

Interactive comment on “Building indoor model in PALM model system 6.0: Indoor climate, energy demand, and the interaction between buildings and the urban climate” by Jens Pfafferott et al.

Anonymous Referee #2

Received and published: 6 March 2021

General comment

The paper numerically investigates the connection between the energy balance and the urban surface model with PALM. It is an important step to include it in a numerical flow solver as the urban heat island effect on the energy balance of a building is larger as the effect of climate change. The derivation of the equations is explained well, however, the presentation of the results in section 4 could be improved (e.g. more detailed explanation of impact factors in the model, where can it be seen in the model? Is there a difference in the model temperature prediction between 1920s, 1970s or 1990s building age (differences in winter (or summer) between different buildings). To

C1

Figure 3 a detailed physical interpretation of the reasons (at least of a few ones) should be given)

Specific questions

- Eq. 5: Can you give a motivation for the 0.3 and 0.7 coefficients?
- It is not explained that is meant by third and second wall temperature in line 128.
- There is no reference in the text to Fig. 2.

Minor comments

- 1 Introduction
- For completeness you should think about stating Fourier's law.
- line 84, 167: 3600 not 3,600
- line 85: v_m not vm (same in line 93 with vi , same 104)
- Eq. 1: 3600 s in Equation to result in the right unit for v_m
- Fig. 3 colorbar figures cannot be identified
- last sentence of section 4 seems to miss something. Should it be 20 and 60 W/m² in summer?