

## ***Interactive comment on “Application of a new productivity coupling hydrothermal factors (PCH) model for evaluating net primary productivity of grassland in Southern China” by Zheng-Guo Sun et al.***

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Dear Professor Liang, I am very grateful for your helpful comments on the article. I think that the comments will be beneficial to the improvement of the article. According to your comments, some modifications have been made accordingly. The specific modifications and some answers to your comments are as follows: Firstly, could authors more clearly explain how to determine the parameters (i.e.,  $t_1$ ,  $w_1$ ) of the estimation model ( $NPP = Ta \times Wa \times (T+W/6)$ ,  $Ta = \ln(T/t_1 + a_1)$ ,  $Wa = \sqrt{(W/w_1 + a_2)}$ )? How to determine the values of parameters  $a_1$  and  $a_2$ ? Is there any relationship between the model param-

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eters and the grassland types and their ecological characteristics? How to modify the model to combine with remote sensing data in the future? Reply: The parameters were set to mediate the abnormal values from the model inputs and so keep the stability of the model results. They were determined and constrained using multi-observation results. Hence, the model parameters are not associated with specific grassland types or the corresponding ecological characteristics. To incorporate remote sensing information into this model, we propose to apply remote sensing dataset as a spatial-explicit scalar for the model parameterization and hence enhance the prediction ability of the future version of the model. Secondly, the language of the entire manuscript still needs to be revised by an English native speaker. The manuscript has some issues in text writing that must be addressed before publication in the Journal. The followings are the details that need to be revised further: Lines 76-77: “Large quadrats were set in each representative sample plot (10m×10m), and five small squares (1m×1m) were set on corners and in the center of large quadrats.” should be replaced by “Five quadrats (1m×1m) were set on corners and in the center of each representative sample plot (10m×10m)”. Reply: Revised accordingly. Thanks a lot. Yours Sincerely, Zhengguo Sun Nanjing Agricultural University 1st Weigang Road, Nanjing, Jiangsu Province, 210095, People's Republic of China, sunzg@njau.edu.cn

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