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Biogeosciences Discussions

Interactive comment on "Nitrous oxide emissions from European agriculture; an analysis of variability and drivers of emissions from field experiments" *by* R. M. Rees et al.

Anonymous Referee #3

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Thank you to the authors for an interesting article about N2O emissions from European agriculture. In a world where GHG mitigation is very topical, it is important to gather data on N2O emissions according to management practcices and other site and climate variables.

However, I do have several general and specific comments regarding this manuscript.

General comments The methods in general are not sufficiently explained. Statistical methods are not explained in enough detail and I have concerns that the chosen analysis techniques were not the correct ones (see specific comments). The experimental methods used, like the chamber design (or different ones), and analytical analysis

are not described in enough detail either. No uncertainties or errors associated with these methods are mentioned which makes it rather difficult to interpret the results. The manuscript needs a thorough revision of statistical analyses and a lot more detail about experimental methods and analyses as well as details about the datasets used ought to be included.

Specific comments 9261 l1 Why Zimbabwe? It is not clear to me what the site from Simbabwe can add to an otherwise European dataset. It would make more sense to either have European sites only or add more sites from other continents. Having just one other site amongst an all European dataset appears to be a bit nonrepresentational. 9261 l16 Is linear regression really the right method? One needs to know more about the individual datasets, see later comments 9261 l18 please state what the IPCC default emission factors are 9262 l10- Please state what kind of meta analysis exactly was quoted in Bowman et al. This is too vague. 9262 l18 Add IPCC directly as reference for the emission factor 9263 l3 What kind of interventions? Please specify. 9263 l18 See comment above. Why Zimbabwe? Either give a good reason or take it out. 9263 l26- What kind of chambers were used? Different ones at different sites? Were fans used? What area and volume were they? How many samples were taking per sampling day and over what time span? How was the flux calculated? Etc. this needs to be expanded! 9264 l4 How exactly was the methodology standardised? An unpublished reference is not sufficient. Any uncertainties or errors are impossible to judge for the reader. What does 590yr of data mean? How many individual data points were there? This needs to be expanded or added to the tables 9264 l8 It is not sufficient to quote Pihlatie et al., it should still be expained 9264 l8 The analytical methods need to be explained in more detail as well, i.e. what kind of GCs were used with what specifications 9264 l17 Is linear interpolation between events sensible? How big were the time gaps in between events and how big are the datasets? 9264 l19 Multiple linear regression might not be the right analysis technique. The points will be time dependent for all sites so (linear) mixed effects models might be more appropriate. In any case more information about the datasets used (i.e. their size) is needed 9265 l4 n= number

of samples per year per site/treatment is needed! Please add it in the text or to tables 3&4 9265 l28 see comment earlier, linear regression possibly not appropriate 9266 l16 438 site and treatment years needs to be expained in detail, how much varied the size of the individual datasets? Tables 3&4 Columns of n=total number of individual measurments per site/treatments and n=number of chambers per site/treatment should be added Figure 2 a&b Are all years, i.e. all data plotted here? Figures 3&4 possibly not correct in case linear regressions was used despite sites having different points in time. Were there any negative emissions taken out to do the log transformation?

technical corrections

Interactive comment on Biogeosciences Discuss., 9, 9259, 2012.