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Interactive comment on “Measurements of nitrogen oxides and ozone fluxes by eddy covariance at a meadow: evidence for an internal leaf resistance to NO₂” by P. Stella et al.

Anonymous Referee #1

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This manuscript reports NO₂ fluxes measured over a meadow using the eddy covariance method. The authors found that measured NO₂ deposition fluxes during daytime were about a factor of two lower than a priori calculated fluxes using the Surf atm model without taking into account an internal resistance, and attributed this large discrepancy to the existence of the internal resistance after excluding the influence of other factors. The study presents the first clear evidence and quantification of the internal resistance using the eddy covariance method. The study merits publication in BG. However, the following aspects need to be clarified: 1) As described by the authors, the NO, O₃, and NO₂ analyzers were located in an air conditioned container about 60m north-east from the air inlets. The non-active PFA tubes were about 62-65 meters. When air passing

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through the tubes from the sampling site to the analyzers, was there any change in the concentrations of NO₂ between inlets and outlets? That is, if NO react with O₃ to form NO₂ while the air passing through the tubes, observed NO₂ would be higher than it really was. This way one would find that less NO₂ deposition and elevated resistance. 2) For the impact of chemical reactions, the authors only considered the NO-O₃-NO₂ triad. We know that there would be emission of BVOCs from the meadow. Some VOC species would react fast with O₃. Were there any differences in the chemical reactions if the role of VOCs were considered?

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