Comment on essd-2021-302

Anonymous Referee #2

Referee comment on "A global dataset of annual urban extents (1992–2020) from harmonized nighttime lights" by Min Zhao et al., Earth Syst. Sci. Data Discuss., https://doi.org/10.5194/essd-2021-302-RC2, 2021

The authors developed a global dataset of annual urban extents (1992-2020) using consistent NTL observations in this manuscript. The method is robust and the results are reasonable.

Minor comments:

- Section 3.1, the authors use GAIA percentage of 50% and NTL DN of 40 as the thresholds to remove the fake urban clusters. How did the authors determine the thresholds and what is their uncertainty? BTW, the authors mentioned in line 265 the NTL-derived urban areas are consistent with the range of ISA percentages from 20% to 45%. Does this percentage range conflict with the defined fake urban clusters?
- Line 260: "This indicates that identifying urban areas using ISA data rather than NTL data may become more complicated due to the diverse urbanization processes worldwide." This sentence is hard to understand. What do you mean by “complicated” and “urbanization processes”? please consider deleting this sentence.
- Section 4.1.3, Fig.10: The urban sizes from this study and population from GPW is not very relevant. Please add some explanation and discussion.