Earth Syst. Sci. Data Discuss., referee comment RC1
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Comment on essd-2021-31

Anonymous Referee #1

Referee comment on "An all-sky 1□km daily land surface air temperature product over mainland China for 2003–2019 from MODIS and ancillary data" by Yan Chen et al., Earth Syst. Sci. Data Discuss., https://doi.org/10.5194/essd-2021-31-RC1, 2021

It is of interest to users to have high spatial resolution Ta data by combining different data sources together using new numerical methods. The results are described in a clear fashion. I have following comments/questions:

1. I'm wondering whether the data from 2003-2016 or 2003-2019 is used and produced. There seems to be inconsistency in the paper regarding the temporal period of the study.

2. For vadiation of the study, how is the performance of the dataset/model if validation is carried out using a time period different from training period? For example, training is done using data from 2003 to 2016 and validation is done using data from 2017-2019? This is to see whether the training coeffients or RF models can be used after Terra/Aqua fail in the future.

3. I suggest to redo Figure 1 showing the number of data pairs and land types at these stations. You could use the color or the size of the symbol to provide such information.

4. Could you show the accuracy of the results as a joint function of surface types and surface temperature?

5. If the FI factors are small for surface radiation measurements, why not remove them from your model?

6. There are places in the paper using "temporary gap filling model", but it should be "temporal" instead of "temporary".

7. are the station Ta measurements used in the prediction of Ta?

Thank you.