

This paper is concerned with the storage heat flux in areas with large thermal mass and multiple surface layers. It provides a really nice, through and useful analysis of the impact of where temperature nodes are in a layered system. My comments are very minor and easily addressed.

Comments

- 1) Notation is confusing for the storage heat flux as two sets of symbols are used for what should be the same (as the model is being evaluated against it- but is referred to differently between the model and observations)
 - a. P1. L20 should be ΔQ_s (that notation throughout)
 - b. P2L23 - Δ changing notation – Infer that the Δ is related to the residual whereas in fact for both it should be the net change in all components of the system e.g. trees, air, as well as the built materials. The observational method of a residual difference is not related to Δ . The notation is confusing relative to the net change in storage – the authors could create a subscript to distinguish the two but refer to it with the same notation or refer to observed as RES (residual) as commonly done
- 2) P2. L2 – there are multiple methods - so it is an additional method
- 3) P3, l5 – cite the original Grimmond et al. 1991
- 4) P3 l12 – references should be in chronological order (throughout)
- 5) P3 L29 – Homogenous – reference examples
- 6) P4 l3 – Jackson et al. (**date**)
- 7) P6 l1&2 – int – for the second R_{int}
- 8) P6 l23 – for the respective time step?
- 9) P8l25 l assemblies or assemblages?
- 10) P8 l24 – give accessible reference location
- 11) P9 line 2 – are representative of? The central tendency of ... later in sentence ‘represent’ or ‘are for the ...’
- 12) P9/L18 – values have been multiplied by 100 % to be made a percent
- 13) P9 l 19 – reword sentence
- 14) P10 – heading observational methods – some aspects have already been introduced, why this heading here? And why is the description of the model under observations?
- 15) P11 line 5 – net all-wave radiation
- 16) P11 line 25 – notation now includes Δ
- 17) P12 line 16 – define centred RMSE
- 18) P14 top paragraph – consider work Salamanca, F., E.S. Krayenhoff, A. Martilli. 2009: On the derivation of material thermal properties representative of heterogeneous urban neighbourhoods, *J. Appl. Meteorol. Climatol.* **48**, 1725-1732
- 19) P14 l21 enhance rather than benefit?
- 20) Figure and Table caption in general need to be standalone so the material can be understood
- 21) Appendix A –Tables A1 and A2 give references or basis for data sources here or indicate where these are given in the text. SITE, WRF uZE aTEB – need to be defined to
- 22) Figures 2 onwards – - units should have space between the dimensions. The extra headers should be removed (difference between talk and paper presentation)
- 23) Figure 4 and 5 – give more details of types of conditions used
- 24) Figure 6 – Caption is not complete enough to be stand alone. Need correct spacing on units $W m^{-2}$ – fix units within plots
- 25) Figure 7 – Label Y axis