Hydrology and
Earth System
Sciences

Discussions

EGU

Open Access

Interactive comment on "Temporal interpolation of land surface fluxes derived from remote sensing – results with an Unmanned Aerial System" *by* Sheng Wang et al.

Anonymous Referee #1

Received and published: 26 December 2019

This study "Temporal interpolation of land surface fluxes derived from remote sensing results with an Unmanned Aerial System" developed a simple but operational land surface modeling framework, simulating energy balance, water and CO_2 fluxes between the land surface and the. Unmanned aerial system (UAS) can be applied flexibly, and can have high spatial-temporal resolution data, which is used widely in recent decades. This study used UAS to provide optical and thermal data as model inputs for land surface-atmosphere fluxes monitoring. A dynamic soil vegetation atmosphere transfer model was developed here, together with the PT-JPL ET model and light use efficiency GPP model for simulating energy, water and CO_2 cycles. The results showed that with using the data from UAS optical and thermal observations, the models were capable

to simulate the energy, water and CO_2 fluxes in a deciduous tree plantation area, indicating that the UAS observations could be served as "ground truth" to calibrate soil and vegetation parameters, highlighting the usage of multiple remote sensing data for land-atmosphere flux monitoring. I think this manuscript is well written and the logic is pretty clear. The results are supported by the data shown here, while the authors explained the results adequately and clearly, though I have several minor questions on the current manuscript. (1) Introduction, why not introduce more about UAS? This is kind of a highlight of this study to use UAS data. Maybe include some introductions about recent studies using UAS data on GPP/ET simulations? (2) Why there is no UAS observation in July, and between May 25th and June 24th? In Fig. 2(c), the fIPAR seems to change a lot during 25/May to 24/June, thus, no observation during this time period may induce simulation errors in the model. (3) Why ignore the observation on 24/June when interpolate the UAS data. (4) Page 16, Ln. 2-3, not fully understand "This demonstrates that SVEN is capable to . . ..", syntax error? (5) Fig. 5(a), Ts, kind of systematic overestimation of Ts sim compared to Ts obs? So can the model parameters be calibrated to reduce the overestimation? (6) Fig 5(c), the scatterplot of SM sim and SM obs is kind of wired, which is more obvious in Fig. 7, I am wondering why? And also why not show daily results together with the half-hourly and monthly results in Fig. 7.