

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that the IPCC methodology may underestimate N₂O emissions where soil rewetting and thawing are common. The abstract adequately concludes this point. Was a 'once a week' sampling adequate to fully characterise the wetting and thawing events? Could these peak events have been even greater than those measured?

A better characterisation of the soils with respect to the US soil classification system would be useful. So that scaling up could be performed on a soil basis as opposed to a creek-bank width. Wouldn't the age, materials and construction methods of the reintroduced riparian zones affect fluxes? Would these have a bearing on N transformation and N₂O flux over time? Likewise do you expect even nitrate concentrations and groundwater flows through out the catchment?

I enjoyed reading this manuscript. I think it makes a novel and interesting point with regard to the peak emissions not being accounted for in the IPCC methodology. I thought the extrapolation to the catchment scale was perhaps a bit crude but the authors acknowledge this. What I would like to see is a suggestion to incorporate the peak fluxes into the IPCC methodology or a new system that would allow for their capture.

Interactive comment on Biogeosciences Discuss., 6, 607, 2009.

BGD

6, S48–S49, 2009

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