

Hydrol. Earth Syst. Sci. Discuss., referee comment RC1
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Comment on hess-2022-246

Anonymous Referee #1

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-RC1>, 2022

I appreciate the Editor to give me a chance to review the paper.

The manuscript "Controls on leaf water hydrogen and oxygen isotopes: A local investigation across seasons and altitude" presents a dataset on analysis of $\delta^{18}\text{O}_{\text{leaf}}$ and $\delta^2\text{H}_{\text{leaf}}$ together with isotopes from potential source waters and meteorological parameters along an elevation transect on the Chinese Loess Plateau. The research topic is important and within the scope of the journal.

But it seems a bit simple and not systematic in the content. The manuscript at present lacks novel results or theory that would provide a significant advance in this field.

1) The main conclusion of this paper has been confirmed by previous studies (the first-order control on $\delta^{18}\text{O}_{\text{leaf}}$ and $\delta^2\text{H}_{\text{leaf}}$ values was the source water (and the second-order control was the enrichment associated with biochemical and environmental factors) (Cernusak et al., 2016; Barbour et al., 2017; Munksgaard et al., 2017). The experimental design and results of the paper are not innovative.

2) A large number of studies have shown that the enrichment associated with plant transpiration is an important factor affecting $\delta^{18}\text{O}_{\text{leaf}}$ and $\delta^2\text{H}_{\text{leaf}}$ values. However, the authors did not carry out research and discussion in this paper.

3) Plants and soils were sampled in May, July, and September 2020 (In the experimental design). Why only choose this three months? Is it persuasive?

4) Besides, what is the specific sampling interval?

5) Why only one or two deciduous and coniferous trees were chosen in each plot?

6) There are large differences in population and altitude between sampling points 5-8 (Fig.1). But there is no weather station here.

7) In 4.1 these results argued with the recent global meta-analysis that $\delta^{18}\text{O}_{\text{leaf}}$ and $\delta^2\text{H}_{\text{leaf}}$ values reflect climatic parameters (i.e., RH and temperature) differently. What are the reasons for the controversial conclusion?

8) It seems a bit simple in the conclusion. It needs a stronger ending for the conclusion. Besides, it is suggested to supplement the existing deficiencies and prospects.

Please also note the supplement to this comment:

<https://hess.copernicus.org/preprints/hess-2022-246/hess-2022-246-RC1-supplement.pdf>