

We are grateful to the reviewer for the careful review and central comments. Our answers to these comments are as follows:

Comment 1. The scientific significance of the topic is highly relevant, but the quality of the paper is just fair (see also comments in the pdf). The description of the processes is confusing; the content of tables and figures seems not to be consistent.

Reply 1. The confusion has been removed according to your helpful remarks within the supplement; the content of the tables and figures is consistent now.

Comment 2. According to the figures 2 and 3, I doubt whether the correlations are significant. Thus, a level of significance should be added and inconsistencies between r^2 in figure 2 and 3 and table 2 should be revised.

Reply 2. We calculated the P values for testing the hypothesis of no correlation. Each p-value is the probability of getting a correlation as large as the observed value by random chance where the true correlation is zero. If P is small, say less than 0.05, then, the correlation R is significant. The resulted P values showed that correlation values we had were significant.

We added a table of the P values and another one for RMSE for the five days.

Comment 3. I would also strongly recommend to revise the paper according to the English language, because a lot of passages are quite confusing (see also comments in the pdf).

Reply 3. We revised the paper for English following your comments which were really helpful.

Comment 4. The units are missing in most equations, they should be inserted.

Reply 4. They have been inserted.

Comment 5. The paper should be revised with respect to consistency, e.g. why only r^2 of 2 days are presented in the figure? Why was the soil watered until field capacity on day 6? The results of the fully watered soil are not mentioned?

Reply 5. As the results of the dry days (days 1, 2, 3 and 4) were very similar, we did not want to make the paper overfilled with similar graphs so we chose one day as an instance of “dry” days (Fig2.). In (Fig 3.) we presented the results of the “wet” day (day 5).

With regard to the consistency in using r^2 , we adopted the correlation coefficient R instead of r^2 in Figures 2, 3 and 4.

Comment 6. The quality of figure 1a is very poor

Reply 6. We have substituted this figure with a better quality one.

Finally we thank the reviewer for the thorough revising of the MS in the supplement according to which we adjusted the MS. But we just would like to clarify one point which the reviewer has referred to in the supplement:

Comment 7. What parameters were also used to drive the simulation of the heat transfer (meteorology, geology i.e. material of the soil, rainfall events)? If you calculate over two years, there must be an influence of weather. Please describe your simulation process in more detail!

Reply 7. As a matter of fact, the numerical experiment which we conducted is too simple to include all of these factors. In this experiment we applied hypothesized ground heat flux as a Neumann boundary condition at land surface. Then, we changed the thermal properties of the soil column as if there were groundwater perching at different levels. A comprehensive model which quantifies the effect of groundwater on land surface temperature is beyond the scope of this paper. Actually, we are working on such a comprehensive model which takes all these factors into account. The results of the simulation will be the subject of a different paper.