

Answer to referee 2

Dear referee,

Thank you for taking the time to review the manuscript and for your relevant suggestions. You will find below the answers to your comments.

This paper presents an innovative mesocosm approach to simulating changes in the crucial zone with an emphasis on climatic factors. The paper is well-written and appropriately detailed in the presentation. As such it provides the critical zone community with a useful overview of this infrastructure.

Thank you for your positive comments.

Major concern:

I lack information on the possibility for researchers to make use of this facility. Is there a possibility for the scientific community to make use of this infrastructure? Or is the presentation more an inspiration for others to try to create their own mesocosm since the one presented in this manuscript is not going to be accessible for testing new ideas from people not already involved in this in this particular mesocosm.

Indeed this is a crucial information. The platform is intended to be rented for scientific projects. We added the following sentence in the abstract: “The broad variety of data that can be obtained with this platform aims at encouraging **scientists that would be willing to use it** to carry out interdisciplinary projects”. We also clearly stated it in the conclusions: “This paper describes a new experimental set-up, **available upon request to all the community**, to study the shallow critical zone based on a combination of 15 lysimeters and an atmospheric conditions simulator.”

Therefore, the paper aims at providing a description for the users, but also an inspiration, notably by providing

Minor comments

Figure 5: There is plateau in cumulated discharge, and a gap in conductivity data between hours 10-25 from start of the drainage. Please explain if this is an experimental artefact or a feature of the planned experiment.

This drainage event was induced by two consecutive irrigations. The plateau after 10 hours is therefore to the end of the drainage after the first rain. We specified this in the caption of the figure, as well as in the method with the following sentence:

“Firstly, to evaluate the autosamplers, we performed a two-hour frequency sampling by running an autosampler during a large drainage event, **that was induced by two consecutive irrigations of 130 and 126 mm**, to sample discharge water every two hours at the bottom of a non-planted mesocosm”

Line 264. Please consider adding “or downslope changes along a soil catena” after the words “... vadose zone, such as preferential flow”

We incorporated your suggestion.