

### **General comments:**

This paper intercompared the Noah Single Layer Urban Canopy Model (Noah/SLUCM) and the Integrated Urban land Model (IUM) using the observed fluxes data at the 325-meter meteorology tower in Beijing. Overall, this paper is well organized and easily to read; I suggest this paper should be published after a MINOR revision.

### **Specific comments:**

1. Line 62, the key factors of the land surface models were found out.

**Answer:** This sentence was corrected.

2. Line 67, land surface comparison projects were launched.

**Answer:** This sentence was corrected.

3. Line 86, please give the full name of the acronym ISE.

**Answer:** impervious surface evaporation

4. Line 108, in urban areas are given below.

**Answer:** This sentence was corrected.

5. Equation 5, please give the equations for calculating the sensible heat flux from roof, wall and road.

**Answer:** These equations were added.

$H_R$ ,  $H_B$  and  $H_G$  are the sensible heat flux from roof, wall and road respectively ( $\text{W m}^{-2}$ ), they are calculated as follows:

$$H_R = Ch_r u_a (T_r - \theta_a) \quad (6)$$

$$H_B = Ch_b u_c (T_b - T_c) \quad (7)$$

$$H_G = Ch_g u_c (T_g - T_c) \quad (8)$$

Where  $Ch_r$ ,  $Ch_b$  and  $Ch_g$  are the heat transfer coefficient from roof, wall and road respectively ( $\text{mm m}^{-1}$ );  $u_a$  and  $u_c$  are wind speed in the reference height and canopy respectively ( $\text{m s}^{-1}$ );  $\theta_a$  is the air potential temperature at reference height (K); is the  $T_c$ ,  $T_r$ ,  $T_b$ , and  $T_g$  are canopy air temperature, roof temperature, wall temperature and ground surface temperature (K), respectively.

6. Line 193-196, road water depth should be impervious surface water depth.

**Answer:** These sentences were corrected.

7. Line 202, road surfaces should be impervious surfaces.

**Answer:** This sentence was corrected.

8. Line 223, please give the full name of the acronym LULC.

**Answer:** land use and land cover

9. Line 227, the temporal resolutions of the two models are 30min.

10. **Answer:** This sentence was corrected.

11. Line 261, in figure 3, the amplitudes of the simulation results seem too big for both the two models, maybe the heat capacity and heat conductivity should be adjusted.

**Answer:** Yes, these two parameters are both important in ground surface temperature simulation. The parameterization of these parameters should be studied in the future.

12. Line 285, as the friction velocity is extremely important and associated with the roughness, the roughness in table 1 should be adjusted to reduce the bias of the sensible heat flux.

**Answer:** Yes, the roughness length of the ground is also an important parameter in sensible heat flux simulation and should be adjusted in the future too.

13. Figure 7, the figure (a) is not in accordance with the figure (b), please redraw either of them.

**Answer:** I checked figure 7 carefully, as figure 7(a) is the daily average ground heat flux, so figure 7 has no problem.

14. Equation 22, please give the meaning of  $P_{rcp}$  and  $D_{rain}$ .

**Answer:**  $P_{rcp}$  is the precipitation (mm/s);  $D_{rain}$  is the water drainage.

15. Equation 22, please give the equations for calculating the roof interception, infiltration and drainage.

**Answer:** The roof rainfall interception is associated with the precipitation and the

maximum roof interception depth, which could be calculated as follows:

$$I_{roof} = \begin{cases} 0 & W_f \geq W_{max} \\ P_{roof}P_{rcp} & W_f < W_{max} \end{cases} \quad (26)$$

Where  $P_{roof}$  is the fraction of the roof area;  $W_f$  is the roof water depth;  $W_{max}$  is the maximum roof interception depth. The infiltration rate is associated with the soil infiltration rate:

$$I_{nf} = \min\left(\frac{P_{er}W}{\Delta t}, I_{soil}\right) \quad (27)$$

Where  $\Delta t$  is the time step of the model;  $I_{soil}$  is the infiltration rate of soil (mm/s). The water drainage is assumed equal to light to moderate rain, which is approximately 10 mm d<sup>-1</sup>. The roof interception and the infiltration are both not considered in this paper.

16. Conclusions. The urban canopy dependency parameterization (SURY) (Wouters et al., gmd-9-3027\_3054, 2016) maybe a choice for urban energy balance parameterization.

Answer: Yes, this was added as the last sentence of this section.

**The urban canopy dependency parameterization schemes (Wouters et. al, 2016) should be considered to improve the simulation associated with the urban energy balance.**

17. Table 1, road should be ground.

**Answer:** Table 1 was corrected.