

An urban trees parameterization for modelling microclimatic variables and thermal comfort conditions at street level with the Town Energy Balance model (TEB-SURFEX v8.0)

by Emilie Redon et al.

Response to editor's comments

Thank you for the modification and corrections. The only thing I'm still missing is the response and action to "Reviewer2 was asking how well the current model compares with other models. **I see that some text on this should be provided in the Discussion as asked by the reviewer. This text should not emphasize results but rather advantages/differences/disadvantages to the current model compared to others used in the field.**" in English.

(sorry we realized our previous reply was in French !!!)

On this point, we believe we have already provided enough elements in the text. It is said that:

- (1) on the one hand, in terms of physical processes, the model does not separate ground/tree energy balances as it may be the case in other models ;
- (2) on the other hand, in terms of performance (or comparison to observations), it is quite difficult to assess if the other models correctly represent the impact of energy fluxes on air temperature, because the results do not show very substantial differences between sites with and without trees.

It is difficult to go further in the discussion, unless we make an intercomparison of models, and that is not the purpose of this paper (although it would be very interesting given the increase in new parameterizations related to urban vegetation!). We hope you will agree with this answer and this vision.

"The choice was made to keep the simple approach of "bigleaf" parameterization for treating all natural covers as a composite compartment, rather than solve distinct energy budgets for soil, ground vegetation, and trees. This choice may be debatable, given that there are other models available today that can independently calculate water and energy flows between foliage and air. Nonetheless, in view of the results presented in the literature, it is difficult to objectively compare the performances of these models. The main limitation remains the availability of experimental data allowing a fine evaluation of the implemented processes, especially for turbulent flux calculation and impacts on air temperature and humidity (Lee and Park, 2008; Lee, 2011; Ryu et al., 2016). Besides, the comparisons presented by Ryu et al. (2016) do not show a very substantial change in the fluxes and Bowen ratio with the implementation of a specific trees' parameterization."