

## ***Interactive comment on “A revised parameterization for gaseous dry deposition in air-quality models” by L. Zhang, J. R. Brook, and R. Vet***

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Received and published: 9 May 2003

Specific comments:

Page 1781: Mesophyll resistance for 31 gaseous species were presented in Table 1 of Zhang et al. (2002a) as explained in the paper (bottom line of Page 1781). It is not included in Rst.

Page 1782: It is quite possible that only sunlit leaves at the top of the canopy are covered by rain drops or dew. Since the current stomatal resistance sub-model is a two-big-leaf (sunlit/sunshade) model,  $W_{st}$  represents the overall effect of wetness on the whole canopy. As can be seen from the formula,  $W_{st}$  never exceeds a value of 0.5.

Page 1789: We agree with the review that if results from other existing models are also

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presented, the improvements of the current model can be easily seen. The reasons that we chose not to include results from other models are: (1) There are many other existing models as cited in the section of Introduction of the present paper. Model performance of earlier models can be found from their own publications. For example, Massman (1994) evaluated Wesely (1989) model using several site data. Erisman et al. (1994) compared several models. Meyers et al. (1988) and Finkelstein et al. (2000) evaluated their multi-layer model using the same data set as we used to evaluate our model. (2) The main purpose of this paper is to show a complete description of the theory so the readers can reproduce the model if they want to use it. Model evaluations and the evidence of improvements have been described in our earlier two studies (Zhang et al., 2002b, Zhang et al, 2003), and we did not want to repeat them here. Based on this reviewer and another reviewer's suggestions, we decided to add some results from our earlier model for wet canopies in Figure 3 in the revised paper. For dry canopies, the differences between the current and old model are small and were not added.

Technical corrections:

Page 1786, Figure 3 and Figure 4: We will make the corrections as suggested in the revised paper.

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Interactive comment on Atmos. Chem. Phys. Discuss., 3, 1777, 2003.

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