

Response Letter:

Dear Editor and Reviewers,

Once again, we would like to thank you for the fruitful discussion to improve our manuscript. We have carefully considered all the comments and made the necessary changes to the document. We have also changed the citation of the preprint publication by Fischer-Bedtke et al. (2023), as it was accepted during the discussions-review processes. In addition to the reviewer recommendations, we worked on the readability of the paper, which resulted in some small changes in the sentences. These changes can be seen in the Author's track-changes file in a different color.

Please see below for a detailed explanation of the changes related to the reviewer comments. The line numbers are written according to the Author's track-changes file.

Best regards,

On behalf of the authors,

Gökben Demir

INTRODUCTION:

We have rewritten the sentences in line 64 (in the tracked pdf file) and revised the sentence in line 122 to eliminate the use of "water scarcity" as suggested by Reviewer 1. We also added information about the research methods for root water uptake patterns in the line between 101 and 113, as suggested by Reviewer 2. We added additional sentences and revised the paragraph to clarify the previous finding about the effect of throughfall patterns on soil moisture variation in the line between 64-83. We revised lines 84-95 to add sentences about abiotic factors for root water uptake patterns.

We also stated the main hypothesis of the study and revised it in the discussion section as suggested by the reviewer 1.

MATERIALS AND METHODS.

As recommended by the reviewer 1:

We not only worked on the readability of the section, but also provided the units for the variables in line 220-221, elaborated further on the data quality criteria and the reasons for discarding some of the sensors' data, please see lines between 241-246. To familiarize readers who may not have experience with the linear mixed effects model we added few sentences in the section explaining the terminology and the rationale for including the fixed effects and their interaction in the statistical model, we have revised lines between 309-317, 326-338.

In line with the suggestions of reviewer 2

We have revised the sentences that created confusion about manual throughfall sampling, see lines between 207- 211. We also revised subsection 2.4, which explains the calculation of root water uptake, to clarify the communication about how we determined the water uptake, and added a brief explanation in the model section (2.5) that the root water uptake was characterized by the sensor location, so as not to mislead the reader about the spatial scale.

DISCUSSION:

As we stated in response to reviewer 1 in the first letter, we have taken the following steps in the discussion section:

A summary - roadmap section at the beginning of the discussion, which is between lines 487 - 494.

We have included more detailed explanations of the results to remind the reader in the subsections, as an example see lines 584-598.

We have incorporated clearer takeaway suggestion by adding clearer and more concise statements about the results, such as in subsection 4.3 lines between 675-682.

We have clearly stated the expectations and revisited the main hypothesis and included broader context of the literature as in lines between 571-575, 675-682, 689-69.

As recommended by reviewer 2:

We clarified about the root activity, which was vaguely worded and lacked a clear explanation, by describing and including exclusive description of the root activity to address these questions. In the cited study (Guswa, 2012), in the corresponding lines, root activity refers to transpiration, root compensation, and hydraulic redistribution.

We further elaborated on how we evaluated the effect of bulk density on root water uptake, since it did not come out as a significant variable during model selection, and we therefore conclude that it was not an important driver in our setting. We revised this in subsection 4.2 and in the lines between 580-600.

Furthermore, we discussed the effects of other factors mentioned by the reviewer, such as tree age and different physiological structures in the subsection lines between 622-636.