

Interactive comment on “Measurements of nitrogen oxides and ozone fluxes by eddy covariance at a meadow: evidence for an internal leaf resistance to NO_2 ” by P. Stella et al.

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1 General comments

The paper reports a study of measurements of concentrations and fluxes of NO , NO_2 and O_3 . The results are interpreted by the use of resistance modeling. Comparing the model results and the measurements it is found that the fluxes can only be modeled by including an internal resistance to NO_2 in the leaves. Such a resistance has been suggested before, but only based on chamber flux measurements, not eddy covariance flux measurements as in this study.

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In general, I find that this study is well carried out and documented and methods are state-of-the art. The paper also gives a nice overview of the problems of interpreting fluxes with the involvement of several possible sinks/sources and chemical and photolytic reactions.

I have a few suggestions for improvement of the paper as detailed below.

2 Specific comments

p. 4462, l.10: "direct NO_2 emission": from where?

p. 4466, l.21: How was the J_{NO_2} measured

p.4468, l.4: If the conversion efficiency was not constant, how often was it measured and how did the variation influence the calculated fluxes?

p.4478, l.10: NO emission from the soil is not discussed. I would assume that if it is a fertilized meadow some NO soil emission must occur. Maybe it quickly reacts with O_3 , and maybe it is so small that it has no influence on the O_3 and NO_2 fluxes. However, for completeness, I suggest that it is included in the discussion.

p.4479, l.13: "and" in stead of "an"

p.4487, l.13: I suggest "would only explain" in stead of "would only le(a)d to"

p.4487, l.15: "an" in stead of "the"

p.4488, l.22: Either "In contrast to ..." or "Contrary to ..."

p.4489, l.4: "60% of the total leaf resistance"

p.4489: l.11-12: "The higher the concentrations of ascorbate and nitrate reductase are, the higher ..."

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p.4489, l.19: "maximum" in stead of "maximal"

p.4489, l.23: "minimum" in stead of "minimal"

p.4490, l.1-6: Can be deleted - not part of a conclusion

p.4490, l.13: "an" in stead of "the"

p.4491, l.10: I suggest "vegetation type" rather than "land use"

Fig.2: The figures are too small to be readable

Fig.3: What are the different coloured areas? It is very difficult to see the footprint countours

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