Review of: “Xylem water in riparian Willow trees (Salix alba) reveals shallow sources of root water uptake by in situ monitoring of stable water isotopes”

This manuscript describes an intensive experiment that monitored the isotopic composition of xylem water in two willow trees and compared it to the available water sources in the soil system. The xylem water most resembled the water in the surface soil, which suggests that most of the water transpired by these trees was from that source. This inference is supported by the drawdown of water content in the surface soil. The paper is one of the first to use the *in-situ* borehole method to monitor rapid changes in xylem water. It was particularly interesting that the traditional cryogenic sampling of xylem water, which has been in serious question for a year or more, yielded isotopic values that neither made sense nor matched the *in situ* samples. Figure 5 can be beautiful--with some modifications.

Two papers describing similar conclusions, but in other species, have appeared in recent months. The first is different because it uses the Volkmann probes, but the second uses boreholes. I am not sure the second can be cited yet, but the first certainly can. These papers are:

Gessler, A., Bächli, L., Rouholahnejad Freund, E., Treydte, K., Schaub, M., Haeni, M., Weiler, M., Seeger, S., Marshall, J., Hug, C., Zweifel, R., Hagedorn, F., Rigling, A., Saurer, M., & Meusburger, K. (2021). Drought reduces water uptake in beech from the drying topsoil, but no compensatory uptake occurs from deeper soil layers. *New Phytologist*, 233:194-206.

and

Kathrin Kühnhammer,Adrian Dahlmann,Alberto Iraheta,Malkin Gerchow,Christian Birkel,John D. Marshall,Matthias Beyer. Accepted. Continuous *in situ* measurements of water stable isotopes in soils, tree trunk and root xylem: field approval. Rapid Comm. Mass Spectrom.

The authors have modified the earlier borehole method by inserting a porous sleeve into the borehole. It is almost certainly not true that fungal infections were prevented by the sleeve (line 224) unless the entire procedure of boring and tube insertion was carried out under sterile conditions. Perhaps it is enough to say that fungal infections were reduced, although even this would seem to require some attempt to examine fungal density on the borehole wall. Second, I am curious about the concern over liquid water (line 222) in the boreholes. As the xylem is under tension, it would seem that this could not occur except perhaps when tension is released as the vessels were first cut. I doubt that the sleeve caused any harm apart from a minor slowing of response, but I am skeptical that it caused any improvement.

Questions about artifacts caused by cryogenic distillation (Chen et al., 2020, cited) are worrying much of the ecohydrology community. As this study has compared this technique to the borehole technique, confirming that the worries are valid, I think that the comparison should be emphasized. I suggest presenting it in the abstract (not corroboration, line 9) and the conclusions, for example. It is relevant as it helps justify preference for some version of the borehole technique in future work.

In the methods, you should probably add measurements of height and diameter of the trees.

I found the order of the figures confusing. Fig. 7 should be presented after Fig. 3 as these are similar in structure and both present something like raw data. Fig. 4 can be moved to the supplement as it is not really used or discussed here. Fig. 5 could then come next, after being modified somewhat. In Fig 5, the polygons obscure the color of the points, making it difficult to distinguish which points are which. Especially difficult is to see the surface soil data in the green and blue polygons. I suggest colored outlines rather than filled polygons. Also, there is a series of precip data in the middle of the plot that almost look too perfect. Perhaps those could be checked and commented on in the text? This figure is otherwise compelling. I look forward to seeing its final version.

Fig. 6 would come next in logical order as lc-excess is derived from the raw isotopes, but the caption should include a brief description of what lc excess is and the labels on the axes should be improved (lc ex. is not OK). Finally I am curious about why the precip lc excess in fig. 6c is so far above zero. It should be zero by definition, should it not?

Finally, two comments on Fig. 9. There is no dashed blue line in the legend. In addition, much of the soil data is cut off at the top and bottom of the plots. This would be more compelling if they were included.

In the discussion before line 381, probably at the end of the previous paragraph, I would note that the dynamics of vwc are also consistent with the conclusion that most water uptake is from the upper layer. I presume that there are few data points above field capacity, so the seasonal pattern of vwc should be driven primarily by root uptake. By the way, this raises the question of what you have actually gained by the isotopic measurements if vwc shows the same thing. I think there are good answers, but it would be worthwhile to spend a few lines on this question near the end of the discussion.