Nhess-2024-97
It could have been much worse: spatial counterfactuals of the July 2021 flood in the Ahr valley, Germany

Major Comments:

1. The authors use bi-linear interpolation to regrid the E-OBS daily precipitation data to use in the hydrological modelling. I have some concerns regarding this method of regridding. Bi-linear interpolation can smooth out extremes, which seems counterintuitive for the purpose of modelling an extreme event. Precipitation, especially at the extremes, exhibits incredibly high spatial variability, and I worry that bi-linear interpolation loses the fine-scale variations needed to accurately model the flooding. And finally, it is my understanding that bi-linear interpolation is not a conservative method, meaning that the total amount of precipitation in the coarse data may not be the same in the subsequent downscaled data. Could the authors address these concerns, add some justification for this chosen method, and perhaps provide some validation of the interpolated data, either comparing it to a more robust interpolation method or high-resolution observations? I also did not see anything in the discussion on how this choice may have affected the results.

Minor comments:

Line 130 – Why bring up snowpack and Sweden when the paper is about precipitation and Germany?

Line 195 – First use of "E-OBS" acronym – please define

Figure 7 – This figure seems to be at a lower resolution than the other figures, recommend replacing with a high res figure

Figure 8 – If this is the standard then please ignore, but my intuition says you should plot max H (m a.s.l.) along the y-axis, not the x.

Line 515 – loosing -> losing

Inundation figures (ex. Fig 9) – I like what these figures are showing, but I think they would benefit from two changes. First, I think the colorbar should be larger. Second, instead of a single column, I think they would be better represented as three columns in a single row, with scenario W3 on the left, S0 in the center, and E3 on the right. Or perhaps best would be to show the difference in the scenarios, so E3-S0 to better visualize the inundation difference between the scenarios.