

## Response to comments by Referee #2

Thank you for considering my comments on your manuscript and addressing all the points mentioned in the previous review. I have a minor point remain that should be addressed to improve the manuscript: In method and discussion section, please consider to check tenses of the sentences to have coherence. For example: in L128 ‘at GS six lysimeters are installed...’ present tense and in L146 ‘at RO six lysimeters were installed’ past tense were used.

Response: Thank you for your positive feedback on our revision. Thank you very much for the point about the tenses; we carefully looked at the tenses in the whole manuscript.

L128: We have changed accordingly to: “At GS six lysimeters were installed; one lysimeter was operated ...” (track changes version)

## Response to comments by Referee #3

The two main issues raised by the reviewers were a lack of depth in the discussion and of synthetic writing throughout the manuscript. Both have been appropriately addressed, and the manuscript has been substantially rewritten. This makes the article easier, clearer and more exciting to read than the previous version. All minor comments have been addressed as well. I would therefore definitely recommend this paper for publication in HESS, provided that some last small errors and typos are corrected (please note that line numbers correspond to the author's tracked changes "HESS-2021-100-ATC1.pdf" version):

Response: Thank you for the positive evaluation of our revision. We are glad that now the manuscript is easier to read and that the main highlights are clearer. Thank you for observing the errors in some lines; we corrected the sentences accordingly.

84-85: "as well as precipitation" instead of "as well precipitation"

Response: The changes have been made accordingly in L39 of the track changes version.

186-187: a bit naive question about coding of the treatments: why 0 for ambient and 2 for elevated, and not 0 and 1 instead?

Response: Thanks for this comment. The reason why we used 2 instead of 1 is related to the overall design of the experimental site, as here also other plots (without lysimeter observations) with an elevated CO<sub>2</sub> of +150 ppm exist (and are indicated by 1).

191: what does GWU stands for? I don't think this acronym has been defined before, but I may have missed it.

Response: We have deleted GWU (L135, track changes version).

230: there is one "the" too much in this sentence

Response: We have changed it to “The change in soil water storage ( $\Delta S$ ), which affects water availability in the soil ecosystem, [...]” see L164 and L165 in the track changes version.

275: maybe "and summed up" instead of "and added"?

Response: We have changed it accordingly to “and summed-up”, see L205 in the track changes version

310: why using  $p < 0.01$  as significance threshold and not  $p < 0.05$ ? Is that a sort of Bonferroni correction because there many linear models are tested?

Response: We changed it to the more conventionally use  $p$ -value of  $< 0.05$ . This did not change the reported results.

873: "steeper" instead of "stepper"

Response: We correct the word into “steeper” in L628 of the track changes version