

Interactive comment on “Observations of reactive nitrogen oxide fluxes by eddy covariance above two mid-latitude North American mixed hardwood forests” by J. A. Geddes and J. G. Murphy

Anonymous Referee #3

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This manuscript gives a thorough presentation of NO, NO₂, and NO_y mixing ratios and fluxes at two research forests. It is relevant to Atmospheric Chemistry and Physics. Because NO_y deposition data are rather limited and emissions in North America have changed significantly since the last extensive study of NO_y flux this paper makes an important contribution, and hopefully stimulates renewed effort on long-term deposition studies.

I recommend publication with some minor changes to address points that could be clarified, or reconsidered.

C10401

Page 27896, line 18 missing "to" page 27898, line 12, to support the use of night-time NO measure as a zero check the text should note what the typical O₃ values were. night time NO would not go to zero if O₃ was very low.

page 27902 I think you may not need to consider the O₃ correction for fluxes. In the case of gold converter ozone is destroyed in the converter and there is no back reaction. I don't know what the Mo converter does to O₃, you ought to check and then ignore this if the O₃ is consumed

page 27903 -line3 True the potential error is only 5-10%,. but it is systematic and always affects the mid-day fluxes. After reconsidering whether O₃ passes through the Mo converter is the conclusion about overall uncertainty still valid?

page 27903, line 12, the approach of using covariances far from the true lag ought to cite prior use in other studies. Where I've seen this used before covariances are computed at multiple lags in a range that is far from the peak, and the statistics for that covariance provide the estimate of uncertainty.

page 27903, line 17, you say this covariance should be close to zero, is it?

page 27909, periods with rapidly changing concentrations should be evaluated for the magnitude of storage term.

page 27911 line 7 Are the apparent NO₂ and NO fluxes distinguishable from being equal and opposite? There is a mechanism for NO₂ emission, but NO uptake has not been considered likely. In the case of no net flux of NO_x the NO and NO₂ would counteract each other. This is mentioned in the discussion section, but here in the results it would help to include some statistical tests and evaluate whether the differences between NO and NO₂ flux are outside the confidence limits.

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