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Biogeosciences Discussions

Interactive comment on "Numerical study of surface energy partitioning on the Tibetan Plateau: comparative analysis of two biosphere models" *by* J. Hong and J. Kim

Anonymous Referee #2

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This study identifies the model performance of two land surface models (LSM) in terms of the energy and water fluxes in the Tibetan Plateau, which plays an important role in the Asian monsoon. Authors compared between observed and simulated surface fluxes, and showed the possible model uncertainties. The manuscript is generally structured and well written, and I believe the manuscript will be published after some minor modification as follows:

Page 10851 Line 15: Further explanation might be required for "radiative coupling". It might be ambiguous.

Page 10851 Line 25: Authors mention one of the objectives as "to elucidate the char-

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acteristics of surface energy balance on the Plateau". But, in the manuscript, authors only mostly concentrated to show the performance of two LSMs and its uncertainties. It will be required to describe the characteristic of SEB of the Tibetan Plateau by adding a sub-section in section 4.

Page 10852 Line 16: As generally known, the eddy covariance measurements has a problem to measure the surface energy balance, so called energy imbalance problem. Author should mention the energy balance closure of this site at half-hourly and longer time scales. In addition, if the energy was not balanced in this site, possible uncertainties of the measurement should be mentioned in the discussion section.

Page 10855 Line 5: I could not confirm that LE slightly increased in Fig. 2. Some modification of the figure will be helpful for readers.

Page 10858 Line 17: k in the equation is missing in the Appendix A.

Page 10859 Line 7: I could not confirm that Rn, H, and LE increased, and Ts decreased in Fig. 5. Authors should modify the figure for clear presentation, or change the expression.

Page 10862 Line 5: Since there are two styles for "the force-restore method": "the force-restore method"(e.g., Page 10862 Line 8), and "the Force-Restore method"(e.g., Page 10862 Line 8). It is to be written in a same manner.

Fig.7: It is helpful to show the observed results in Fig. 7.

Authors show the details of the LSMs by using some equations. I think that some of equation is difficult to fully understand the LSMs for the readers who are not specialist of boundary-layer meteorology. It might be helpful to show the diagrams of the model structure related in this study (e.g., Fig.1 in Engstrom et al., 2006; Goetz et al., 1999).

References: Engstrom et al., (2006): JGR 111, doi:10.1029/2005JG000102. Goetz et al., (1999); Ecological Modeling 122, 239-255.

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