

General comments:

This study proposed the use of a Semi-empirical URban-canopY parametrization (SURY) to improve urban simulations. The idea is to better represent urban effects parameterized in bulk urban land surface schemes without employing computationally expensive explicit-canyon schemes. Simulation results were evaluated by both in-situ and remote sensing measurements, and the proposed approach was able to improve urban heat island simulated by a bulk urban model.

While the use of SURY shows improvements in urban simulations, there is one thing that needs to be addressed in this manuscript.

The proposed SURY does not really carry out the heterogeneous features presented in explicit-canyon schemes, and there is no comparison between the simulation results from SURY and explicit-canyon schemes. Therefore, it is hard to tell if SURY is able to reasonably serve as an alternative of explicit-canyon schemes with lower computational cost. I suggest that this deficiency be addressed before publication.

Specific comments:

Page 19, ln 8-10: The authors claimed that the temperature overestimation for the rural site is larger for REF than for STD, because of the advection of excess heat from urban areas towards the rural areas. However, there was no result supporting the occurrence of heat “advection” at that time. Why the overestimation is due to heat advection but not the changes with SURY?

Page 24, ln 1-2: Similar issue as the previous one. Is there any result suggesting the occurrence of heat advection at that time?