

Earth Syst. Sci. Data Discuss., referee comment RC2
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Comment on essd-2021-458

Xian Guo (Referee)

Referee comment on "Mapping 10□m global impervious surface area (GISA-10m) using multi-source geospatial data " by Xin Huang et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2021-458-RC2>, 2022

The mapping of 10-m impervious surfaces at the global scale using multiple geodata sources is interesting. The authors applied temporal-spatial-spectral-geometrical rules to generate samples, and validation of the results is comprehensive and adequate. They also attempted to delineate the spatial distribution of impervious surface in urban and non-urban areas. The manuscript fits the journal's scope and the dataset is valuable, which is suitable for publication in ESSD. However, the paper still has some flaws (see my comments below) which should be further clarified or discussed before acceptance.

My major concern lies in the completeness and correctness of the OSM data. How about the effect of the geographic bias in spatial distribution of OSM data? More analysis is needed to discuss this issue.

Line 10: "global ISA mapping" should be "global ISA datasets"

Line 21: "refined OSM data" -> "OSM data".

Line 80-85: The GISA-10m dataset attempted to further delineate road regions from the ISA. This should be mentioned in the introduction and abstract.

Line 152: "multiple sources" is not clear, and can be modified as "multi-source datasets".

Figure 1. It would be better to label each step, e.g., "Step 1. Training sample generation".

Line 157. The authors selected the GlobeLand30 in 2010 but chosed other data (e.g., GISA and FROM-GLC) in 2016. Would the temporal gap between these data impact the quality of training data?

Line 171. How did you define edge pixels? I think the edge pixels are different between 30-m and 10-m images, as a non-edge pixel in a 30m image may be edge pixels in a 10m image. Could you clarify this issue?

Line 197. Why buildings with area less than 100 m² were excluded?

Line 210. Why did the authors remove the OSM samples intersected with those from other global datasets?

Line 235. Please explain why these features were chosen.

Line 286. How many RF models were built?

Line 293. How did the authors select the ISA test points? If the points were mostly located in urban areas, it might bias the assessment result. Could you provide the ISA density around these ISA points?

Figure 9. It's interesting to see the accuracy in rural and arid areas. How about urban areas?

Line 379. How did you divide the rural and urban areas?

Line 380. What do you mean by Global ISA?

Figure 14. The title of subgraph seems incorrect.

Figures 16 and 17 may be moved to the supplements.

Line 523. "difference" or " differences"

Line 500: "distinguish well ISA from NISA" -> "distinguish ISA from NISA effectively"