

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.

P. Stella et al.

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Dear Referee#2,

We acknowledge you for your comments on this manuscript, and the English corrections you pointed out. Our answers to your comments were included in the revised paper in order to improve the quality and understanding of the study presented here.

Sincerely yours,

P. Stella et al.

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The Referee addressed two major comments concerning this manuscript.

First of all, he pointed out that the model performs very well at the Grignon site because it was parameterized using data from this site. The Referee#1 also pointed out this issue. However, it must be noted that although parameterizations were obtained on this site, it concerns only two resistances: -the soil resistance, which was effectively obtained on this site and including partially data before maize establishment. However, this parameterization was also obtained using other datasets from Grignon. This point is in addition discussed in Section 4.3, page 6717, lines 9-12. -the cuticular resistance which was also parameterized on the same site, but for a maize crop in 2002, not the one presented here. In addition, the parameterization was significantly modified as described in Section 2.2. This issue was addressed in the reply to Referee#1. We clarified this issue in the final manuscript.

The second point concerns the approach used here (i.e. one vegetation layer and one soil layer) compared to multilayer models and phenological models. The multilayer approach could be particularly interesting for the canopies with inhomogeneous vertical structure such as forest or tall canopies. Indeed, the presence of such ecosystems implies to take into account the understorey (e.g., Wesely and Hicks, 2000) and/or the exchanges inside the canopies. Using a multilayer approach is particularly necessary when the big leaf approach is not adapted. For the case considered here, i.e. maize crop, the big leaf approach for the canopy seems adapted: this canopy is not a tall vegetation and the vertical structure is quite homogeneous. The second argument that much be pointed out is a more practical consideration. Indeed in our opinion, this quite simple model could be adapted quite easily coupled with more global model to predict future ozone deposition for example.

The minor corrections suggested by the Referee were carried out in the final manuscript.

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References.

Wesely, M.L., and Hicks, B.B.: A review of the current status of knowledge on dry deposition, *Atmos. Environ.*, 34, 2261-2282, 2000.

Interactive comment on *Biogeosciences Discuss.*, 8, 6701, 2011.