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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Real time rainfall estimation using microwave signals of cellular communication networks: a case study of Faisalabad, Pakistan" *by* Muhammad Sohail Afzal et al.

Anonymous Referee #2

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First of all I would like to congratulate the authors to have initiated this work on Commercial Microwave Links (CMLs) for rainfall measurement in Pakistan and obtained data from a telecom compagny. The hardest is done ! More work is now needed to provide a quantitative evaluation of the CML based estimation and explain in more details the data processing.

The main points to be worked on in order to bring this work to a publishable paper are :

METHOD : - the data processing needs to be detailed. The authors used an existing and open source code provided by Overeem/Leijnse/Uijlenhoet, however the proposed algorithm needs to be tuned and some parameters set (for instance the exponent and prefactor of the attenuation/rainfall relationship in eq 1). The authors have to explain how they did this, what choices were made and which uncertainties were analyzed. Given that the evaluation is done on a daily time step basis, while the data is gathered at 15 minutes, are the parameters set up at 15 ' or daily time step ? -They also need to provide more details on the way they calculate the baseline or reference attenuation. And what they call ' corrected' attenuations 'free of errors' (p6 l 150). -Also they mention the use in the processing of several neighboring links, with a range of operating frequencies ; they should explain how their processing is adapted to this variation in CML characteristics within the network.

TIME RESOLUTION -In the introduction and through the text the concept of high space-time resolution is put forward. However the evaluation is provided at the daily time step – mention of high time resolution should be suppressed. -'Real time ' should be suppressed from the title as the work is based on archived data. The RT prospect can of course be mentioned in the perspectives.

SPATIAL ANALYSIS Using the CML density to analyze the spatial structure of the rain field is an original idea. I encourage the authors to clarify and further develop the analysis presented in Fig 6.

ENGLISH TEXT : Once the content of the work has been improved special care should be taken in the writing. But let's work one step at a time.

Given the comments above, I encourage the authors to submit a substantially revised manuscript with a detailed description of their methodology and quantitative results.

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