

## **hess-2016-555-RC1**

The subject of this manuscript is interesting and worthy of publication. I believe that the topic will be of broad interest to readers. In my opinion, the key contribution of the manuscript is that it aims to investigate soil water migration processes using isotopes, integrated with sampling in the field, experimental observation and laboratory analysis, and to integrate data from several different compartments of the hydrological system, i.e. precipitation, soil water, plant xylem and root etc.

However, I think some minor modifications are required before the manuscript's publication.

2.2 Sample collection and field experiment "Samples of precipitation, soil, xylem, stem, leaf and root were collected in the study area." "Stem samples (about 0.5 to 2 cm diameter and 5 cm length) were obtained." While no linkage of analysis about stem and leaf was found with the previous and the subsequent discussions. This paragraph should be moved and edited.

**Response: Done.** We have revised it. The statement of "stem and leaf" has been removed. The analysis about stem and leaf will be the research point in the future.

4.1.1 Evidences for piston-type flow there are two continuous rainfall events on 20 July 2014 and 24 September 2014, which infiltrating uniformly into deep depths, as shown by the reducing D and <sup>18</sup>O values with time after the precipitation. Here how many days did the two continuous rainfall events last respectively? What about the precipitation values? Please give specific explanation.

**Response: Done.** We have revised it. The rainfall event on 20 July 2014, with the precipitation of 25mm, lasted for three days. The rainfall event on 24 September 2014, with the precipitation of 16mm, lasted for two days.

4.2.1 Water origin of water sources are uptake by plants "The results show that isotope composition of xylem water of various plants is different". In the paper, what part can explain this point? There is no such comparative analysis about different plants, so please give further explanation or delete. In addition, please give explanation about the reason of choosing 130cm as the maximum sampling depth.

What about groundwater? Why no discussion in this study?

**Response: Done.** We have revised it. In this paper, our discussion focuses on water origin of *caraganakorshinshiikom* xylem. Therefore, we delete the statement of “The results show that isotope composition of xylem water of various plants is different.”

Characterized by dry climate, less precipitation, more evaporation and thicker soil layers, and groundwater buried deeper, groundwater in the study area is difficult to use due to the depth of water table in the northwestern Loess Plateau. The thickness of the soil layer in vadose zone is typically Tens of meters, even a few hundred meters. Many researchers have shown that groundwater in the study area has no effect on plants. Therefore in this study the influence of groundwater does not exist. Thus, soil water is almost the only water resource in the study area. *Caraganakorshinshiikom* in the study area are artificial planting, old small, root system distribution within the 100 cm. There is little more than 100 cm depth. Therefore, we choose 130cm as the maximum sampling depth.