

Interactive comment on “On the Use of Measurements from a Commercial Microwave Link for Evaluation of Flash Floods in Arid Regions” by Adam Eshel et al.

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First, we would like to thank Dr. Marra for his review.

Referee comment: This raises questions about this study: how can 30-min measurements of average attenuation along a 16-km link covering part of the catchment provide information for flash flood warning in the Ze'elim basin without the radar information? Such a microwave link cannot provide information on (a) the local rain intensities occurring within the 16-km link – this length is much larger than the typical scales of convective rainfall in the area, and this is partially addressed by the method you propose, and (b) all for the portions of the catchment not covered by the link path.

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Response: Thank you for the opportunity given to clarify our aim. We agree that a single, long link cannot be effectively used for flash flood warning with the absence of side information, especially due to the two reasons you mentioned. In regard to the first (a), the aim to reveal which kind of rain patterns induce types of attenuation was indeed the reason for the additional use of radar data. You are correct with regard to comment (b). We are aware that convective cells can develop in the eastern parts of the basin (even if this is rare) and as there are no links in that area we are limited. Data fusion can go further with additional use of the spatial capabilities of radar, preliminary calibrated products and more. Nonetheless, we chose to focus on a very specific aspect: the effect of the spatial distribution along the link on the hydrologic response to demonstrate the proposed method. We possess data of other links in the area (but not directly in the basin), several rain gauges (today), and the X band radar you mention, which can thereby be used for future research.

Referee comment: Why not using the link to adjust the radar estimates? This would provide spatially distributed information over the full catchment, improving the quantitative accuracy of radar estimates and fully exploiting the characteristics of the two instruments. At this point, both kurtosis and quantitative rainfall estimates from the radar over the full catchment could be used following the method you are proposing.

Response: Indeed, an interesting topic. This subject has already been studied (e.g., Cummings et al., 2009), but nonetheless, further progress can be (and perhaps should) be undertaken with regard to the implementation into catchment hydrology.

References Cummings et al., 2009

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2017-963>, 2017.

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