Hydrology and Earth System Sciences Discussions

Interactive comment on "Modelling the statistical dependence of rainfall event variables by a trivariate copula function" *by* M. Balistrocchi and B. Bacchi

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Dear referee, in order to better suit the outcomes shown in the paper, we agree to your suggestion to change the title and to highlight in the abstract and in the conclusions the absence of a significant dependence between the interevent time and the other variables.

1. Minor points: we accept all revisions except for the first one, concerning the expression of the empirical copula. The argument of the identification function **1**(.) consists in an inequality of vector components that cannot be substituted

by an inequality of vector norms and that is meaningful because they vary only between 0 and 1. It means that the function assumes unitary value only if all the components of the pseudo-observation vector $\hat{\mathbf{u}}_i$ are lesser than or equal to those of the generic point $\mathbf{u}$, for which the empirical copula value is evaluated. Applying the norms would improperly modify the region, where the pseudo-observations have to fall for satisfying the identification function condition, form the rectangular form into a radial one. Indeed, although some authors have written such an expression as in the paper, this formulation could actually be ambiguous and questionable. In order to clarify such a point, the only feasible way that we see is to explicit the p components.

$$C_n \left(\right) = \frac{1}{n} \sum_{i=1}^{n} 1 \left(\hat{u}_{1,i} \leq u_1; \ldots; \hat{u}_{p,i} \leq u_p \right)$$