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Interactive comment on "Gauge-Adjusted Rainfall Estimates from Commercial Microwave Links" *by* Martin Fencl et al.

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The manuscript provides methods for adjusting rainfall estimates from commercial microwave links (CMLs) to rain gauges (RGs). It compares different temporal scales for adjustment and different layouts of gauge/CML systems. The work is novel and addresses very relevant issues in high resolution rainfall estimation in urban areas. It is well written and understandable and would fit well into the scope of HESS. Although not an expert in CMLs (but in radar rainfall estimation), I have some comments and suggestions which in my opinion could improve the manuscript.

1. It is unclear whether the paper aims for on-line (real-time) adjustment of CML's and thus real-time rainfall estimation or to estimate historical rainfall. Real-time adjustment would be associated with larger uncertainties. . ..

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2. P4L31-P5L3: This is almost a conclusion of the paper. It does not belong in an introduction – but could be applied in the abstract.

3. In section 2, it should be argued why two different experimental sites are used. Could the same results not have been derived using only one site – or is there an objective to compare the two sites in terms of data, layout, etc.

4. During the paper it is also a bit confusing where averages of CMLs are used (in Prague) and when single CMLs are used. Please be clearer on this.

5. P6 bottom. It is unclear how you define an event. This is not necessarily an easy task operating with more than one rain sensor. Please clarify.

6. Section 2.6. You state that you adjust on different aggregation levels ranging from 5 min to 1 day, but compare on 1 minute values. Couldn't there be reason also to compare on larger aggregation levels than 1 min. It is well known that for small rain intensities rain gauges are not very accurate. E.g. one tip of 0.1 mm per minute in a tipping bucket rain gauge corresponds to 6 mm/h. An error of +/- 6 mm/h on gauge estimates over one minute for intensities larger than 6 mm/h, it therefore not unrealistic. For smaller intensities where the intensities are estimated using the time between two tips, the intensity at minute scale might be somewhat uncertain. In a paper (Thorndahl et al. 2004) we made radar-rain gauge adjustment over different temporal scales, but also compared the results over different scales. Maybe you could find some inspiration here.

7. With regards to estimating area rainfall (section 2.2 and 3.2) I guess results are still compared on the minute scale and adjustment is performend on larges temporal scales. I guess this will by associated with many random errors if there is rain in one gauge and not in another? Again I suggest to also comparing e.g. hourly estimates of rainfall.

8. Related to my comment no 4. I think it would be interesting to see a scatter plot of a

single CML vs a single RG and how R2 would depend on the range between CML and RG?

9. For the Dübendorf site it is unclear what you use the disdrometers for. Don't you use the RGs for adjustment/validation? Related to the problem above, disdrometers might be more accurate for small rain intensities?!

10. P9L18-19. A likely reason for the smaller scatter on the 1 day aggregation levels might be found in the fact that all of your events (except one) have duration shorter than 1 day. Thus, for some events same results for 12 and 24 h should be expected!

11. Figure 1. Please use lat/long or UTM rather than a local coordinate system.

References Thorndahl, S., Nielsen, J.E., Rasmussen, M.R., 2014. Bias adjustment and advection interpolation of long-term high resolution radar rainfall series. Journal of Hydrology 508, 214–226. doi:10.1016/j.jhydrol.2013.10.056

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