

***Interactive comment on “Technical note on
measuring run-off dynamics from pavements
using a new device: the weighable tipping bucket”
by T. Nehls et al.***

Anonymous Referee #1

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Due to climate change a precise estimation of the urban soil water balance is necessary. An important prerequisite for paved areas is the measurement of run-off events with high temporal and spatial resolution. The well known tipping bucket technique traditionally used in meteorology and soil hydrology is not able to detect the dynamics of both small and big flow events from a pavement. To improve the situation the authors developed a so-called “weighable tipping bucket”. The technical design as well as the data processing is exemplary demonstrated in some detail. The evaluator supports the basic idea of the improved tipping bucket (TB). The solution seems to be simple as well as cheap and the device produces measured data with high reliability. In principle the

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reviewer agrees with the main content of the manuscript. However, before full acceptance of the paper it is recommended that the following issues be discussed in more detail:

- p. 9274, l.1 18 ff – For the experiments weighing lysimeters have been used. During a rain event we have two processes. The first is storage of the rain on the surface of the lysimeter, i.e. on the pavement and in the seams, respectively. The second is run-off from the surface and its measurement with the weighable tipping bucket. Why is it not possible to measure the first process (storage of rain on the lysimeter surface until that time, when run-off from the paved surface into the tipping bucket begins) directly with the lysimeter, based on changes of the lysimeter mass during the rain event?
- p. 9275, l.2 12 ff and p. 9276, l.3 24 ff – The description of the characteristics of the TB seems to be o.k., but a discussion of alternative measuring techniques is missing (for example, flow measurement techniques used at petrol filling stations, etc.).
- p. 9279, 2.3 12 ff – The use of the term “weight” is physically not correct – you measure a mass or a mass change with the TB. Please correct the use of the term in the whole manuscript.
- p. 9280, 2.3 10 – It is not clear how you have identified the criterion for the end of the real surface run-off, a more detailed description would be helpful for the reader.
- p. 9290, Fig. 2 – This sketch of the new weighable tipping bucket system does not enable a reader to construct such a system for his purposes. To do that the dimensions of the various components need to be added. In addition, a top down view, also with dimensions, is required.

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