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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Towards a compound event-oriented climate model evaluation: A decomposition of the underlying biases in multivariate fire and heat stress hazards" *by* Roberto Villalobos-Herrera et al.

Anonymous Referee #2

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The study by Villalobos-Herrera et al. deals with an important topic and offers an approach to identify and quantify the source of biases in multivariate impact-based indicators derived from climate model simulations. The methods are correct and well explained, although there are few clarifications needed (see the specific comments). Results are effectively presented and useful to start reflecting on this complex topic. Concerning the manuscript, I found the discussion session a repetition of concepts already discussed and again mentioned in the conclusions. I suggest to make it shorter and more focused on the key point, that to me is the difficulty in having multivariate bias

adjustment methods and the complexity of some impact indicators based on several different variables.

Specific Comments

Figure 1 caption is 'chaotic'. I suggest to re-write. Figure 2 is not very informative. I would either improve or remove. Figure 7 I would modify Panel b to let readers better appreciate the identified behaviour. L87: this implicitly means you assume models are able to correctly reproduce the seasonality. It may be worth to discuss it. L96 more details should be added on this estimated lag. L100-115 add a brief explanation on all these absolute numbers, just to let readers better understand. L157 following your notation Uerai is the transformed random variable (unif distributed) from Terai. L191-192 Since many tests exist to compare distributions, I do not understand this sentence on K-S and A-D. I would delete it. L213 Here, on the contrary, I would add an explanation. Why CvM test and not the A-D you use for marginals? As they both belong to the same test family. L319 According to the Figure, it seems that the dependence contributes much less than the others.

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