Comment on essd-2022-257
Anonymous Referee #2

The authors have produced a high-resolution (1 km×1 km) thermal index collection at a monthly scale (HiTIC-Monthly) in China during 2003 to 2020, with 12 widely used human thermal indices. The authors have created a high-resolution products for quantifying thermal index in China, which is valuable to the scientific community. I have some comments to be addressed by the authors.

1. The biggest concern is the temporal resolution. Why do the authors choose monthly resolution, rather than daily? Daily products would be extremely useful to characterize extreme events, which are of societal importance.

2. Lines 168-169: How about the impacts of precipitation on thermal indices? Have the authors considered precipitation as a covariate?

3. Figures 7 and 8: The results indicate spatial variability of bias in the thermal indices. What factors drive the spatial variability of the bias? Meanwhile, there is also temporal variability in the bias (Figure 8), and what is the drivers of this variability? Are the spatial and temporal variabilities of the bias related to background climates?

4. One way of evaluating the quality of these products is to evaluate the EOFs of these products. For example, what are the first three EOFs in each product? How do the temporal coefficients change over time across these products? Such spatial-temporal evaluation would be desirable.