

Reply on RC3

Hui Zhang et al.

Author comment on "HiTIC-Monthly: a monthly high spatial resolution (1°km) human thermal index collection over China during 2003–2020" by Hui Zhang et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2022-257-AC3>, 2022

1. Line 157-158, suggest: Comparisons on our products with two existing datasets are in Section 5, data availability is provided in Section 6, ...

Response: Revised per your suggestion.

2. The 3rd response to the reviewer2 (spatial variability, temporal variability, background climates), Please consider how to answer the question directly.

Response: Thank you very much for your comment. Below please see our updated and direct responses:

As shown in Figure 7, the biases exhibit zonal variations across the space, i.e., positive bias values tend to distribute in northern China and negative values are mainly located in the south. This spatial variability is likely caused by the generally low and high temperatures in the north and south, respectively. The extremely small values in the north may be overestimated while the extremely large values in the south may be underestimated to some extent. The overestimation and underestimation issues are quite common in machine learning (Cho, Yoo, Im, & Cha, 2020; Li, Li, Li, & Liu, 2020; Uddin, Nash, Mohammad Diganta, Rahman, & Olbert, 2022; Wu et al., 2022). This can explain the temporal variability of the bias (Figure 8) as well. Positive bias values are more likely to be seen in early periods with lower temperature, and negative bias values tend to appear in more recent periods with higher temperature. Although the biases have spatial and temporal variabilities, these variations are quite small (i.e., ranging from -0.3 °C to +0.3 °C). Overall, the estimations in our study are reliable (see the evaluation results in Section 4.1).

References

- Cho, D., Yoo, C., Im, J., & Cha, D. H. (2020). Comparative Assessment of Various Machine Learning-Based Bias Correction Methods for Numerical Weather Prediction Model Forecasts of Extreme Air Temperatures in Urban Areas. *Earth and Space Science*, 7(4). doi:<https://doi.org/10.1029/2019ea000740>

Li, Y., Li, M., Li, C., & Liu, Z. (2020). Forest aboveground biomass estimation using Landsat 8 and Sentinel-1A data with machine learning algorithms. *Sci Rep*, 10(1), 9952. doi:<https://doi.org/10.1038/s41598-020-67024-3>

Uddin, M. G., Nash, S., Mohammad Diganta, M. T., Rahman, A., & Olbert, A. I. (2022). Robust machine learning algorithms for predicting coastal water quality index. *J Environ Manage*, 321, 115923. doi:<https://doi.org/10.1016/j.jenvman.2022.115923>

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Please also note the supplement to this comment:

<https://essd.copernicus.org/preprints/essd-2022-257/essd-2022-257-AC3-supplement.pdf>