

Areal Reduction Factors from High-Resolution Rain Gauges in Austria

- Author's response -

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We thank referee #1 and #2 for their recommendation to publish the submitted manuscript at its current state, and editor Henning Rust for spotting a few remaining issues.

Please find here out detailed [point-to-point response \(blue\)](#) to the comments (black) by both, R1 and R2. The [modification within the manuscript \(green\)](#) is added as well.

Editor Henning Rust (HR)

Additional private note (visible to authors and reviewers only):

- l. 173 teh -> the

[Thanks for spotting, the typo was corrected.](#)

- l. 180 you refer to a parameter λ of a distribution function, without giving the function. Please specify the function as the naming convention of parameters can vary. E.g. for the naming convention used by Wikipedia (EN), the exponential distributions arises when setting the shape $k=1$ (and not the rate λ) of the Weibull.

[We thank the editor for pointing at the missing introduction of \$\lambda\$. We have added the equation for the exponential distribution function and introduced \$\lambda\$ with its definition:](#)

[The exponential distribution function \$F\(x\)\$ \(see Eq. 3\) with \$x\$ as variable of interest \(here: precipitation\) is a special case of the Weibull distribution function with a fixed value of the intensity parameter \$\lambda = 1\$ \(number of expected events per interval\):](#)

$$F(x) = 1 - e^{-\lambda x}, x \geq 0 \quad (3)$$

- l. 185 there is a lost part of a sentence at the beginning "according to DWA (2012)."

[Thanks for spotting, this was a leftover from the previews review round. It has been removed.](#)

- l. 194 you explained u and w in terms of their meaning in a semi-log-plot and a straight line fit. There seems to be a misunderstanding. R#1 was asking for the distribution function used, and the meaning of u and w in that distribution function. The exponential distribution function is $F(x) = 1 - \exp(-\lambda x)$ in the notation used, e.g. in the english Wikipedia. Where $F(x)$ is the non-exceedance probability and x the variable of interest, here precipitation P . There is one parameter λ . The question is now how u and w are related to this one parameter. This all might be obvious from the DWA (2012), which is a German publication and not accessible to the audience of NHESS. This should be briefly explained.

We thank the editor for our misleading previous reply to R1. We have added the equation for the exponential distribution function as Eq. 3 (please see our reply to the second comment) and the following text:

Instead of using the exponential distribution function in its arithmetic version, a geometric approach is chosen using probability plots. With P on the y-axis and T on the x-axis the exponential distribution function will be a straight line in a semi-logarithmic plot, characterized by u as zero point shift and w as slope.