

Interactive comment on “Rainfall estimation from a German-wide commercial microwave link network: Optimized processing and validation for one year of data” by Maximilian Graf et al.

Anonymous Referee #3

Received and published: 24 October 2019

The authors present an interesting analysis of rain fall derived from an unique dataset of nearly 4000 CMLs measured at a 1-minute scale. The correspondence with RADOLAN-RW is in general good during summer and less so during winter. This is corresponds well with other studies and theory, but was able to this on a new larger scale than seen before. The study therefore shows the great potential of CMLs, especially in areas where there might be little other data sources available.

The paper is well constructed in general and will contribute to the further development of CML derived rain rates. There are a few points that I would like to see addressed however:

C1

1. The reference dataset is based on gauge-adjusted hourly radar. While this offers the authors a source of data to compare link path derived rain rates with, it does not show the uniqueness of their dataset with a 1-minute resolution. The paper could for example benefit from an additional analysis of CMLs compared to rain gauge data with a high temporal resolution available at the DWD Climate Data Center. This analysis could be further extended by comparing hourly sums of rain gauge data with CML and RADOLAN derived rain rates (even though the RADOLAN data are of course adjusted using these same gauge data). While the rain gauges only offer point measurements, compared to the line measurements of the CMLs and the volumes of the radar it would give additional insight and offer the authors a chance to show the uniqueness of the dataset.

2. Like the first referee I think the paper might also benefit of analyzing the data at different thresholds, to show clearly how CMLs perform in at different rain intensities. It would also be good to clearly state how the filtering was performed. Is only a threshold applied to the RADOLAN data and how does this affect the CML data?

Finally a few minor comments:

P1, line 5: add a comma -> one year, spans

P2, line 11: this -> these

P2, line 12: remove the space before the .

P2, line 15: add a mention of the often limited spatial resolution of satellites

P4, line 13: The CML range is mentioned to be over 30km. In figure 2 there do not seem to be any CMLs beyond 30 km.

P6, fig2: The label on the x-axis should read (km) and not (m)

P9, line 24: Are all antennas of the same material and construction?

P13, line 34: What is the 30km range based on?

C2

P15, line 5; But -> However

P18, line 10: But -> However

In general the text could benefit from added commas to improve readability.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2019-423>, 2019.