The authors show an excellent job of coupling an urban model to the VIC model to improve the capability of this global land surface model. The manuscript is well organized, with concrete results demonstrating the advantages of the VIC-urban model. I think it should be accepted after considering the following minor issues.

Reply: We thank the reviewer for the positive comments. The replies can be seen below.

1. The authors are suggested to give more information about the base map and urban maps. Did the authors update different urban maps during the study period? Because the study period was a time of high urbanization, the urban maps should have changed significantly over time.

Reply: Thanks. We have indeed updated the land cover maps and related parameters every five years during the 2005-2020 period. The land cover distribution maps used in this work are shown in Fig.1 below. Moreover, we employed Global LAnd Surface Satellite (GLASS) products to update parameters, including Leaf Area Index (LAI), downward shortwave radiation, Fraction of Vegetation Cover (FVC), and albedo, on a daily scale. This approach ensured the model to capture changes in land surface. We will add related statements and the fig in the manuscript.

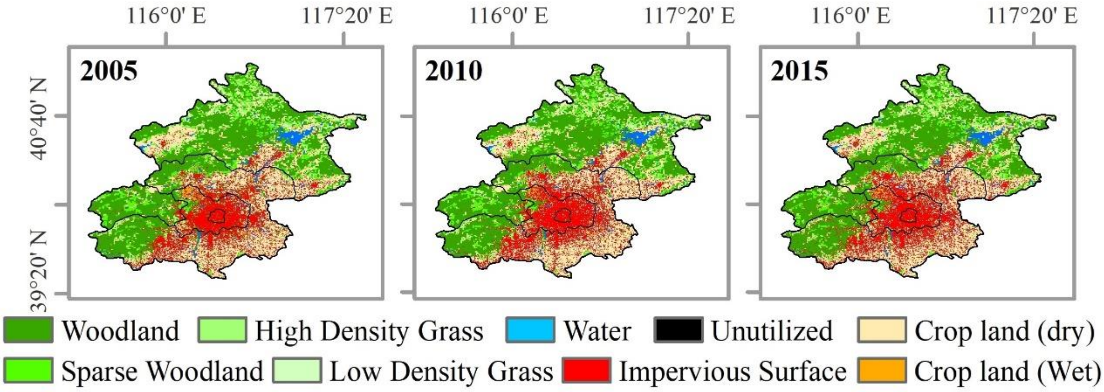

Fig. 1. Land cover maps during 2005-2020 period used in the study.

2. More details about the Beijing simulation are needed. What is the simulation resolution of the VIC model? The resolution of the various data used in the model is inconsistent, what methodology did the authors use to standardize the resolution.

Reply: Thanks. The spatial resolution and temporal resolution of the VIC model is 0.0625° and 3 hours. To ensure consistency, all input data were adjusted to match the 0.0625°/3h resolution through a linear interpolation. Additionally, we considered temperature changes according to elevation differences during the interpolation. We will elaborate on this process in more detail in the revised manuscript.

3. It is better to show more details about the urban parameters, for example, the spatial distribution maps of the parameters of the urban model of Beijing.

Reply: Thanks for the suggestion. We made a figure to show the spatial distribution maps of the urban parameters of Beijing (Fig. 2 below). These maps will offer insights into the spatial variability of the parameters. It is important to note that we updated land cover maps and related parameters every five years (As mentioned in the Question 1), and Fig. 2 shows an example of urban parameters of 2015. The figure and related statements are added in the supplementary document. We will add related statements and the fig in the manuscript.

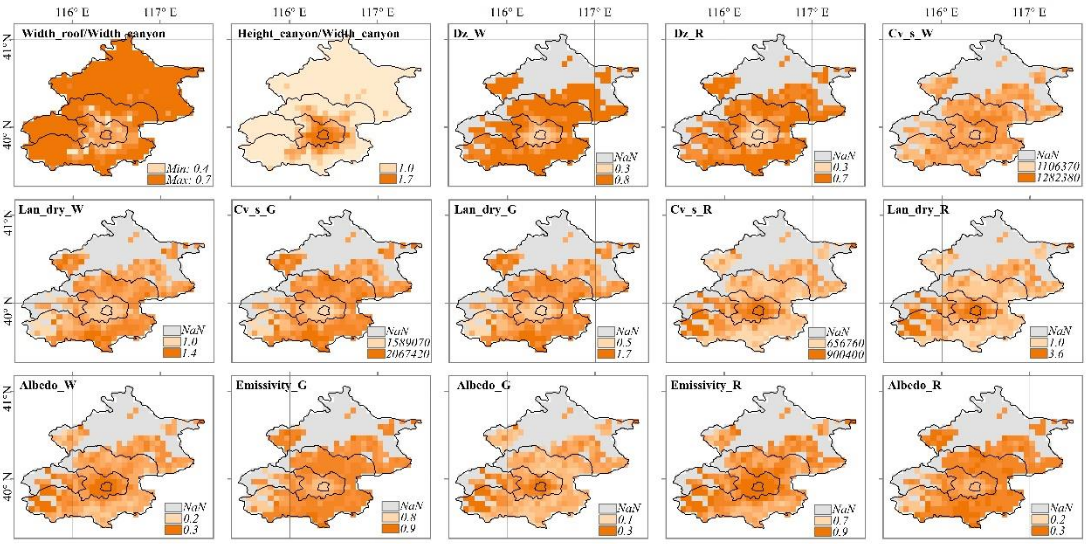

Fig. 2. The spatial distribution maps of the urban parameters used in our work, using urban parameters in 2015 as an example.

4.For figure 6 and table 3, can the authors show the results in daily scale?

Reply: We made a new figure and table to show the results in daily scale (Fig. 3 and Table 1). However, we kept the monthly scale results in the manuscript due to the slight differences observed between the daily and monthly scales. Moreover, adopting the daily scale tends to artificially inflate *R* values.

It is worth noting that the urban parameters of VIC-urban model are calibrated based on the MODIS land surface temperature (LST), not the LST values of these 14 sites. The figures are used to highlight the better performance of VIC-urban over VIC.

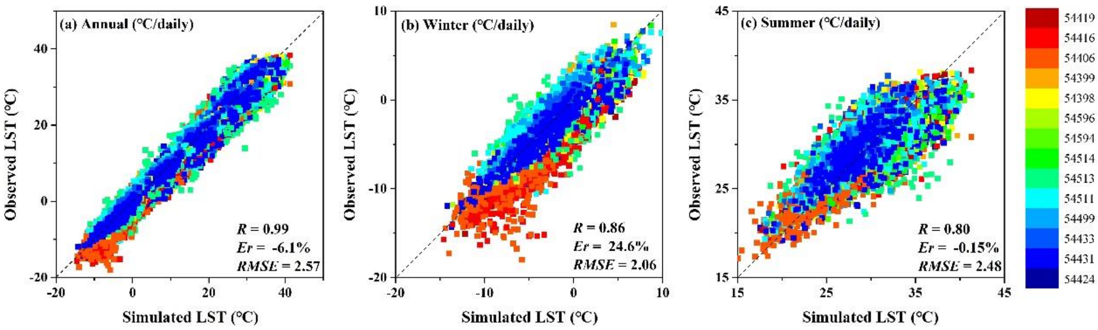

Fig. 3. Daily simulated LST validated against 14 ground-based observation stations, which are marked in different colours.

Table 1. The simulated LSTs from VIC-urban and VIC-orig models are validated by 14 ground-based observations in daily scale.

Station	***Er (%)***	***R***	***RMSE***

	VIC-urban	VIC-orig	VIC-urban	VIC-orig	VIC-urban	VIC-orig
54419	-7.78	-9.56	0.99	0.98	2.44	3.07
54416	-11.28	-10.58	0.99	0.98	2.81	3.03
54406	-8.37	-12.75	0.99	0.97	2.41	3.55
54399	0.29	8.61	0.99	0.98	2.15	2.78
54398	-8.5	-13.82	0.98	0.98	2.72	3.47
54596	-6.54	-5.29	0.99	0.99	2.4	2.8
54594	-7.1	-3.77	0.99	0.98	2.53	2.58
54514	-5.21	1.18	0.99	0.99	2.55	2.46
54513	-5.45	-3.54	0.97	0.96	3.49	3.7
54511	-1.38	-0.41	0.98	0.98	2.41	2.52
54499	-1.88	-1.72	0.98	0.99	2.32	2.36
54433	-1.2	3.09	0.98	0.98	2.32	2.53
54431	-5.24	-7.59	0.99	0.98	2.31	2.82
54424	-11.74	-12.44	0.98	0.98	2.98	3.24