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Geoscientific Model Development Discussions

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 #1

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General comment: The topic of this paper is the implementation of a building model into an urban climate model. The building model representing the transient energy balance of a building is described well; it is based on DIN EN ISO 13790 and uses the analytical solution of Fourier's equation. Less well explained is the coupling between the building model and the urban climate through a so-called urban surface model. Specific comments: It should be explained in more detail how the temperature of the building's boundary layer (which is called 'façade near temperature' by the authors) is calculated as it is influenced by the urban climate and the building itself (surface temperatures). The authors should explain/define tf in figure 2. Why is a 3R3C model used for the façade? Wouldn't a 1R1C model be enough? A schematic drawing of the

building with the addressed facades and surfaces would help to understand the boundaries of the indoor model (interior surfaces and structure?) and the interconnection to the exterior surfaces. How is the anthropogenic waste heat passed back to the urban climate model (page 5, line 133)? In figure 2 it is declared as an input into the urban surface model.

Technical corrections: Headlines of chapter 1 and 2 are identical Page 2, line 56: 'indoor air temperature' Page 2, lines 38 and 60: Replace 'façade near temperature' by something like temperature of the building's boundary layer Page 6, lines 177 and 178: 'top' and 'bottom' instead of 'above' and 'below' Page 7, line 195: 'Fourier's' instead of 'Fouriers'

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