Reviewer 2

This manuscript presents a review of some hydrological problems that can be characterized in terms of a multivariate extreme value distribution. The identified hydrological conditions that require a probabilistic estimation in terms of event magnitude and occurrence are listed and briefly discussed along with the metrics that can be generally used to determine the dependence among the variables. Further, copula for multivariate frequency analysis and continuous time serie simulation are introduced as strategies for modeling those phenomena. Due to the variety and complexity of the problems mentioned in the review paper, each of them is only hinted at, missing an in-depth discussion about several important issues. Further, many interesting works about multivariate statistical modeling are not mentioined at all; indeed, also the most recent literature on the topic is very rich. Based on these consideration, I suggest the Author to revise her work trying to improve the description of the phenomena, especially those problems that are still unsolved, and enlarge the state of the art description referring the interested readers to the most recent papers (and books) that provide well established and innovative solutions with a deeper insight into the mentioned problems.

Reply: *Thank you very much for your assessment and for highlighting that the discussion of multivariate statistical models was too superficial in the first version of the manuscript. I rewrote Section 3 (Modeling multivariate extremes) by including multivariate statistical models going beyond copula approaches, which are applicable to higher dimensional problems such as spatial extremes. Furthermore, I substantially expanded the description of metrics used to describe the four types of multivariate hydrologic extremes I focus on in this review, i.e. regional extremes, consecutive extremes, extremes with multiple characteristics, and extremes transitions.*