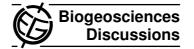
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**BGD** 

8, C5635-C5636, 2012

Interactive Comment

## Interactive comment on "Multiple-factor controls on terrestrial N<sub>2</sub>O flux over North America from 1979 through 2010" by X. F. Xu et al.

X. F. Xu et al.

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This is a nice study on N2O emissions from the North American Continent and the factors controlling its variability. It is comprehensive, well structured, clearly written and a very useful contribution to the scientific discussion on interactions between global change and trace gas emissions.

[Response: thanks for the positive comments.]

As an experimentalist, I am impressed by the precision of stated emissions (e.g. 1% for baseline emissions). To avoid possible misinterpretation, it would be useful to add a sentence or two to section 4.5 (Uncertainty) in which the difference between precision and accuracy of the values reported is discussed. Further, the study would benefit

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from a comparison with N2O emissions and their trends reported by the North American countries to the UNFCCC (National Inventory Reports). Here, the issue is not to discuss which number is more likely to be true, but to embed the values of the present study in a larger context.

[Response: Thanks for pointing out the issue of accuracy and precision. We added one sentence in the uncertainty section to clary this issue:"...we acknowledged that the precision is different from accuracy; more efforts are needed to increase the accuracy of estimated N2O fluxes". Regarding the comparison with UNFCCC report, we included one paragraph in the discussion section, i.e.: A newly developed country-level inventory data of N2O fluxes was reported by United Nationals Framework Convention on Climate Change (UNFCCC) (unfcc.int) in late 2011. A comparison shows that results from UNFCCC and this study are comparable yet different in magnitude due to different methods or datasets; for example, the UNFCCC estimates that N2O emission from agricultural soils in US is for  $0.79 \sim 0.88$  TgN a-1 from 1990 to 2009, while it is  $0.35 \sim 0.44$  TgN a-1 estimated by DLEM; this might due to the fact that UNFCCC considers all agricultural land while DLEM only considers cropland.]

Page 10952, line 15: "suppress", not "sppress"

[Response: Mistake corrected; thanks.]

Page 10946, line 7: ". . .period resulted. . .", not ". . .period were resulted. . ." same on Page 10953, line 9, and on Page 10947, line 4.

[Response: We have revised these sentences, thanks.]

Page 10952, last line: ". . .stimulating N2O emissions will be observed,. . .", do you mean ". . .enhanced N2O emissions"."?

[Response: Thanks for the comment. We have revised this sentence.]

Interactive comment on Biogeosciences Discuss., 8, 10935, 2011.

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