



EGUsphere, referee comment RC1  
<https://doi.org/10.5194/egusphere-2022-979-RC1>, 2022  
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## **Comment on egusphere-2022-979**

Anonymous Referee #1

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Referee comment on "Brief communication: On the extremeness of the July 2021 precipitation event in western Germany" by Katharina Lengfeld et al., EGU sphere, <https://doi.org/10.5194/egusphere-2022-979-RC1>, 2022

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The authors investigate the precipitation event occurred in July 2021 in western Germany by means of the weather extremity index (WEI) and the cross-scale WEI (xWEI) with the updated RADKLIM product (estimations of WEI and xWEI for this event were already performed, but not including the year 2021, as it was still not available). They highlight that, when including the year 2021 in the estimation of GEV parameters, the ranking of the event changes for what concerns the WEI but is always the most extreme when looking at the xWEI. This finding points out the relevance of considering multiple spatial and temporal scales, as they might be crucial for defining the extremeness of rainfall events.

The event object of the study is surely of high interest, given the consequences it caused in Germany and western Europe, and the paper emphasizes the need of updating the way through which we study rainfall events and determine their characteristics. Therefore, I think that this communication is worth publication, after some minor revisions and clarifications. As a general comment, the paper is well written and mostly easy to follow, analyses are sound, and methods and results clearly presented in most of the cases. Please find a few remarks below.

L3: firstly, the sentence "both rely....GEV parameters" might not be clear to everybody (I am putting myself in the shoes of someone not completely within the topic). Secondly, from how it is written it seems that the GEV distribution is the only one that can be used for the estimation of return periods of extreme events, which is not the case. I would suggest trying to make this sentence clearer and include some details about the link between return period and GEV parameters when you introduce the WEI in the main text.

L26: even if the authors claim that the WEI is increasingly used in the community (I guess they mean the meteorological one), for someone that is not within it the information reported about the WEI (229 log(yr)km) at this point of the paper is not straightforward to understand. The definition of WEI is indeed provided only at L60. I would therefore

suggest trying to insert this number into a context and explain briefly what the extremity index is and how it is computed (or at least what variables are considered) such that a broader audience can have a feeling of what this number means.

L57-66: see my comment on L3.

L69-74: writing explicitly the formula through which the xWEI is computed would be helpful.

Figures.

Figures are not color-blind friendly, please consider change color scaled such that everyone can appreciate differences and color meanings.

Figures 2: do the gray lines represent the WEI of the July 2021 event? If yes, it should be specified somewhere. Moreover, I would rather representing it as a point (with different markers/colors depending on the RADKLIM product used to compute it).