**Natural Hazards
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Sciences**

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Discussions

Interactive comment on "Space-time clustering of climate extremes amplify global climate impacts, leading to fat-tailed risk" *by* Luc Bonnafous and Upmanu Lall

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Received and published: 31 May 2020

The authors present a very interesting analysis of global exposure of the mining sector to wet and dry extremes, and its implications for climate impacts on global economic activity. However, I think the paper would benefit from some additional clarity in the methods, organization, and choices made in the analysis.

1) I don't think the text is very clear on how the empirical and simulated densities are generated in Figure 1. Early in the results section, they mention one line about how the SPEI is mapped to a probability distribution. Later in the results, there seems to be one line explaining the use of independent binomial distributions across locations for wet

and dry events for a large ensemble of simulations. However, overall, these methods are somewhat unclear, and could be explained in more detail in the Methods section (rather than the results section). This would then help in the interpretation of Figure 1.

2) I'd also note that some references for the wavelet and multitaper analyses (beyond the packages used) would be helpful. Also, the reference to the package used for the multitaper analysis (Rahim, Burr, and Rahim, 2017) is awkwardly placed in the sentence (see end of Methods section).

3) Many of the Supplemental figures are not referenced in the main manuscript. I would either remove them, or reference them appropriately throughout the paper.

4) The authors focus on the 10-year return level, but I wonder if this magnitude of event would have detrimental impacts on the mining sector. One could image that this degree of extreme event would be guarded against in the design and operation of some of these facilities, and so the impact on global supply chains may not be that large. This then leads me to wonder about the spatial coherence of more extreme events (> 10-year event). I'd imagine the spatial coherence will decrease as the intensity of the event increases. It may be helpful to see this relationship, and then to have a discussion that addresses the intersection between the global coherence of extremes of different magnitudes, and the likelihood they would have an impact on different economic sectors.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., https://doi.org/10.5194/nhess-2019-405, 2020.