

## ***Interactive comment on “Comparison of land-atmosphere interaction at different surface types in the mid- to lower reaches of Yangzi River Valley” by W. D. Guo et al.***

**Anonymous Referee #1**

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With the development of social economy and population density increases, evidences have indicated that land use and environmental quality change a lot at a global scale, and the surface ecosystem becomes increasingly fragile. The surface vegetation cover has seriously deteriorated by multi-sources (including NOAA-AVHRR and TIROS-TOVS satellite remote sensing data), which has been largely documented. While land cover changes, land variables such as albedo, roughness, and bulk transfer coefficients, also change, which lead to the variation of surface heat fluxes, and then result in surface temperature anomaly. Therefore, in many previous studies, using dramatic land condition change to evaluate the land surface process impact has been widely used for regional land surface impact studies in preliminary stage to excite more comprehen-

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sive studies. And most of them focused on the importance of land surface processes through climate modeling. This research investigated the impacts of different surface parameters for four different surface types over the mid-to lower reaches of Yangzi River on the radiation budget and surface-atmosphere water, heat and mass exchanges. Firstly, the authors revealed the differences in several physical parameters among the four typical surface types. Secondly, they tried to explore the mechanism for the differences. The analyses in the paper are well organized and the results are reasonable. Few published papers discuss the differences of surface physical parameters among different surface types based on the field observations, especially over the mid- to lower reaches of Yangzi River Valley. This paper provides useful information, especially for the land-atmospheric interaction research over East Asia monsoon region. The presentation of this article is generally clear. I suggest publication of this paper with some revisions.

1. In the first part of the introduction, the authors review many studies about the impacts of land cover change on global and regional climate. Land-atmosphere interaction is strong in East Asian monsoon zone. Since the research focus on Yangzi River, some previous work on LULCC effects on China or East Asian climate should be mentioned importantly in the introduction. Actually, there were serious land degradations over East Asia during the past several decades and have identified Tibet Plateau, Northwest China and Inner Mongolian were among areas with severe land degradation. For example, Xue et al. (1996) and Qian and Xue (2010) have pointed out the East Asia summer monsoon circulation was weakened and the precipitation is reduced due to the land degradation over three areas. 2. In Table 1, the units of the measurement height for soil temperature and water content are not specified. It should be cm? Please complete them. 3. In page 10, line 10 and 11, “. . . . ., and it also lags in the summer that in the spring” please clarify the sentence. It’s so hard for readers to understand. Also, in the same line, “Due to the influence of the surface,. . . . .”, it’s a general statement and in the research article, it should be avoided. It’s better to state what the influences are and how the surface or other anthropogenic factors make the surface temperature

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show larger diurnal range than air temperature. 4. In the results and discussion part, the authors show the differences of many observed elements and several surface characteristics over four sites during spring and summer. Actually, tables that can show the detailed quantitative differences could be the compliment for the figures (e.g. figure 2, figure 3. ....). For example, for the figure 3, a table can be presented that show the average of diurnal air temperature, surface temperature and relative humidity for the four sites. The table and figure can exhibit the differences more easily observable.

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