

Observations of land surface heat fluxes over the QTP are essential for understanding the land-atmosphere interactions. However, limited by the small amount of land-atmosphere monitoring stations and sparse spatial coverage, it is difficult to quantify the responses of the land-atmosphere interactions under the condition of climate warming on the QTP. This study aims to provide a plateau-scale product with a notable advantage of hourly-resolution using the SEB model in conjunction with the observations from polar and geostationary satellites. As we know that the temporal resolution of land surface heat fluxes is highly dependent on the forcing in various modelling approaches. In general, temperature and wind speed are two key input variables for the latent heat flux and the turbulent flux, respectively. The input variables in this study use the hourly temperature observations and other observations with a three-hour resolution. As a result, the reliability of the turbulent flux might be problematic when using the energy balance equation for calculation, and its accuracy is even worse than the 3-hourly product using data assimilation approach (e.g., GLDAS). A rigorous analysis of the accuracy is required to consolidate the proposed method. Given the present analysis, the current conclusion of hourly-resolution is not convincing for me. Considering other issues, a substantial revision is needed for this manuscript.

Major issues:

1. Since forcing data is lack of homogeneity in temporal and spatial resolution, the authors should discuss their impacts on the accuracy of the product. The authors declaimed a spatial resolution of 5 km, but it has been changed to 10 km in the new version (no rational explanation in the text). I think the authors should cope with the similar problem for the temporal resolution. As mentioned above, the methodology needs a rigorous analysis of the accuracy of the estimated land surface fluxes. Besides, I did not find the description of how to use the 3 hour-forcing in the SEBS model to produce the hourly product.

2. The major supporting for the conclusion of a better performance of the proposed product than the GLDAS produce is based on the comparison with the observational data. The authors use the Bowen ratio calibration method to improve the observed data. We know the validity of the Bowen ratio method varies distinctly in different environments due to the different fulfillment of assumptions. As a result, certain biases will be brought into the observational data, and this can mislead the comparison. First, it is not clear in the text that if the comparison is under the same condition that the observational data are all corrected with the Bowen ratio method. Second, even if using the similar observational data for the comparison, the biases from the correction can still distort the RMSE. Hence, I would suggest directly using the observed data for comparison. Besides, since the data quality of eddy covariance measurements may vary at the 6 stations, comparison on the indicators like RMSE at each station separately may provide more information.

3. The product provided by the authors is produced based on the input data with a spatial resolution no less than 10 km. The authors compare it with a product with a spatial resolution of 25 km. While the scale of the stations normally represents a scale of about less than 1 km. The authors should give some explanation about their comparability.

Minor issues:

1. P5-line 13-25: the authors validate the forcing data and find the notable variance. These differences can further propagate to the product. Please discuss its relation to the final product.
2. P8-line 2-6: The introduction of the GLDAS dataset should not belong to Result. The authors should introduce it more in light of its importance for comparison.
3. P8-line 5: what high accuracy?
4. P9-line 15-27: the authors describe the feature of diurnal variation of hourly flux map. Are there any special in comparison on our general understanding?
5. Table 4: add values of the same indicators for all sites.
6. Figure 1: the caption is too brief. The same problems for other plots. What is the right plot?
7. Figure 4: the scale of the axis is misleading. Besides, how do you choose the representative days for each month? Choose the nice one? Please describe what they are in subpanels.