RC1

Dear editors, dear authors,

After careful consideration of the submitted manuscript, I recommend that the presented analysis needs to undergo numerous and extensive revisions (see more detailed comments below). At the same time, I encourage the authors to refine the analysis and re-submit an improved manuscript to present this novel data set. I hope that the remarks in this document help them to do so in an efficient manner.

Authors response:

Thank you very much for your efforts. We have double-checked our paper with your comments, it does need some improvement in data analysis and discussion, which would make our paper more scientific and easier to read. We will refine our paper in the revised manuscript.

The paper addresses the vertical patterns of depth of root water uptakes (RWU) by two tree species located in the Chinese Loess plateau. It investigates how these RWU patterns change over the season and also comparing a dry with a wet year. The paper sets out to compare RWU obtained with different methods: MixSIAR, Direct Inference (both based on isotopic signatures in soil and xylem waters) and a method based on the change in soil water storage. This comparison is most welcome in the research community and lies in the scope of HESS. However, tackling this requires in-depth discussion of the assumptions underlying these methods and the corresponding limitations.

Authors response:

Thank you very much for your affirmation. We investigated the RWU modes of two commonly planted tree species both in a dry and a wet year, compared and quantified the pattern of RWU through three methods: the direct inference approach, the MixSIAR model and the dynamics of soil water storage (ΔSWS). We will thoroughly modify our paper in the revised manuscript. Thanks again for your considerable comments.

The researchers collected an excellent data set with many replicates that allows to have robust conclusions. The data set is novel to my knowledge and should be published! This involved a lot of field work and has value in it. It is great to see, that the aggregated values are reported in the supplementary material. (Although, raw values would be even better.)

Authors response:

Thanks a lot for your comments. We organized our data and shared our data that presented in the Figures and Tables, as shown in the supplementary material (DATA.zip). If you have any query, please don't hesitate to contact us.

Scientific methods and assumptions are not clearly stated and the limitations of these methods could affect the interpretations and conclusions. The analysis is subject to ambiguities and lacks clear figures, which leads to the provided materials not robustly supporting the claims and findings the authors make in the discussion (e.g. confounding factor P in ΔSWS, or figure 6 not clearly supporting l.353-354, among others). Improvements to the analysis and illustration of the presented data are needed in order to assess how well they support the claimed findings.

Authors response:

Thanks for your constructive comments. After thoroughly discussion in our team, we will double-check our data and paper, including figures and descriptions, and rewrite the part of **Materials and Methods, Results and Discussions** thoroughly in the revised manuscript.

General comments

The article is clearly structured, but suffers from imprecise language and formulae. This hampers its clarity

and reproducibility. Further, many figures should be tweaked to better support the comparisons and care should be taken to the consistent reporting of units.

Authors response:

Thanks for your comments. We will improve our statement and language in the revised manuscript. Many figures will be replotted with your comments to better support our paper.

The results and discussion of the Meteoric Water Lines (slopes and intercepts) is not adding significantly to the outlined research questions or discussed findings and could be removed. An exception to this is the visible evaporative enrichment in soil and xylem water that highlights differences between the dry and humid year and the fact that the dual isotope plots indicates possible source waters of xylem seem to be sampled exhaustively.

Authors response:

Thanks for your detailed comments. Our data showed that the slopes and intercepts of LMWL were higher than that of GMWL in a dry year, while they were lower in a humid year. We focused on this result and tried our best to explain the novel data, which may make the part of 4.1 hard to understand and bored. We will refine this part and discuss more on the isotopic compositions of water samples in the "4.1".

In order to interpret ΔSWS, one has to notice that it is a combined effect of multiple processes, which can be simplified to ΔSWS = P - ET. Thus, precipitation P is a confounding factor that can influence estimates of evapotranspiration ET based on ΔSWS. This confounding factor P has differing impact given the amount and duration since last reasonably large rainfall when ΔSWS is measured. This severely limits the possible comparisons that can be made based on ΔSWS. For example, P is the same when the authors compare the same seasonal period between P. tabulaeformis and R. pseudoacacia. However, it is not the same e.g. when the authors compare across years or across seasonal periods. This should be stated more explicitly and authors should either a) limit their comparisons to the ones unaffected by this, b) clearly discuss the impact, or c) try to remove the effect of P in ΔSWS to allow comparison of ET. (This affects various lines in the manuscript, e.g. l.381-382 in the discussion.)

Authors response:

Thanks for your detailed comments. As you stated, the precipitation is an important factor that affects the results of our study, especially on the dynamics of soil water storage. Some researchers have proved that the proportion of interception and stemflow to precipitation was about 20–22% and 1–2%, respectively, and the difference between *P. tabulaeformis* and *R. pseudoacacia* was little (10.1016/j.agrformet.2015.03.009, 10.1016/j.jhydrol.2021.126751). We have double-checked our data, the distance between the *P. tabulaeformis* and *R. pseudoacacia* plantation was about 700 m, and the two plantations had similar density, thus the throughfall of the two plantations were generally the same. Furthermore, We will remove the effect of P in ΔSWS and discuss more about the variation in ET, especially on the influence of plant species to ET. Thanks again for your suggestions, they are of great help to improve the cohesion of our paper.

The authors mention the drought resilience of R.pseudoacacia based on the species' ability to increase the relative contribution from deeper soil layers to RWU in drought years (l.39-41). What would additionally be interesting is to see if this resilience allows to maintain a comparable total amount of transpired/absorbed water in dry vs wet years (e.g. ET = ΔSWS - P). I would be interested by an additional, more detailed analysis combining the mixSIAR based RWU (relative contributions) with the total amounts of actual ET (derived as ET = ΔSWS - P, assuming no deep percolation as a first approximation), to estimate if total contribution from 40-200cm was increased in absolute terms in 2019 compared to 2020 (l.39-41).

Authors response:

Thanks for your detailed comments. We have compared the total ET of *P. tabulaeformis* vs *R. pseudoacacia*, please see Page 9 Lines 199-201. We will discuss more on the compassion of the results of the MixSIAR model and

the variation in SWS, and detailed clarification will be added to compare the water use pattern of different plantations in different soil layers at wet year vs dry year. Thanks again for your suggestions, it is of great help to improve our paper.

Specific comments

To clarify figures and make them better support the results please consider:

make x-axes comparable by having same limits (concerns Fig.3, Fig.4, Fig5 (SWC))

adding title and units on x axes (Fig.3, Fig.6) (Fig.3 How is the x-axis in Fig 3 linked to SWC?)

consider a horizontal layout with a row for R.pseudoacacia and another row for P.tabulaeformis,(agreeing with the suggested table below) (concerns Fig.3 and Fig.6)

For figure 6: I feel that using the area to represent the total relative contribution of each layer makes it difficult to compare their values. I argue that using bar width to represent total relative contribution (in combination with a constant height of the rectangles) would better support your discussion of total relative contributions. (Indeed you're not discussing relative contribution per unit depth, which is currently shown by the rectangles' widths.)

Authors response:

Thanks for your comments.

(1) we will double-check the Figure 3 and replot the Figure 3 by the bar width instead of the area. The x-axes in the Figure 4 were the same for the same year, and the x-axes in the Figure 5 was the same for all plots. However, we adjusted the x-axes to clarify the data more clearly, as the difference between treatments was large.

(2) the title and units of Figure 3 and Figure 6 were at the bottom of the figure. We will replot the figures to make it clearer. In the Figure 3, the variation in SWS was calculated by Eq. (3), which was related to the SWC of different soil layers.

(3) we want to compare the difference in plant water consumption and RWU mode between the two species, it would be better to put the two species together during the same period. Thanks again for your warm advice.

(4) we will replot the Figure 3 and Figure 6 using the bar width instead of the area. Thanks a lot for your constructive comments.

Revise language (especially tenses in figure descriptions but also correct conjugation of verbs)

Authors response:

Thanks for your comments. We will double-check our language and ask some professional agencies to polish our paper.

Be careful to remain consistent in your terminology. E.g. refer consistently to "twig xylem water" instead of "stem water".

Authors response:

Thanks for your comments. We will double-check the terminology in our paper, and the same terminology will be used for consistent.

Find further specific comments pertaining to the indicated lines below:

Intro

l.61-62: Please clarify what you mean by "depict all water sources". Further it'd be nice to see a discussion on the limitations, e.g. the confounding factor of P that limits the interpretation of RWU=ET=P-ΔSWS. And what comparisons are allowed or not considering this confounding factor.

Authors response:

Thanks for your comments. “depict all water sources” means the water sources that plants could absorb, such as precipitation, soil water and groundwater, and the ΔSWS could only interpret the water source of soil. The effects

of P on ET calculation for the two plantations will be discussed in the discussion, and the limitation of P on ET interpretation would be eliminated. We will discuss more about the limitation of this traditional method, and compare the results of ET between the two plantations without the consideration of P.

l.70-73 and l.79-81: Please try to be more concise and clear in the English. For the reader it is not easy to understand the message of these lines.

Authors response:

Thanks for your comments. We will rewrite these two sentences for clarify.

Materials and Methods

l. 118: How was the number of two trees per plantation decided? Does this mean you took multiple twigs then from the same tree? Were the results between the two trees consistent? This could be added as a small sentence to the results.

Authors response:

Thanks for your comments. After the forest tally, two sample trees with well-growth and with the mean tree-height and DBH (Table 1) were chosen per plantation. Three twig branches were sampled from one tree, and mixed with the other, so we totally took three xylem water samples per plantation in one sampling, and the difference between trees was not considered in our paper. We will rewrite the "2.2.2 Water sampling" for clarify.

l.148: how are the four "aggregate" layers linked to the HCA shown in figure S1? It would be nice to have some more background information on how you applied Ward's method (applied to what variable? Z-scores?)

Authors response:

Thanks for your comments. A hierarchical cluster analysis (HCA) method was used to classify the soil layers according to the similarities of the SWC between the soil depths. Before data standardization by z-score normalization, Ward's method, based on Euclidean distance, was chosen for classification. We will add some more background information of the HCA in the "2.3 Data analysis", and present the process of layers aggregation in Page 7 Lines 147-149.

l.150-155: Does "I" refer to the "aggregate soil layer" (0-20, 20-40, 40-100, 100-200cm?) while "i" is the sample depth (i.e. the ones state in lines 130-131) ? Maybe revise the English to make this distinction clearer in the text.

Authors response:

Thanks for your comments. What we want to express is as you explained, "I" refer to the "aggregated soil layer" (0–20, 20–40, 40–100, 100–200 cm), and "i" is the sample depth (i.e., the ones state in lines 130-131). We will rewrite these sentences for clarify in the revised manuscript.

l.164-167: Pleaser provide more details to the MixSIAR model, e.g. did you use any prior assumption on the root distribution to constrain solving the overparametrized system? How did these root distributions look like?

Authors response:

Thanks for your comments. No prior assumption of the root distribution was used to constrain the model running, and the detailed information was provided in Lines 163-168. The root biomass was increased with soil depth, and reached the highest proportion at 40–100 cm, then decreased with soil depth. The detailed information can be seen in: 10.16258/j.cnki.1674-5906.2005.03.027, 10.26949/d.cnki.gblyu.2019.000282.

l.170-176 Please revise the formula a) generally (units, explain Δ) and also b) in view of the comments to lines 150-155. Unclear points include (should h be h_i? Maybe include the double index I to explain how you computed quantities shown in figure 3? Was d_i constant over time or did you really consider Δd as your formula suggests

with the parentheses?)

Authors response:

Thanks for your detailed and warm comments. We will revise the Equation (3) and (4) in the revised manuscript. Δ means the variation in SWS, which was calculated by the latter SWS minus the former. The SWS_I is the soil water storage of the I_{th} soil layer (0–20, 20–40, 40–100 and 100–200 cm), and the parameter of d and i were not constant for the different sampling method in 2019–2020, which we will clarify in the revised manuscript.

l.185-186: Please provide more explanations why you look at Pearson correlation between variables (also affects l.233-234, 276-280, Table 2, and l.333-342). To understand l.333-342 a better explanation of the hypotheses underlying the correlation analysis between ΔSWC and ΔRWU. It would also be nice (on line.185-186) to have further details on the subgroups within which you computed correlations. These analyses could lead to a better process understanding of the water cycle but could be more clearly linked to the research question regarding forest restoration schemes or more clearly linked to the interpretation of the other analyses.

Authors response:

Thanks for your constructive comments. We will add more detailed information in "2.3 Data analysis". The correlation analysis was conducted to further explore the relationship between variables, such as Page 10 Lines 233-223, it means that the soil water in the deep soil layers was less interrupted by precipitation; Table 2, it means increased air temperature promoted water isotope fractionation and caused higher isotope values. The higher precipitation accompanied by lower air temperature, and caused lower isotope values.

Based on the hypotheses that the amount of plant root water uptake was related to the variations in SWC per soil layers, we performed the correlation analysis between ΔCR (contribution rate of a soil layer to the overall RWU) and ΔSWC. We will rewrite the Lines 333-341 in the revised manuscript.

Results

l.201 Please mention that the reported values in the text are "(not shown)" in the figure 3 as such. Further you might add that in 2019 as well as in 2020 total changes in SWS between August and October were much bigger than changes in SWS between July and August.

Authors response:

Thanks for your detailed comments. We will add the detailed total ΔSWS in the Figure 3, and we will compare the ΔSWS during July–August and August–October per plantations in the revised manuscript.

l.201-210: This paragraph could greatly benefit from more clarity by reworking the text (both structure and language) to make it easier to follow the various comparisons. A support in form of a table or figure would definitely be helpful. Additionally the confounding factor/ambiguity induced by P should be more highlighted for the respective comparisons. E.g. would the time since last rainfall affect the observed decrease/increase in ΔSWS (or "rates of increase of SWS") with depth or is the observed ΔSWS robust with respect to that because you consider depths of up to 2m ? A discussion of this would be needed.

Authors response:

Thanks for your constructive comments. We will rewrite the Lines 201-210 and replot the Figure 3 for clarify. The samples were sampled at least 2 days after rainfall, so the last rainfall before sampling had less effect on the observed ΔSWS. We mainly focused on the seasonal variation in water consumption and RWU. As we mentioned (Lines 59-60), the soil layers of up to 2 m is considered efficient in quantify plant root water uptake, and we will further discuss it in the discussion.

l.213-219: Please explain better the relevance of reporting the slope and intercepts of the LMWL and SWL, as well as the ranges of the observed isotope values (l.221-230). Where they do not contribute to the findings regarding the

research question, they could be removed (see general comment further up.) This also applies to correlation with soil water (l.232-234)

Authors response:

Thanks for your constructive comments. We want to investigate the spatial and temporal variations of stable isotopes in consecutive hydrological years (Page 4 Lines 94-95), and the results and discussion were shown in "3.3 Isotopic composition of water samples" and "4.1 Comparison of the water stable isotope composition of precipitation, soil and xylem". We will rewrite the "3.3 and 4.1" to better serve the research topic.

l.242-261: These result sections would benefit from a summary in tabular form, where you might compare RWU depths from the direct inference method, RWU modes from the MixSIAR method and largest ΔSWS for the 6 periods and the two plantation types. See below example as suggestion (values to be verified...):

	Dry year			**Humid year**		
Plantation species	Jul 19	Aug 19	Oct 19	Jul 20	Aug 20	Oct 20
Direct inference: RWU depth (cm)						
R (black)	60?	80?	50	10,70,150?	40?	20?
P (orange)	50	60	70	120?	20?	20?
MixSIAR model: Depth of RWU mode (cm)						
R.pseudoacacia	40-100	100-200	40-100	100-200	40-100	0-20
P.tabulaeformis	0-20	0-20	100-200	100-200	40-100	0-20
Change in SWS: Depth of largest decrease in ΔSWS (cm)						
R.pseudoacacia	...					
P.tabulaeformis	...					

Authors response:

Thanks for your constructive and warm comments. We will reorganize the section "3.4 Water uptake pattern based on the direct inference approach and MixSIAR model", combing the Figure 5 and Figure 6 together and changing it into a table, as shown below:

	Dry year			Humid year		
Methods and plantation species	Jul	Aug	Oct	Jul	Aug	Oct
Direct inference approach: RWU depth (cm)						
R. pseudoacacia	40–60	60–80	40–60, 80–100	5–10, 40–60, 80–100, 120–140	40–60, 160–180	10–20
P. tabuliformis	40–60	40–60	60–80, 120–140, 140–160	100–120, 180–200	15–20, 80–100,	-
MixSIAR model: main soil layers of RWU mode (cm)						
R. pseudoacacia	40–100	100–200, 40–100	40–100, 100–200	100–200, 40–100	40–100, 100–200	0–20, 100–200
P. tabuliformis	0–40	0–20, 40–	100–200,	100–200	40–100,	0–20, 100–

		100	40–100		20–40	200
Depth of largest decrease in **ΔSWS** (cm)	Jul-Aug		Aug-Oct	Jul-Aug		Aug-Oct
R. pseudoacacia	100–200		100–200	100–200		40–100, 20–40
P. tabuliformis	20–40		100–200	40–100		0–20

We will refine the table according to our data. Thanks again for your warm and constructive comments.

Discussion

l. 331-332: Also here above table could help clarify when and where MixSIAR agrees with ΔSWS and when and where it does not. It appears to me the conclusion that they agree well is mostly based on the observation of water use from 100-200cm in R.pseudoacacia (in July and August 2019). See also remark regarding l.353-354. l.322-324

Authors response:

Thanks for your constructive and warm comments. We will put a table in the section "3.4" as we have stated above. The results of MixSIAR model and the ΔSWS agrees well in 100–200 cm for *R. pseudoacacia* and 20–40 cm for *P. tabuliformis* during July-August 2019, 100–200 cm both for the two species during August-October 2019, 100–200 cm for *R. pseudoacacia* during July-August 2020, and 40–100 cm for *R. pseudoacacia* and 0–20 cm for *P. tabuliformis* during August-October 2020. We will specify and compare the results in the discussions.

l. 333-340: Please explain better the hypotheses underlying the correlation analysis between ΔSWC and ΔRWU and what you want to test with it. E.g could the same have been done instead with ΔSWS (ΔSWS =\bar{ΔSWC} * 10 *\bar{d} * h / ρ) ?

Authors response:

Thanks for your comments. The hypothesis is the plant prefers to consume more water from water enriched soil layers (higher SWC), and we found the *R. pseudoacacia* conforms to this law. This hypothesis also can be tested with ΔSWS, while the result would be the same.

l.353-354: How is this claim supported by the MixSIAR figure 6 that implies 65% of xylem water coming from 100-200cm for P in July 2020 or 26% for P in October 2020? Is this claim only based on figure 3 based on ΔSWS method? (l. 331-332)

Authors response:

Thanks for your comments. After compared the results of the direct inference approach and the MixSIAR model, the results of the MixSIAR model was the closest to that of ΔSWS method, and the MixSIAR model was regarded as the first choice in RWU judging (Lines 331-332). Based on the results of the MixSIAR, we stated that the *R.pseudoacacia* tend to absorb water from deep soil layers during July-August 2019 (Line 352-354), with the precipitation was only 51.3 mm during this period (Figure 3). We will compare the results of the three methods in specific and rewrite Lines 352-357 for clarify.

Conclusions

l.378-380: as stated earlier it is still unclear why correlation of δ18O values with other variables is analysed and (why this is stated as such in the conclusion).

Authors response:

Thanks for your comments. We want to claim that the spatial-temporal variation of water isotope values in this region were conformed to the general law (Line 278-296), such was precipitation effect, temperature effect and the infiltration path. We will discuss more on the spatial and temporal variations of stable isotopes in consecutive hydrological years to serve the first objective, as shown in Lines 94-95.

Technical corrections

Abstract

l.34: suggest to remove "with contrasting soil moisture dynamics"

Authors response:

Thanks for your warm comments. Using ΔSWS as a criterion, we studied the applicability of the direct inference approach and the MixSIAR model in Chinese Loess Plateau. We prefer to keep this sentence or rewrite into "with contrasting soil moisture dynamics per soil layers" for clarify. Thanks again for your warm comments.

l.35-36: what does correlation of δ with Tair and P mean? How to interpret this?

Authors response:

Thanks for your comments. The spatial-temporal variation of water isotope values was also investigated to reveal the meteorological factors that influence local hydrological processes. We will rewrite the sentences and discuss more about the background information that related to this content.

l.38: "more effectively" what does it mean?

Authors response:

Thanks for your comments. "more efficiency" means the results of the MixSIAR model were more similar to that of ΔSWS, and the MixSIAR model could be applied in judging RWU modes of plants in Chinese Loess Plateau.

l.43: "inclined to absorb soil layer" what does it mean?

Authors response:

Thanks for your comments. "inclined to absorb soil layer with enriched soil moisture" means the *R. pseudoacacia* prefers to absorb water from soil layers with higher SWC, which was related to Lines 337-341. We will rewrite this sentence for clarify in the revised manuscript.

Intro

l.53: replace "potential" with "danger"?

Authors response:

Thanks for your comments. We will replace "potential" with "danger" in the revised manuscript.

l.92: Please try to avoid confusion in the English formulations e.g. distinguish "soil δ" from "soil moisture content" and be more explicit in the "relevant variables".

Authors response:

Thanks for your warm comments. We will rewrite the sentence in Lines 92-93, and we will double-check the terminology used in the revised manuscript.

l.94: By "spatial" you mean "vertical"? Would this be a more appropriate formulation?

Authors response:

Thanks for your comments. The "spatial" means vertical distribution of soil δ per plantation and the different isotopic values between the two plantations. The "spatial" would be a more appropriate formulation for our study.

l.101: Refer to a year instead of the "Grain for Green" project.

Authors response:

Thanks for your warm comments. We will use the afforestation year "since 1990s" to replace the "Grain for Green" project in the revised manuscript.

Materials and Methods

l.138: cryogenic extraction: could you report the efficiency separately for soil and twig samples?

Authors response:

Thanks for your comments. We have measured the extraction efficiency during the test of the cryogenic vacuum distillation system, which was about 97.0–99.9% for soil and xylem samples. Then the extraction efficiency of the instrument was though as 98% with the same settings. During the water samples extraction, if the efficiency of one sample was lower than 98%, then the sample was discarded and replaced by another replicates, until the extraction efficiency was not lower than 98%. Thus, the extraction efficiency for soil and twig samples were thought as 98% during our experimentation.

l.146: how did you measure the precision of the CRDS analyzer? Do you have an estimate of the accuracy?

Authors response:

Thanks for your comments. The precision of the CRDS analyzer was excerpted from the instrument description, as the instrument is well maintained throughout the experimentation.

l.161: with "significant" do you mean "relevant" or "large"?

Authors response:

Thanks for your comments. What we want to state is that the raw isotopic values were similar to the representative values, which were calculated by Eq. (2). "significant" means "large" in your words.

l.157-165: please clarify at the very beginning of the paragraph what data set was used for the analysis and all the figures (except Fig S2). I understand it was the "raw" (and supp-l.10 do you mean "unweighted average method")

Authors response:

Thanks for your detailed comments. We apologize for our inaccurate statement. The raw isotope values were applied in the direct inference approach (Figure 5); the mean raw isotope values were applied in the MixSIAR model and calculated by soil depth weighted method, due to four layers (0–20, 20–40, 40–100, 100–200 cm) includes many soil layers during soil sampling (Lines 130-131), respectively. Furthermore, we found that the difference between the raw and the soil water content weighted isotope values was not significant. We will specifically rewrite the sentences (Lines 157-165) for clarify.

Results

l. 205-210: "Both plantations increased SWS ... " is unclear? Is this saying that ΔSWS from July-October for each single depth and for both years was positive? Please add units to the "rates of increase" stated in the text and consider showing/adding these numbers in tabular form to follow more easily the claims.

Authors response:

Thanks for your detailed comments. “Both plantations increased SWS from shallow to deep soil layers over time in 2020” means the two plantations increased SWS in the shallow soil layers (e.g., 0–100 cm for *R.* plantation and 0–40 cm for *P.* plantation) during July-August, and the SWS of deep soil layers were increased during August-October (e.g., 100–200 cm for *R.* plantation and 20–200 cm for *P.* plantation), as shown in Figure 3. We will rewrite this sentence more specifically for clarify.

The unit of the “rate of increase in SWS” is mm/mm, which was calculated by the latter SWS minus the former SWS then divided by the former SWS. And the rate of increase could be calculated based on the numbers noted in the Figure 3. We will add the formula of the “rate of increase” in the revised paper. Thanks again for your comments.

l.242-244: State more clearly that these are results from direct inference approach.

Authors response:

Thanks for your warm and constructive comments. We will rewrite the sentences related to the results of the direct inference approach, and specifical formulation will be added at the beginning.

Discussion

l.267: Do you mean "kinetic fractionation" (as opposed to "equilibrium fractionation") instead of "unbalanced fractionation"?

Authors response:

Thanks for your detailed comments. We will replace the "unbalanced fractionation" with the "kinetic fractionation" in the revised manuscript.

l. 290: Consider replacing "rare rainwater infiltrated" with "on rare occasions rainwater infiltrated".

Authors response:

Thanks for your detailed comments. We will replace "rare rainwater infiltrated" with "on rare occasions rainwater infiltrated" in the revised manuscript.

l.333: Consider adding "[the relationship between] the changes in [SWC and RWU]".

Authors response:

Thanks for your comments. We will add the hypothesis and detailed correlation analysis between SWC and RWU in the revised supplementary material.

l.357: Please explain what you mean by conservative.

Authors response:

Thanks for your comments. "conservative" means the *Pinus tabulaeformis* is more inclined to absorb water from precipitation, and the water use strategy is less changeable, especially during the dry year. And it consumed less water than *Robinia pseudoacacia*. We will rewrite the sentence more concisely in the revised manuscript.

l.359: Consider replacing "trees with high density were planted" by "trees were densely planted"

Authors response:

Thanks for your detailed comments. We will replace ""trees with high density were planted" with "trees were densely planted" in the revised manuscript.

l.365: "Compare to the R. pseudoacacia" is redundant at the beginning of the sentence.

Authors response:

Thanks for your detailed comments. We will delete the "Compare to the *R. pseudoacacia*" in the revised manuscript.

l.370: "better" in the sense to consume less water and allow more deep infiltration?

Authors response:

Thanks for your comments. "better" means the *Pinus tabulaeformis* consumed less water and has no danger for deep soil desiccation (Lines 52-53), which may be suitable for forest sustainable development.

Figures

l.531: Consider replacing "google map" with "Satellite view (Google Maps)"

Authors response:

Thanks for your detailed comments. We will replace "Google Maps" with "Satellite view (Google Maps)" in

the revised Figure 1.

l.577: Consider clarifying caption: "Grey and blue lines represent the Global (GMWL [add formula]) and Local (LMWL) Meteoric Water Lines, black and orange represent the Soil Water Line of the R... and P... sites, respectively."

Authors response:

Thanks for your detailed comments. We will replot the Figure 4 according to your suggestion, and the caption will also be rewrite for clarify. Thanks again for your warm comments, which are constructive to our paper.

l.588: Consider adding "[in xylem] (shown as vertical lines) [and soil water]"

Authors response:

Thanks for your detailed comments. We will add “(shown as vertical lines)” in the caption of Figure 5. Thanks again for your warm and constructive suggestions.