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Comment

***Interactive comment on* “Predicting and partitioning ozone fluxes to maize crops from sowing to harvest: the Surf_{atm}-O₃ model” by P. Stella et al.**

Anonymous Referee #1

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This study describes a soil-vegetation-atmosphere transfer model for O₃ and model-measurement comparison over three maize crops. Partitioning of O₃ fluxes into stomatal and non-stomatal pathways is also conducted in this study. The information presented here is useful in better understanding air-surface exchange of O₃ and to assess potential O₃ damage to agricultural crops. The paper is generally well organized and can be recommended for publication in the final stage of BG if the following concerns are addressed.

Page 6702, lines 11-13: the better agreement between the model results and the measurements at one site compared to the other two sites was because the model input

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parameters was generated from the measurements obtained at the first site. The statement here seems misleading; it implied that the model can actually perform so well.

Page 6702, lines 18-21: How about on annual basis, especially you state that the model could be used for projections of tropospheric O3 budget?

Page 6703, second paragraph of Introduction: O3 damage on canopies, its green house effects, etc., were all discussed. To make the discussion complete, O3 effect on air-quality should also be briefly mentioned here.

Page 6704, line 26: is LAI a surface parameter? How about roughness length? Non-stomatal resistance depends on both of these two parameters.

Page 6706, line 16-20: The statement here is not appropriate. Large surface resistances over water bodies (lakes, ocean) were generally observed; however, small resistances over wet canopies (by rain or dew) were observed frequently. Cuticle resistance is expected to be smaller when RH reaches 100%.

Page 6707, the last paragraph: would a sunlit/shade model perform better than the simple scaling?

Page 6714, second paragraph of Section 4.2: the major reason of the good performance of the model at this site should be explicitly stated, e.g., some model input parameters were based on measurements from the same data set.

Page 6717, line 10-12: Many of the explanations in this section for the model-measurements discrepancies were speculations. Thus, a sensitivity test on soil resistance for this and the third site is strongly recommended to check if the model can perform as good as at the first site. This would validate all your assumptions.

Section 4.4, if it is not too much work, providing the annual number and compare this number with previous studies would be very useful.

Abstract and Conclusion: these two sections need to be revised after addressing the

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above specific comments which requires some additional work and provide more results.

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