

## Comment on **essd-2021-454**

Anonymous Referee #1

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Referee comment on "A compiled soil respiration dataset at different time scales for forest ecosystems across China from 2000 to 2018" by Hongru Sun et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2021-454-RC1>, 2022

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Soil respiration is an important indicator for a wide range of applications, especially those related to evaluating carbon cycle regionally or globally. The authors did a great job for collecting a total of 10288 monthly and 634 annual soil respiration data from 568 publications. I enjoyed reading this well-reasoned and well written study. In a certain extent, it is helpful for building robustness of this dataset for comparison between that from reference and software. However, it still requires substantive effort for the following reason:

- Authors mentioned Yu et al. (2010) established a geostatistical model with 390 monthly data and Jian et al. (2020) analyzed the spatial patterns and temporal trends with 1782 monthly data. The authors need to justify the importance of their research in comparison with these researches. For example, using any quantitative method to address advantage of their dataset. It just looks like a supplement for the research mentioned above right now.
- What is the difference of soil respiration among different equipment and method? How does these affect the robustness of the dataset?
- Authors need to add more information for 'cross-checked'. It will be helpful to add one table or figure to address the different sources.
- In Table 1, it is confused that the number of latitude and longitude are more than Study site. I only found 251, 122 and 180 different values for latitude, MAT and MAP, respectively. It needs more clarification for this table.
- What are the patterns for soil respiration along MAT and MAP?
- I strongly recommend that the authors rasterize this dataset to about 10 km resolution. You can exclude the Northwest and Southwest part of China which did not covered with much forests. Then, it would be more compatible to do analysis with spatial climate data.