

Interactive comment on “Nitrate and dissolved nitrous oxide in groundwater within cropped fields and riparian buffers” by D.-G. Kim et al.

Anonymous Referee #1

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This paper contains some interesting field results and deserves to be published in due course. However, it needs some further work in places, and some fuller referencing of prior literature (a good deal of European work is not cited). The abstract and 653/25 both state that very little work has been done on this; not true, and some have included vegetation studies and isotope work, which this study does not. The cited paper by Hefting et al would get the authors into the NICOLAS project, for example, and some of the research by Gilles Pinay and colleagues on N isotopes must be cited. They would do better therefore to concentrate in testing the IPCC assumptions than trying to appear as if this is novel work.

Figure 1 shows a simplistic well network. this would be insufficient to establish flow paths accurately. See Haycock and Burt (Hydrological Processes, 1993).

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The flux calculations rely on an assumption about average linear velocity. Where does this come from? Why not quote hydraulic conductivity and hydraulic gradient values? If these are not known, this would be a flaw indeed.

No direct measurements of N₂O flux are presented here. It is not acceptable practice to refer to another submitted paper with them in - that might be turned down. Possibly, the two should be turned into one paper? I'm not convinced from what is written here that we have a good test relating assumed denitrification and emissions of N₂O therefore. Presumably the other paper contains detail on potential and actual emissions? If it doesn't, then I'm not convinced this adds very much at all. See Burt et al (HP, 1999) for an example from a decade ago.

Interactive comment on Biogeosciences Discuss., 6, 651, 2009.

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6, S373–S374, 2009

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