

Interactive comment on “Quantifying the contribution of land use change to surface temperature in the lower reaches of Yangtze River” by Xueqian Wang et al.

Anonymous Referee #2

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General comments: As one of the most developed regions in China, the middle to lower reaches of Yangtze River is featured by intense human activities, especially large scale urbanization and agricultural processes in terms of land use and land cover change (LUCC). It goes without saying that such alternations will inevitably exert distinct influences on the exchange of water and energy fluxes between land surface and near surface atmosphere at local to regional scales. Therefore, it has significant scientific value to access the contribution of above mentioned influences quantitatively. At the same time, it is still a very challenging issue. A method proposed by Lee (2011) was introduced in the manuscript to quantitatively quantify the contribution of land surface parameters (albedo, aerodynamic roughness length, and Bowen Ratio) to the changes

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of surface temperature associated with LUCC under the similar background of micrometeorology based on field observations from 3 sites at lower reaches of Yangtze River. This work is important to further understand the effects of LUCC on regional climate over typical regions undergoing rapid economic developments.

Specific Comments: Some questions that need to be further addressed are listed as follows: 1. To my understanding, terms in Eq. (2) are originally at the interval of every half hour, then averaged as the monthly mean. Please add more details to let us know how you select the data, especially the land surface turbulence data. Some descriptions on the details of monthly mean value in Fig.2 are also needed;

2. P4L9, “parent”, should be “apparent”;

3. P6L28,29,30, “Ts” at X axis of Fig.3 should be ΔT_s ;

4. Is it suitable to regard “Bowen ratio” as a land surface parameter? Or it is more likely to be regarded as a kind of land surface characteristics? Considering the fact that changes of evaporation in cropland are mainly affected by human activities like irrigation, Bowen Ratio may reflect some characteristics of underlying surface rather than a single parameter. Attentions should be paid to this issue throughout the analyses section of the paper.

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