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Earth System Dynamics
Discussions

# *Interactive comment on* "Evaluating the dependence structure of compound precipitation and wind speed extremes" *by* Jakob Zscheischler et al.

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The manuscript titled "Evaluating the dependence structure of compound precipitation and wind speed extremes" aims to estimate the likelihood of compound precipitation and wind speed extremes. In particular the Authors use metrics (the coefficients $\chi$, $\overline{\chi}$, and KL measure of divergence) to measure the tail of bivariate distributions, and if it is similar between different datasets. The Authors use data from one reanalysis product (ERA5) and three model simulations (ERAI-WRF, CESM-WRF, CESM-WRF-fut) over a period of 20 years.

General comment: The manuscript is well written. The methodology is well grounded,



and of interest also for other compound events. The conclusions concerning the ERA5, which is considered as state-of-the-art dataset, are of value. Thus, I think that the manuscript should be accepted after minor revision.

Here you have some specific questions/comments:

- Application of the methodology to real data: Have the Authors an idea about the minimum number of data necessary to obtain a reliable estimate of the proposed metrics? Some details about this could be very useful.

- Please give details about how you have calculated the KL measure of divergence, similar to the information given for the calculation of the coefficients $\chi$, $\overline{\chi}$.

- A reference for the risk function could be useful.

- I think that in Figure 7 "K=3" should be substituted with "W=3", to be coherent with the text. Similar comment applies to the caption of Table 1.

- Line 261 change "bivarate" with "bivariate".

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