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Interactive comment on "Synthetic ozone deposition and stomatal uptake at flux tower sites" *by* Jason A. Ducker et al.

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This manuscript describes the development and application of a method to predict the deposition flux of ozone to vegetation. Specifically, the stomatal deposition is quantified. The method is based on flux measurements of latent heat (evapotranspiration) and other micrometeorological parameters at over 100 FLUXNET sites in North America and Europe. Measured data are used wherever possible. The analysis is based on the present-day knowledge as available in the literature, and on sound understanding of all processes involved. A rigorous uncertainty analysis is performed. Data of the synthetic flux estimate are compared to measured data of 3 sites. Uncertainties of the synthetic fluxes on the one hand and of the measured fluxes on the other hand were in the same range. Overall, the ozone deposition flux and stomatal flux can be

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Discussion paper

estimated with an error within the factor of 2 or less. Eventually, the potential damage of the O3 to the vegetation is estimated. It is convincingly shown that the novel dose function is a better proxy than other, widely used proxies such as AOT40 and W126. The manuscript is thoroughly written and very clear. It covers all aspects of ozone deposition to vegetation. It is not only a micrometeorological and physiological analysis, but also reaches out to aspects such as potential damage of vegetation through ozone deposition. It is very interesting to see that the stomatal conductance is a major driver in this regard, likely more than the ozone mixing ratio is. A large portion of the result data set is included in the supplement material. This offers the opportunity to other researchers to make direct use of this data. The only error that this reviewer founds is that in the Appendix, the molar ratio of ozone in units mol mol-1 or ppb is erroneously called concentration. Overall, this is a brilliant manuscript, ready for publication as is (except for the minor error mentioned in the preceding paragraph).

Thank you for pointing this issue out within Appendix A and your comments about our manuscript. We will fix the description of O3 mole fraction within the Appendix.

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