

***Interactive comment on* “Inclusion of vegetation in the Town Energy Balance model for modeling urban green areas” by A. Lemonsu et al.**

Anonymous Referee #2

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Inclusion of vegetation in the Town Energy Balance model for modelling urban green areas A. Lemonsu¹, V. Masson¹, L. Shashua-Bar², E. Erell², and D. Pearlmutter²

This paper describes the development of the TEB model to include integrated vegetation. The new model is evaluated with data collected in Israel. This is an interesting contribution but some issues need to be clarified

Major issues 1) Discussion of scale is needed. The model is a local scale model but the evaluation data are micro-scale.

2) More detail is needed about the observations – several parts not clear

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3) Notation – there are number of inconsistencies that need to be clarified

a. Fractions – two different symbols are used

b. Humidity – Q & q . Q – is the same as turbulent heat fluxes (p12 l6)

4) English in a few places make it difficult to actually determine what is meant. In other places just needs to be tidied up.

Detail

1) P4 top – not clear what this refers to

2) P5 22/23 - tense

3) P10 l4 – explain why the two SVF are equal.

4) P11 l3 original version rather than ‘initial’

5) P14 – need clear statement about the scale of the observations –and their applicability to the scale of the model. It is not clear from the description how extensive each treatment is (what areal extent?).

6) P14 – English need work

7) P14/13 - local microclimate – scale need to be made clear

8) P14/15 – not clear - what is meant by the 3-4 day of the landscaping strategy. Was the grassed rolled out etc? i.e. the areas changed or is the equipment being moved between sites for the 3-4 days.

9) P14 l22/23 – what is the method for evapotranspiration determination – what scale/area does it represent.

10) P15/l28 plan area (and elsewhere)

11) P15/29 – rather than ‘town’ -> ‘built’

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- 12) P16/17 – need proper reference for soil map
- 13) P16/18 – basis for aerodynamic resistance – why is this prescribed in TEB – veg?
- 14) P16/13 – external disruption – clarify
- 15) P16 – need to know if the sites are permanent – is the soil moisture and temperature known prior to the model simulations?
- 16) P17/section- 5.4 – scale issue again needs to be discussed
- 17) P18 – how do these results compare with other previous evaluations?
- 18) P19 – English - several place difficult to understand what is actually meant
- 19) P19 – implications of observational error to forcing data – to assessment. What is the size of the measurement error?
- 20) P20 need discussion linked about scale and evaporation
- 21) P24 – A4 – is that defined? – i.e. one sunlit and one shaded
- 22) P24 – I20 – what is the impact of the non-isotropic sky - or state assumption.
- 23) P31 – Halstead coefficient – needs reference
- 24) P31 – link needs to be made to the windfield assumptions and the aerodynamic resistance
- 25) P33/13 Journal wrong?
- 26) Table 1 – needs sources – e.g. reference in caption
- 27) Table 2 – why does the roughness length stay constant despite the change in urban form? Would that happen normally in the previous version or is that forced here?
- 28) Plane> plan
- 29) Roughness length assumptions are quite different between upper and lower part

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of the table.

30) Figure 4- plan and cross sectional views to scale would be better.

31) Figure 5- lines are hard to distinguish

Editorial

1) Large number of places English needs work as it is not clear (I have not identified these)

2) Reference order needs to be sorted out (Chronological then alphabetical)

3) Explicitly (no 'e' in the centre)

4) Parameters – should be 'variables'

5) Type of coatings – surface materials

6) What are all the extra numbers at the end of the references?

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