Reply to Referee #1

It seems Gong and his/her colleagues have substantially improved the manuscript in the resubmitted version. Generally, the manuscript is written clearly and understandable, but some grammars are still need to be checked and confirmed, probably by a native speaker. I like the discussion about the human impact on evaporation, i.e. vegetation degradation and sand dunes bulldozing. The impact of vegetation degradation did not only change the vegetation cover but also modify the soil conditions. I agree with the authors that the processes are complex, and still needs to be further investigated. Summarily, these relative long-term and intensive land surface water and energy observations are important for us to understand the interaction between land surface and atmosphere and even groundwater, especially in this semiarid region where the ecosystems are vulnerable. But there is still space to improve the quality of this manuscript before publication.

Answer: Thank you for your positive comments. We will check and confirm the grammars of the manuscript by a native speaker.

Other comments:

L24: I think it might be okay to generalize the results a little bit to "improve our understanding . . . in the fragile ecosystems of semiarid regions."

Answer: We will emphasize the significance of this study in the abstract with the following sentences:

"This study improves our understanding of land use/cover change impact on evapotranspiration and provides a scientific reference to the regional land management in the context of water resources sustainability".

L34: Not clear info. Please rephrase.

Answer: We will rephrase it with the following sentences.

"In terms of physical processes, ET is affected by net radiation (Valipour et al., 2015), water vapor pressure deficit (Zhang et al., 2014), wind speed (Falamarzi et al., 2014), and soil moisture stress (Allen et al., 1998). Besides, vegetation is also a crucial factor influencing ET (Tian et al., 2015; Wang et al., 2011; Piao et al., 2006; Mackay et al., 2007)".

L 65: limiting factor for. . .

Answer: We will replace the expression of "limiting factor on vegetation" with "limiting factor for vegetation".

L66: what do you mean by "common droughts"?

Answer: In this sentence, the "common droughts" referred to droughts. In order to avoid misunderstanding, we will delete "common" in this sentence.

L 62-73: Some detailed information might better go to study site section.

Answer: We used the information in this paragraph to describe the typical characteristics of Mu Us sandland, including the sand dunes, biological soil crusts

(BSCs) and dry sand layer, which result in complex ET process. Therefore, we think it will be better to leave some information about these typical land surface properties in this paragraph. Following this suggestion, we will move some sentences to the section of site description.

L 81: in situ field. . . ?
Answer: We will correct it.

L88: "doubtful" is a strong word. You'd better change it.
Answer: We will revise it by replacing "doubtful" with "may induce uncertainty".

L97: ". . .is little learned. . ." reads awkward. Please rephrase. Again, "field observations"
Answer: We will correct grammar and spell mistake.

L102 probably change measurements to measurement
Answer: We will revise it.

L123: is it better to say "water demand"?
Answer: Yes, we will revise it.

L141: "as time went on. . .". Please keep the same tense in one sentence.
Answer: We will revise it.

L187-189: It might be better to briefly describe how you calculated latent heat flux.
Answer: Thank you for your suggestion. We will add a brief description of latent heat flux calculations.

L198: what do you mean by "immediately"?
Answer: We used "immediately" to emphasize that we used the values before and after the data gap. In order to avoid the confusion, we will delete the word "immediately".

L266: How did you determine the factors in this equation?
Answer: We will add the detailed descriptions in this section.

L291-294: Is this the commonly used method to calculate NDVI? If so, you do not need to mention these details. And I have no idea why you describe the NDVI_Terra and NDVI_Aqua. Can you clarify?
Answer: Yes, this method is commonly used to calculate NDVI. As we found that there were tiny differences ($|NDVI_{Terra} - NDVI_{Aqua}| = 0.01 \pm 0.0075$) between the calculated daily $NDVI_{Terra}$ and $NDVI_{Aqua}$, we calculated NDVI by averaging $NDVI_{Terra}$ and $NDVI_{Aqua}$ in our study in order to eliminate the impacts caused by such difference.

We will add the above information in the text. Besides, we will follow your

suggestion to simplify the descriptions of the method to calculate NDVI.

L398-399: Since NDVI is a normalized factor and you derived the NDVI_w based NDVI, I do not think it is meaningful to quantify the impact of NDVI on evaporation. This relationship might be changed in different cases and even with different time series datasets. You can describe this relation, but it is probably not suitable as a highlight and mention it in Abstract.

Answer: We agree with you that the relationship between NDVI and ET differs in different cases or with different time series. We also discussed this point in the manuscript. The main purpose for describing the relationship is to compare our result with other studies in different cases to show how strong NDVI affects ET. By our survey, the relationship between NDVI and ET were reported mostly in forests (Loukas et al., 2005; Nouri et al., 2014; Chong et al., 2007) and grassland (Kondoh and Higuchi, 2001; Nouri et al., 2014). Thus, it is meaningful to fill the gap to quantify the impact of NDVI on ET for the shrubland.

In summary, we described this relationship in the main body for comparison, and following this suggestion, we will delete this sentence from the abstract.

L412: do you mean "compared Period I with. . ."?

Answer: Yes, we will revise the sentence.

L431-434: The first-order control of evaporation is a long time debate. I agree with the conclusion, but this research might be not directly related to this conclusion. I suggest the authors weaken the tone, to use "probably" or "very likely" etc.

Answer: We will revise the word "mainly" in this sentence to "probably".

L545: "tolerant to" is probably followed by some "vices", not survive. Please rephrase.

Answer: We will revise the sentence.

L 550: more water than "what"?

Answer: The missing "what" in this sentence was the word "grass". However, we will delete this sentence "As potato consumes much more water than grass". Because we have emphasized the fact that potato consumes more water than grass in this paragraph.