



Interactive comment on “The relationship between ammonia emissions from a poultry farm and soil NO and N₂O fluxes from a downwind source” by U. Skiba et al.

Anonymous Referee #1

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This is a nice little study on the effect of N deposition on NO and N₂O emissions downwind a poultry farm. Unfortunately, the generated data is somewhat over-interpreted, especially in the case of N₂O.

There were only two small N₂O chambers at each sampling point, providing eight measurements each. As the authors know, N₂O is notoriously variable in space and time. Therefore, it is not surprising that differences between sites were not significant and no relation was found between N deposition and N₂O emissions. In fact, the study provided neither proof nor disproof of any relationship between N₂O and any other parameter. Nevertheless, the point was made that emission factors observed "...greatly exceed the emission factor of 1% advised by the IPCC...". I wonder what are the estimated errors in observed emission factors and whether observed factors are

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significantly different from the IPCC default value of 1%.

Another case of over-interpretation might be the correlation between N deposition and soil available NH_4 and NO_3 . In the methods section, two sampling occasions for soil mineral N were mentioned. In the results section, however, results from only one sampling occasion were found to reflect the N deposition gradient. What indicated data from the other sampling occasion?

Also, I wonder whether the activation energy for NO calculated for site C is meaningful. As I understand, calculations are based on temperatures at 5 cm and 10 cm depth. How much of the NO produced at these depth was likely to escape to the atmosphere under the relatively moist conditions at the site (16 to 63 % v/v)?

A large part of the discussion is dedicated to comparing findings with those of a study by Pilegaard et al., which is in preparation. Maybe, it would be a good idea to merge the present study with that of Pilegaard et al. Present study is already compact and could be further reduced by leaving out the inconclusive part on N_2O .

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