Earth Syst. Dynam. Discuss., referee comment RC3
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Comment on esd-2021-22

Anonymous Referee #3

Referee comment on "Impact of urbanization on the thermal environment of the Chengdu–Chongqing urban agglomeration under complex terrain" by Si Chen et al., Earth Syst. Dynam. Discuss., https://doi.org/10.5194/esd-2021-22-RC3, 2021

This is a manuscript on a very important topic of the impacts of urbanization on the microclimate. I have a few major concerns, which the authors may address:

1. The write-up is a bit loose and so is the organization. For example, the abstract should clearly state the hypothesis, results, and implications of the results. The modeling framework is not discussed well.

2. The details of the WRF simulation zone should be provided with the justification of the selection of such a zone.

3. The details of WRF parameterization need to be provided with validation and sensitivity analysis.

4. I am wondering why are authors not using BEP parameterization for urbanization. Recent studies show that the urban structure does impact the microclimate, for example, they may see https://www.nature.com/articles/s41598-018-22322-9

5. In figure 8, The authors said daily and nightly, does that mean day time and night time, daily may not be the correct term.

6. More detailed validation may be needed. For example on a heatwave day, how do the hourly variation of simulations and observations match, what are the diurnal variations at different locations etc.

7. Is there any seasonal variation of UHI?