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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 NO_2" *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 Surfatm 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

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?

Interactive comment on Biogeosciences Discuss., 10, 4461, 2013.