

Hydrol. Earth Syst. Sci. Discuss., referee comment RC1
<https://doi.org/10.5194/hess-2021-317-RC1>, 2021
© Author(s) 2021. This work is distributed under
the Creative Commons Attribution 4.0 License.

Comment on hess-2021-317

Anonymous Referee #1

Referee 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-RC1>, 2021

As an important component of the ecohydrological cycle, it is always difficult to analyze and quantitatively characterize Non-rainfall water (NRW). In this paper, the author designed, manufactured and tested a novel micro-lysimeter (ML) system, which has high precision and weighing range, and overcomes some defects of the existing lysimeters. Different types of NRW inputs, such as dew, hoar frost, fog, rime and the combinations among these, are well distinguished by auxiliary sensors. At the same time, it is also similar to the surrounding environment in terms of canopy and soil temperature, plant growth and soil humidity. The author applied the ML system at a field site in Switzerland. Through the monitoring of a hydrological year, different NRW events were effectively distinguished and the NRW inputs was quantified. In general, the paper has good innovation and practical value, but some parts need to be improved, and major revision are suggested. The specific opinions are as follows.

- It is recommended to attach the location map of the study site in Switzerland and the real photos of the ML system;
- How deep is the groundwater level? Should the impacts of groundwater be considered?
- Line 215-220, it may be difficult to transfer the soil body from one ML to the second. How to ensure the stability of soil during transfer?
- Do you think freezing-thawing would have impacts? Should the accuracy of the ML change at different temperatures?
- Can the ML distinguish the influences from dust or other drifting materials falling on it?
- According to the author's statement, the ML can only distinguish windless conditions, so it cannot work on windy days? NRW input over a year in Figure 8 might be underestimated?
- The ML can quickly discharge the excess water after precipitation, but this would also cut off the evapotranspiration channel, which might misrepresent the conditions in the nearby soils. Will it affect NRW?
- In figure 7 (b), it is described as WFPS in the text, but not in this figure.
- Different types of NRW inputs in Figure 8 can be represented in different colors. The same is for Figure 9.

