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Comment on acp-2021-914

Anonymous Referee #1

Referee comment on "Revising the definition of anthropogenic heat flux from buildings: role of human activities and building storage heat flux" by Yiqing Liu et al., Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2021-914-RC1, 2021

The paper deals with a significant topic of anthropogenic heat from buildings. Unfortunately the authors were not aware of recent developments (e.g., the capability of EnergyPlus to calculate heat emissions from buildings in version 9.1released in 2019) and directly relevent publications which are not mentioned at all in the manuscript, such as:

Modeling and Analysis of Heat Emissions from Buildings to Ambient Air. Applied Energy, 2020. https://doi.org/10.1016/j.apenergy.2020.115566

A Simulation-Based Assessment of Technologies to Reduce Heat Emissions from Buildings. Building and Environment, 2021. https://doi.org/10.1016/j.buildenv.2021.107772

EnergyPlus already can calculate in detail (at sub-hourly timestep) heat emissions from buildings to ambient air by components. There is no need to re-invent the wheel (a new definition or formulas).

The use of the shoebox model to simulate and analyze the building heat emission is questionable as the shoebox model is not a real building. In ASHRAE Standard 140 context, the building model is used as a common simplified benchmark model to test and compare results from various building energy modeling tools. Why use this model? If the analysis is to study how human activities influence building operation and thus heat emissions, a real residential or commercial office building model should be used.

The manuscript has some typos, e.g., "and time lag and are poorly quantified"