

## ***Interactive comment on “Global variability of belowground autotrophic respiration in terrestrial ecosystems” by Xiaolu Tang et al.***

**Anonymous Referee #1**

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This manuscript deals with estimation of global belowground autotrophic respiration (RA) in terrestrial ecosystems. I have some questions in this study. 1) Authors compared global RA by data-derived with that by Hashimoto et al.(2015). However, authors did not refer the data of Hashimoto et al. (2015) in the manuscript. How did authors get the data from Hashimoto? Please explain the difference between Randomforest model and methods of Hashimoto et al. (2015). 2) Authors used PgC a-1 or gC m-2 a-1 for the unit of RA, but I guess that a-1 should be yr-1. Please correct all unit in the manuscript and figures. 3) Authors discussed about importance of the dominant environmental factors for estimate spatio-temporal variation in RA. I think that it is important not only environmental factors for plant production but also plant biomass because root respiration would have positive correlation with plant biomass. Why did

C1

authors ignore the global pattern of plant biomass?? ãÛãÛFinally, please considering my specific comments and get some English proofreading. In addition, please reconsider carefully about all figures, because I feel that some figures are not important in this manuscript. If authors resolve these questions, I think that this manuscript would be better for global data science.

Specific comments Page 3, line 54, “which is almost 5 times of...”: I cannot understand relationship between this sentence and preceding sentence. Page 3, line 56, “Therefore, an accurate estimate of...”: I think that authors did not enough explain the reasons before the sentences. Please add more explanation. Page 8, Figure 2: I cannot the meaning of the figure 2c and 2b. Why did authors indicate the standard deviation of temporal variation in RA?? Page 11, Figure6: what the difference of Fig.6a and Fig.6b? Please add more explanation. And, please make the same value of y axis in both of Fig.6a and Fig.6b. And I think that Fig6c is not needed. Page 12, Line 254 to 227, “All the biomes, except... , respectively”: please rewrite these sentences. Grammatical subject is RA, I think. Page 12, Line 259, “a significant increasing trend of...”: is this “a significant increasing trend of total RA in temperate zones,...”?? Page 13, Figure9: I cannot understand the importance of this figure. Page 14, Line 290 “For example, temperature was the...Australia” is that the result of Hashimoto et al. (2015)?

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C2