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Biogeosciences Discussions



# *Interactive comment on* "Significant non-linearity in nitrous oxide chamber data and its effect on calculated annual emissions" *by* P. C. Stolk et al.

**Anonymous Referee #3**

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The study reports on quasi-continuous measurements with an automated chamber system of N2O fluxes from two positions within a grassland. Concentrations of N2O were determined by GC-ECD four times during a period of 25 minutes. From the total set of data, one quarter was selected and analysed for whether it indicates a linear or rather non-linear change in concentration over time. More than half of the data was rejected because of inconsistent concentration changes. Discussed are possible reasons for non-linearity and the bias in annual budgets when non-linearity is not taken into account.

The study is a re-iteration of an old problem on a new set of data but it does not provide a new solution. It concludes that a quadratic fit is preferable to an exponential one, which can lead to extreme values, if not supported with a larger number of concentra-

tion measurements during the closure period. Both alternatives to the linear fit were known before and a thought experiment would have sufficed to come to the conclusion regarding the greater robustness of the quadratic fit over the exponential one.

Larger EU projects require data collected by different groups in different parts of Europe with similar methods. Advances in understanding are expected from the analysis of the ensemble of observations. I understand that each contributing group is also under pressure to publish their particular and local contribution as a stand-alone paper. This is filling journals but not advancing scientific understanding. If Biogeosciences is to remain a leading journal in its field, it should refrain from accepting contributions of that kind.

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Interactive comment on Biogeosciences Discuss., 6, 115, 2009.