Hydrology and
Earth System
Sciences
Discussions

Interactive comment on "Spatially dependent Intensity-Duration-Frequency curves to support the design of civil infrastructure systems" *by* Phuong Dong Le et al.

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This manuscript describes the application of a correlation model for spatially dependent rainfall and hydrological response of four subcatchments that can cause flooding of a highway. The road is blocked if either of flows from the four subcatchments exceeds a critical threshold. The probability of system failure (road blockage) thus depends on the exceedance probability of four thresholds by four correlated stochastic variables.

Although the scientific methods that are used in this study may not be entirely new, the explanation of spatial dependency of rainfall and application to a practical case study are very clear and a pleasure to read. After reading this manuscript, a decision maker

should understand that it is important to take this correlation into account.

I have only one specific comment: the core of the technical approach I would consider to be the correlation model, i.e. the Brown-Resnick inverted max-stable process. This method is not explained at all. Instead, the authors choose to refer to literature. Although a fully detailed description of the B-R algorithm may be too much, it would be good if the essence of this method is explained briefly.