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***Interactive comment on “Upscaling of gross ecosystem production to the landscape scale using multi-temporal Landsat images, eddy covariance measurements and a footprint model”
by B. Chen et al.***

x. zhang

xiaomin_zhang@yahoo.com

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Dear Dr. Chen

Your paper is very interesting and well written. However, I have several concerns to discuss with you Page 11323, section 2.3 is confusing. It is described that an algorithm for estimating landscape and regional C fluxes including following four steps. Steps one and two are carried out in your paper. I am not clear which parameters are optimized in this study. Which method used to conduct parameter optimization? How the updated

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Interactive Discussion

Discussion Paper



Interactive
Comment

satellite-based vegetation photosynthesis model was used for data fusion with other satellite data or directly used for estimating landscape/regional GPP in this study?

Page 11325, is fPAR equal to EVI? Parameters in the formula of EVI are optimized in this study (Page 11331, line 10) or from Huete et al.?

Pages 11325 and 11326, Pm and Wm are functions of LSWI, which is calculated bi-weekly from Landsat images. It means that you should a Landsat image every two week. It is practically impossible in your study area. Normally, it is possible to get only several scenes of Landsat images with cloudy coverage smaller than 20% at a year in this area. How many Landsat image you used for this study? Could you give more detailed information about Landsat images used, including path/row numbers, coverage of clouds, and acquired time? How do you deal with pixels affected by clouds and their shadows?

Do you use ETM+7? Which method did you use to smooth stripped lines on ETM+7 images? Which roles does NDVI play in this study?

Page 11328, atmospheric correction is very important for producing a time series of remote sensing images. Which algorithm did you use to implement atmospheric correction? How are some key parameters required for atmospheric correction determined? I am not clear which kinds of other corrections are conducted.

Figure 4, there are some water bodies in the 6X6 km area around the tower. NDVI may be negative for these pixels. There are also some paddy rice plots in the 6X6 km area around the tower. NDVI should be also low since rice is at late stage of growth on Oct. 3. I suggest that a land cover map is shown along with the NDVI map. Do you use same maximum light use efficiency values for forests and rice?

Figure 5. it would be better that the footprints are overlaid on the land cover map. Readers will be easy to understand why the integration of footprints can improve the simulation of GPP.

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A figure shows the times of Pm, Wm, LWSI, and EVI for the tower pixel is necessary. It allows readers to see whether Pm and Wm work for this evergreen coniferous forest and analyze the causes of larger seasonal variations of simulated GPP than that of measured GPP.

Best regards,

Xiaomin Zhan

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Comment

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