

Interactive comment on “Estimation of Hourly Land Surface Heat Fluxes over the Tibetan Plateau by the Combined Use of Geostationary and Polar Orbiting Satellites” by Lei Zhong et al.

Anonymous Referee #2

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Comments to the Authors:

This is an integral work for estimation of land surface heat fluxes based on remote-sensing data, reanalysis meteorological data, and in-situ observations. The derived land surface heat flux, more like a heat flux dataset, was evaluated using observations of six eddy-covariance sites on the Tibetan Plateau (TP). And then, the diurnal and seasonal variations of the heat fluxes were also analyzed. This is of general interest for the readers of this journal.

The TP is notorious for its lack of meteorological observations, which cripples the predictive power of numerical models for this region. The land surface heat fluxes are

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crucial for understanding energy and water cycle and also are the boundary conditions for numerical weather and climate simulations. This paper provides an integral investigation for land surface heat fluxes over the TP which will help better understanding the land-atmosphere interactions over this region. More importantly, this paper is one of the very few works to estimate land surface heat fluxes over the TP using high temporal resolution geostationary satellite data.

The manuscript is well organized. Numbers of work are integrated into this paper, and abundant discussions are presented as well. I suggest acceptance after a minor revision.

Specific issues:

P1, L16: “which” → “where”

P1, L18-19: Change the sentence to “However, the high temporal-resolution information about the plateau-scale land surface heat fluxes has lacked for a long time, which significantly limit the understanding of diurnal variations in land-atmosphere interactions.”

P1, L20: “a” → “the”.

P1, L21: “with a spatial resolution” → “at a spatial resolution”.

P4, L9: The sentence “These stations are the only stations currently available.” is not accurate. I am quite sure that there are other eddy-covariance sites on the TP apart from the six stations mentioned in the paper.

P7, Equation (11) and (13): “Hs” → “Hs”.

P8, L4: I do not think “Zhong et al., 2011” is a proper reference here. Perhaps you cite the paper which introduces the production of GLDAS data.

P8, L12: Provide some references for “traditional polar orbiting satellite” to strengthen your argument.

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P10, L23: “land-atmosphere heat flux data” → “land surface heat flux data”.

P10, L24: Delete “using a combination of geostationary and polar orbiting satellite data”.

The English need substantial improvement. Please find a native speaker to help you to polish the manuscript.

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2018-1165>, 2018.