

Hydrol. Earth Syst. Sci. Discuss., referee comment RC2
<https://doi.org/10.5194/hess-2022-246-RC2>, 2022
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Comment on hess-2022-246

Anonymous Referee #2

Referee comment on "Controls on leaf water hydrogen and oxygen isotopes: a local investigation across seasons and altitude " by Jinzhao Liu et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2022-246-RC2>, 2022

Liu et al, based on field sampling of leaf water and measuring isotope composition ($\delta^{18}\text{O}$ and $\delta^2\text{H}$) along an elevation transect on the Chinese Loess Plateau belt to illustrate controls on leaf water hydrogen and oxygen isotopes. The results point that the first-order control on $\delta^{18}\text{O}$ and $\delta^2\text{H}$ was the source water, and the second-order control was the enrichment associated with biochemical and environmental factors. Overall, this is an important and hard-working investigation for deepening the understanding of the control of leaf water isotopic composition in field conditions. However, the current analysis is mediocre, the scientific questions are poorly elaborated, and new discoveries are lacking. Secondly, the results show that source water is the main control of leaf water isotopes, which is contrary to the previous results which indicate that relative humidity is the main control of leaf water isotopes both under leaf and ecosystem scale. Therefore, there requires more evidence to support your conclusion. I recommend major revisions before considering publication in this journal.

Minor revision:

Line 148-150, "For the plants, one or two deciduous and coniferous trees were chosen in each plot, and several large leaves and suberized twigs were collected for each species." Here should be describe in details.

Line 214-215, How was the $\delta^{18}\text{O}$ and $\delta^2\text{H}$ obtained? Here should be describe in details.

Line 264, predicted $\delta^{18}\text{O}$ and $\delta^2\text{H}$ values of leaf water were quiet simpler, and need

consider non steady state (NSS) under complex environment condition.

Line 456-459 $\frac{1}{4}$ there need more deep-seated analysis but not common knowledge in this area.

Line 466-469, The conclusion is too simple and needs to be further explored.