

Response to the editor's and the reviewers' comments

Dear Authors, could you please consider the minor comments from Reviewer 2 and also specifically the comment regarding like-for-like comparisons of the methods please?

We would like to thank the editor and the two reviewers for the time they spent on our manuscript and for the valuable suggestions. We welcomed the comments by reviewer 2 and the editor suggesting to explain that the SPC vs. CVD-TwB comparison is the one which makes more sense and is used as kind of reference. At the same time, we decided to keep the comparison between all other water types because we believe this make the paper more impacting and more useful for the ecohydrological community.

We report the reviewer's comments in black and our responses below in blue.

Response to reviewer 2

Review 3 Hess-2020-446

A comparative study of plant water extraction methods for isotopic analyses: Scholander-type pressure chamber vs. cryogenic vacuum distillation

General comments:

I will dive right in, since I summarized the manuscript the last two times, I reviewed it. I think I have to apologize for not making my points clear enough, I will try to here:

In the results section of this revised version of the manuscript the authors compare every CVD extracted tissue to SPC extracted tissue. The only comparison I think the authors can argue to be valid is that of SPC and CVDTwB and therefore, in my opinion, the only comparison that should be carried out and communicated in the results section. It is an **a priori** assumption that the methods are **not** comparable for all the other plant tissues you extracted with CVD and therefore it is not an issue to be discussed but a comparison that should not be carried out in the first place. Therefore my suggestion would be for you to take this under consideration and revise the manuscript accordingly. Especially in these sections 3.4 Data analysis, 4 Results, and 5. Discussion you should refrain from comparing all but CVDTwB and SPC. I'm very sorry if this is my fault for not communicating this strongly enough. I think you can very well communicate the other CVD extracted data as a comparison of plant tissue differences but not to compare the two methods.

We would like to thank the reviewer for this further round of revision of our manuscript. We agree with the reviewer that we had a priori assumptions about all possible comparisons. Therefore, as suggested, in the revised manuscript we focused more on the comparison between SPC and CVD-TwB, and we clarified that this represents the "reference comparison" in our manuscript. However, we prefer to keep also the comparison regarding plant water extracted by different tissues using CVD. Our proposal is based on the fact that it would be quite useful for the scientific community to know whether there are significant differences in the isotopic composition of such extracted waters, and our manuscript helps shed light into this topic.

I would also again encourage you to have a native speaker check the revised version.

We have a native speaker in the authorship, and we performed a careful polishing of the English language.

Specific comments:

Introduction:

L48 the extraction of water directly from the stem due to positive pressure on the inside is only possible for very few tree species, otherwise no one would have to ever extract any plant tissues. Please make sure to clarify this when adding that reference (Zhao 2016)

Done.

L64 which two versions of CVD are you referring to here?

We refer to both systems used in Millar et al. (2018). We think that there is no need to specify the characteristics of the two systems here.

L94 check formatting of references

The formatting of the references is correct.

L114ff Here you switch to present tense while the rest of the introduction is written in past tense. I would suggest choosing either one consistently throughout the manuscript.

We changed the tense of these sentences as the reviewer requested. However, we think that for general (and generalizable) statements the present tense is more adequate, as thus we do not use the past tense only throughout the manuscript.

Material and Methods

L188 The bark and the leaves remain attached to the twig on what basis? In physiology the bark is usually removed to avoid phloem contamination. If you insist on keeping this reference here, I would ask you to dig a little bit into physiology research literature and at least mention that this is not the standard procedure when extracting xylem using the Scholander pressure chamber.

We agree with this comment. As requested by the reviewer, in the revised manuscript we added a sentence about the fact that this is not the standard procedure for the extraction of xylem water using the Scholander pressure chamber.

3.2

L213/214 see my concern above.

We revised the text according to the general comment.

Table 1 Did you notice the differences in hydrogen isotopes for beech SPC and CVDTwB and compare that to the oxygen isotopes? There is no difference in delta18O for CVDTwB and SPC (-5.75 SPC and -5.74 CVDTwB) but 8permil for the same comparison of delta2H. That might just be the bias for your cryogenic extraction line. It is a finding worth mentioning in the discussion when elaborating on the cryo bias.

We thank the reviewer for this suggestion, that we implemented in the discussion.

Results:

L298 – 301 these sentences say the same thing twice, please rephrase

The two sentences convey the results of two statistical tests; in the first sentence we reported the result of the Friedman repeated measures analysis of variance on ranks, whereas in the second sentence we specified the results of the Tukey test. Therefore, we prefer to keep the text as it is.

Discussion

I like the discussion now. However, please consider my general comment for section 5.2

We are glad you appreciated the revised discussion. We made few more changes according to the general comments.

Concluding remarks

As I already said in my former reviews, I think this reads like another summary and not a conclusion. I would suggest deleting it.

In the first revision, we tried to reduce this section and to consider all comments of the reviewers. We think this section does not need a further thorough revision (although we removed the first sentences of this section), except for the following minor comment.

Also, Line504 “SPC is not an alternative to CVD...” directly contradicts the following lines suggesting using SPC when interested in accessing transpiration. It sounds like the better alternative to me.

We would like to thank the reviewer for pointing out this unclear phrasing that we modified.

Response to reviewer 3

I think the authors greatly improved the manuscript. All the 'weaker' points have been clarified and the document reads very well. I believe it will be an important paper for the community.

I do not have anything else to report. Thank you for considering my comments.

We would like to thank the reviewer for his/her comments and suggestions, and for appreciating the revised manuscript.