We highly appreciate your keen review, and your proficient and constructive comments. Please find our reply below:

**General**

In this companion paper the authors convincingly show that there is a strong relationships between groundwater depth on the one hand and land surface soil temperature and the SEBS calculated surface energy balance on the other hand. This was already predicted from their modelling exercise in the companion paper and now it is proven with real remote sensing data. There are three issues to be resolved before publication:

- The conclusion at the end of the abstract that MODIS is suitable for shallow groundwater effect detection is too strong. It should be added that this is only been shown for this particular climate and for an area without much vegetation.
- This is true, we will add this statement.

- The structure of the paper: I feel that section 3 on SEBS is incomprehensible. It provides a bunch of equations without explaining how in what order they are applied. Therefore, I would either provide an recipe-type of description in an appendix and only provide a small explanation of principles in the main text or provide only the explanation of principles and refer to the original reference (Su 2001).
- We will enhance the explanation of SEBS and make the section clearer.

- The method does indeed show a correlation between groundwater depth and land surface temperature, but how valid is this to actually predict groundwater depth? Are the relationships constant in time (or perhaps the relationship with groundwater depth and the z-score of surface temperature (T-Mean_T)/std_T is constant in time such that in can be applied at different times and at locations with a similar soil type. The authors should explore this possibility by e.g. a split sample exercise.
- We aimed in this study to show the potential of satellites to actually detect the groundwater signal. This was realized under favorable conditions. However we do not think that simple correlation analysis will always be useful to extract water table depth. To put this tool (satellites) into operational service of shallow groundwater dynamics, further studies and investigations are needed and encouraged. This clearly should involve a 3D transient groundwater model that is able to simulate the dynamic interactions between water table and surface moisture and temperature. We believe that this model can then be supported by accompanying time series of thermal imageries. Such a setup will require continuous monitoring of water table depth, soil moisture and temperature. We hope we can conduct such an interesting study in near future. We will discuss this in the manuscript.

**Minor comments**

- Page 8672, Line 5: Add "the effect of" before "groundwater" and remove "effect" after "groundwater". The same in line 6.
- Page 8672, line 16: "clearly"
- Page 8673: What is assimilative capacity of unconfined aquifers? Ans shallow groundwater occurs mainly because topographic drivers are not present, so in lowlands, but also in altiplanos, even if recharge is small.
- This is accurate; Shallow groundwater may occur even if recharge is small like the example you present. The word "assimilative" is not a suitable term here. We will improve this sentence.

- Page 8674 and the rest of the paper: the use of the English language could be improved. I suggest letting an English native speaker look at it.
- We will do this.

- Section 4.1: Here assumed relations between water table depth and landscape features are explored. However, we should also have the following analysis added to make sure that the assumed relations are not indirect: Plot water table depth against surface elevation as well as texture against surface elevation. Texture and surface elevation may explain some of variation in groundwater depth.
- There is no considerable topographic relief within the study area as can be realized from the DEM map in figure 2a. However, it will be useful to plot water table depth - surface elevation relationship. We will also plot percentages of sand, silt and clay of the available soil samples against water table depth.

- Also, it is better to plot relative degree of saturation (theta/theta_sat) instead of the absolute soil moisture, because this may be too texture dependent and thus interfere too much with relation water table depth- soil wetness.
- This is true. We will do this.

- Figure 2: Why is there so little vegetation in the shallow water table depth area? Is there a salinity problem?
- The major crop in this area is cotton. Wheat comes in the second rank followed by maize. At that time of the year the majority of the fields in the study area were fallow according to the cropping calendar.

- Figure 3: reverse the colour scale on the soil moisture plot: Blue for high, red for low soil moisture.
- We will do this.