Accurate mapping of artifical impervious surface using remote sensing is challenging, especially at continental and global scales. The authors here provides an really exciting ISA map dataset which makes the above-mentioned challenge partially addressed. Given a 10 m spatial resolution, the GISA-10m is able to detect some subtle patterns that cannot be extracted by previously 30~300m products. As a public user, I only have one concern as follows.

The city group often include multiple cities with different scales. So, I believe it is important for potential users to know the accuracy of the GISA-10m for the cities with different scales, i.e., small, middle, and big city. Is it possible to compare the overall accuracy of the GISA-10m across different city sizes?

R: Thanks for your comment. We extracted the visually-interpreted samples located in cities and divided them into three levels (i.e., small, middle and big cities) to assess the accuracy of GISA-10m over cities with different scales: Level 1 (population<250,000), Level 2 (250,000 to 1,000,000), and Level 3 (>1,000,000) (Larkin et al., 2016; Yang et al., 2019). It was found that the overall accuracy of GISA-10m across three levels of cities was 85.35%, 87.43% and 85.42%, respectively (Table R1). The result indicated the performance of GISA-10m in different scales of cities was stable, and was also close to its global assessment (OA of 86.06%).

Table R1. Results of quantitative accuracy assessment for three level of cities: Level 1 (population<250,000), Level 2 (250,000 to 1,000,000), and Level 3 (>1,000,000). OA represents the overall accuracy.

Level of cities	OA (%)	Kappa	F-Score of ISA (%)	F-Score of NISA (%)
Level 1	85.35	0.2205	91.92	30.41
Level 2	87.43	0.2189	93.11	29.41
Level 3	85.42	0.4005	91.86	47.06

Reference:

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