

## ***Interactive comment on “Spatial and seasonal variations of leaf area index (LAI) in subtropical secondary forests related to floristic composition and stand characters” by W. Zhu et al.***

**W. Zhu et al.**

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The manuscript entitled “Spatial and seasonal variations of leaf area index (LAI) in subtropical secondary forests related to floristic composition and stand characters” by Zhu et al. is an interesting study on the spatial heterogeneity of LAI and its controlling factors in subtropical forests in China. The paper covers an important issue. The investigation is in-depth and thorough. The results are interesting and fill the gap of LAI measurement in subtropical forests. The paper is well-written and duly illustrated. Publication is therefore recommended with minor revisions suggested as follows: Re: First of all, we thank X. Zhang very much for the positive comments and valuable suggestions. Based on the following comments, we will revise the manuscript and our

C1

detailed replies are presented below.

1. Line 33-34: insert a word “and” after the geostatistics method. Re: We will add “and” as suggested.
2. Line 46: remove the keywords “Deciduous species”. In your paper, more than one tree species were investigated and the constituents of forests or tree species richness was one of the controlling factors of LAI values. In other words, “deciduous species” is not a proper substitute for the proportion of deciduous species. Re: “Deciduous species” will be deleted from the keywords.
3. Line 51, 55-56 and throughout main text, the reference should be arranged by the published year. Re: Based on the comments, all references in the entire manuscript will be re-arranged according to a chronological order.
4. Line 59: insert a word “as” between “used” and “parameter”. Re: Instead of adding “as”, we will change the sentence into “Leaf area index (LAI), defined as total one-sided leaf area per unit ground surface area (Biudes et al., 2014), is a widely used parameter to. ...”.
5. Line 109: change “stand character” to “stand characters”. Re: We will change “stand character” to “stand characters” as suggested.
6. Line 133-134: the mean temperature of the study site should be a fixed value, please correct it. Re: We will change the mean annual air temperature into “16.5°C”.
7. Line 148: check and correct the plot size of *P. massoniana* - *L. glaber* mixed forests. Re: We have checked and the plot size is correct.
8. Line 170: please add the manufacturer and country to the LAI measuring instrument (SY-S01A). Re: The LAI measuring instrument was made by Shiya Scientific and Technical Cooperation in China. We will add the manufacturer and country in the manuscript.

C2

9. Line 199-200: coefficient of variation (CV) does not need full name here. Re: We will use abbreviation CV only.
10. Line 234-238: the author need to report which smooth method used for GAM in this study. Re: Good point. We will indicate that the smooth method for GAM is smooth spline.
11. Line 250: it is better to illustrate the version of R software used in this study. Re: We will add the version of R (R 3.2.1) in the manuscript.
12. Line 255: consider changing "month" in Table 1 into "measurement seasons". Do the same modifications in other tables and Fig. 1. Re: Change as suggested.
13. Line 265: How did you calculate the mean LAI values? I'm a little confused that why you think it's necessary to report the minimum, maximum and mean values of LAI at the same time. what's the differences or the particular meaning between them? Re: We calculated average LAI values of 100 plots in each forest at a given measurement season. The minimum and maximum values within a forest at different measurement seasons to examine the variations in LAI.
14. Line 350: "... but they are not suitable for LAI correction in subtropical forests", why? Is this a conclusion drew by yourself or from other's research? Re: The previous studies by Liu et al. (2015a) and Liu et al. (2015b) showed that the  $\alpha$  values ranged from  $0.04 \pm 0.01$  to  $0.69 \pm 0.12$  and  $\Omega$  values ranged from  $0.88 \pm 0.04$  to  $0.96 \pm 0.01$ . These values were measured in temperate forest in northeastern China and differed from our study ( $\alpha$  ranged from  $0.04 \pm 0.03$  to  $0.15 \pm 0.09$  and  $\Omega$  ranged from  $0.84 \pm 0.09$  to  $0.92 \pm 0.08$ ). Therefore, we drew the conclusion and revised the sentence.
15. Line 360: change "is" to "was". Re: Change as suggested.
16. Line 695-700: the "RSS" in the first line in Table 3 need to be clarified. Re: We will offer the full name of RSS (residual sum of squares).
17. Line 745-750: In Fig.1, the y-axis should change into "mean LAI value", x-axis

C3

should change into "Month". Re: Changed as suggested.

18. Fig 3 and 4: These two figures are new and unique, and the results might be interesting. It's a pity that you didn't thoroughly discuss these figures except simply described in Results Line 326-330. I suggest to add some discussion about these two figures in you manuscript. Re: Good comments. We will add some sentences to discuss the results of Fig. 3 and Fig. 4.

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C4