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Comment on hess-2021-317

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Community comment on "Technical note: High-accuracy weighing micro-lysimeter system for long-term measurements of non-rainfall water inputs to grasslands" by Andreas Riedl et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2021-317-CC1>, 2021

The authors present a new ML system and show how this ML system can be used to determine NRW for a grassland site. The manuscript describes partially very detailed the technical set-up of the ML system. The authors describe that the ML system doesn't include observations of the ML outflow/drainage and argue in line 207 the ML design was used here to quantify NRW inputs during dry spells and drought periods in summer. I agree that under this conditions the used assumption of no outflow from the ML system might be partially correct. It is also nice to see that the authors recommend in the same section that an ML system would need, when using it in a more general way e.g. to describe NRW inputs for longer time, and additional sensor to determine drainage outflow. Thus I don't understand why the authors showing in section 3.6 NRW inputs over one year here, when the know that the ML system cannot provide such data? I recommend to delete the section 3.6 as the shown total amounts are strongly biased by the inability of the ML system to correctly quantify NRW input during time were also drainage occurs.

This is a technical note, and I strongly recommend that the authors make it clear to the reader throughout the manuscript that this technical inadequacy of the ML system largely limits the usability of the ML design described in this technical note.

More comments:

- please show the ML system installed in the field somewhere in the Material and Method section
- 5 please show day and nighttime here and show in a) more the just the very close vicinity of the ML system in the pictures.
- The dry out periods in Fig.7 a) showing large difference from July until September between different pots and the control. The authors only show this for one period in July but it is also visible in august and September! The argument that nighttime difference are small is not correct as B) shows that only for a very small time window around 6 in the morning the difference is close to zero. However dew starts, as shown in a previous figure (Fig. 5) much earlier at around 7 pm where differences are still large (~2°C shown in Fig. 7 c). Thus the conclusion of the authors that that soil

temperatures inside ML pots during the most relevant hours of day when dew forms (during the night before sunrise) from line 429-430 is partially not correct.

- Section NRW inputs over one year showing strongly biased NRW data as the ML system fails to correctly quantify NRW under conditions where drainage occurs and I was very surprised that this topic was even not picked up in the discussion section 4.4.
- The appendix A: drainage water flow of ML pots is too speculative from my perspective. Drainage occurs not only during rainfall and shortly after rainfall as mentioned in line 792. The outflow from soil depends on their soil characteristics and thus might differ when using ML system at other sites and different soils. The outflow from soils are typically low additional also bias ET during the day!