We thank the reviewer for the objective appraisal and the interesting comments on our research. We had the pleasure to answer these comments as follows:

Comment 1. Should be noticed that, in the arid region, the thermal gradient in soil column is very large, therefore, the soil temperatures measured at 5cm (e.g., figure 2-a) and 10cm (e.g., figure 2-b) might have poor representativeness of LST

Reply 1. We agree that the soil thermal gradient may be large in the arid regions (and that is due to the low thermal conductivity of the dry soil, which is not the case in our research area (please refer to Fig.4)). However the relationship between the skin temperature and the subsoil temperature remains valid du to the following reasons:

- Fourier's diffusion law remains the major governing equation of heat transfer in the soil (eq.6).
- All the analytical descriptions of subsoil temperature oscillation include the amplitude, the phase and the average of the skin temperature in their equations.
- Actually we consider the temperature at the different depths of soil as a filtered signal of the skin temperature. Particularly the minimum, maximum and average temperature of subsoil is highly correlated to the skin temperature oscillation under all conditions and environments.

Comment 2. The reviewer is wondering why the LST was not used in the analysis?

Reply 2. It was not possible to have skin temperature of the seven sites with the same temporal resolution that we have got using our temperature loggers. To have these measurements we need either 1) seven thermal cameras which is a very expensive option and far beyond the budget of our research, or 2) satellite measurements which can not be available for the desired temporal resolution and even if they were available, the spatial resolution would become a major issue with all of its complex problems of heterogeneity and pixel fusion. Therefore, using thermal remote sensing in this domain requires an entire paper to deal with and is out of the scope of this paper.

Comment 3. The results show good relationships between LST and groundwater table (Figure 2 &3), however, the vegetation, soil moisture, and other factors also have strong effects on LST. The study just carried out an ideal experiment at a homogeneous area. However, if other factors were taken into account, the relationship would not be so simple. In addition, the thermal conductivity and volumetric heat capacity in a true word will change with soil moisture; this was not considered in the paper as well. All these issues need to be discussed in the paper.

Reply 3. That is true. We did not take the vegetation effect into account in this paper. We considered the effect of groundwater on skin temperature of bare soil only. (We missed to state that in the title, sorry).
With regard to the soil moisture effect we omit its effect in the last day of the experiment (day5): soils at the loggers' locations were watered until saturation immediately before the last day of the experiment. Consequently, the difference in soil moisture effects among the different locations was almost vanished. However, the relationship between soil temperature and water table depth (Table1, Figs. 2 and 3) was not affected considerably.
Nevertheless, we recommended setting a comprehensive numerical model that takes into account all the different factors which contribute to determining skin temperature and the exact magnitude of that effect. Actually, we are working on that and the results of the simulation will be the subject of a different paper.

Comment 4. Is the results showed in Figure 4 meaningful? What the physics behind it? It is suggested to omit Figure 4 and related discussion.

Reply 4. In fact we have plotted the soil moisture values measured in the different measurements locations to show that groundwater affects soil moisture and consequently soil temperature. In a later stage, we omitted this effect (day5, as mentioned in answer 3) and observed that groundwater affects soil temperature indirectly through its effect on soil moisture (Figure 4) and directly through its distinctive thermal properties as revealed in the numerical experiment.

Comment 5. What's the purpose of Figure 5 and corresponding discussion?

Reply 5. We aimed in presenting figure 5 to give the reader an idea about the range and shape of the skin temperature oscillation which was investigated in the hypothetical numerical experiment. It is not of major importance. If you recommend omitting, we have no objection.

Comment 6. "Saturated soils naturally have high values of both.". Is this true? Saturated soil has low thermal conductivity but larger volumetric heat capacity.

Reply 6. Yes it is true, saturated soil has higher thermal conductivity and volumetric heat capacity. Please refer to deVries (1963) and Farouki (1986).

Farouki, O.T. 1986. Thermal Properties of Soils. Series on rock and soil mechanics. Vol. 11. Trans Tech Publ., Clausthal-Zellerfeld, Germany.

Comment 7. I do not think the results can be used in land surface energy balance studies.

Reply 7. Surface soil temperature is a key parameter in the energy balance studies. When surface soil temperature is affected, the whole system is

affected in particular: ground heat flux, Latent heat flux and sensible heat fluxes.

Finally we thank the reviewer for the rest of the helpful editorial comments. We have adjusted the MS accordingly.