Interactive comment on "An improved post-processing technique for automatic precipitation gauge time series" *by* A. Ross et al.

Anonymous Referee #2

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This paper presents the evaluation of four post-processing algorithms for the filtering of precipitation time series measured by weighing gauges. One of those algorithms is applied operational for weighing gauges within the Environment Canada network and is implemented directly at the data logger, working near real time, while the three others requires a 24 hour segment of the time series and are thus processed after data are transferred from the sites to Environment Canada. The study compares the performance of all four algorithms applying both a synthetic dataset and a real-world dataset with data from international sites in different climates and configurations. Noise on weighing gauge signals is a common and well-known problem. Mechanical vibrations and electro-magnetic disturbances cause high frequent noise, while evaporation, temperature changes and leakages may cause more low frequent noise, oscillations

or drift on the signal. Given the various sources, the exact structure of the noise of a single gauge at any given site may vary a lot. Filtering algorithms are applied worldwide, but documentation of these are sparse. Weather services with weighing gauges in their network may have developed their own filters, often only described in an internal note while instrument providers may have added an inbuilt and proprietary filtering algorithm into the instrument electronics, prone to firmware updates with unknown changes. This situation makes it difficult to analyze precipitation measurements across networks because detailed information on the post-processing procedures are missing. Therefore, this paper is very valuable and falls absolutely inside the scope of the Journal "Atmospheric Measurement Techniques". I specially want to thank the authors for the good description of their algorithm and the announcement to make the code available on an online repository. This will open for further exchange and comparison of existing filter algorithms, thus positively affecting any across-network comparisons and cooperation and hopefully encourages other precipitation-gauge network holders and instrument providers to describe and share their post processing methods. The paper is well written and readable. However, at some points, some more detailed or further clarified information would help the overall understandability of the paper. I recommend accepting the paper, requiring minor revisions. Attached, a list of more specific comments.

Please also note the supplement to this comment:
https://www.atmos-meas-tech-discuss.net/amt-2019-423/amt-2019-423-RC2-supplement.pdf

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Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2019-423, 2019.