

## ***Interactive comment on “Speculations on the application of foliar $^{13}\text{C}$ discrimination to reveal groundwater dependency of vegetation, provide estimates of root depth and rates of groundwater use” by Rizwana Rumman et al.***

### **Anonymous Referee #1**

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This is a rigorous study examining the feasibility of using  $\Delta^{13}\text{C}$  as an indicator of groundwater use by vegetation. The paper is well written and addresses the important issue of determining vegetative water sources. The potential to use the measurement of  $\delta^{13}\text{C}$  in place of the more time consuming  $\delta^2\text{H}$  and  $\delta^{18}\text{O}$  analyses is promising and a very useful contribution to the field.

Overall, the paper is well organized and interesting to read. One thing I might suggest is a diagram or table depicting the different sampling plots/transects and how many/what kind of samples were taken in each. This is not completely necessary, but with such a

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wide variety of variables being examined, it might be helpful.

Minor comments:

Figure 1: Change red lines to arrows (or something else). Right now they are covering data and look misleadingly like they are depicting actual data. Also, the y-axes in the top two panels do not match, but are consistent between all other pairs of panels.

Page 11, line 9: Error “shallowest site that at sites”

Figure 3: Make fonts and panel sizes consistent

Figure 5: X-axis label is cut off in panel (a)

Figure 5: It seems odd to combine both species together for the regressions when there are only data from *E. camaldulensis* for a small fraction of the total distance examined. It would be better just to include the regression for *C. opaca* while still keeping the *E. camaldulensis* data points in the figure for reference.

3.3 Leaf vein density: Error in first line “Leaf vein densityLVD”

Figure 6: Make font size in (a) match font size in (b)

Figure 7: Error in figure legend “from same individual leaves”

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2017-540, 2017.

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