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Interactive comment on "Characterizing the spatial variations and correlations of large rainstorms for landslide study" *by* Liang Gao et al.

Anonymous Referee #2

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This paper presents a study related to the spatial characteristics of three large rainstorms in Hong Kong and aims to quantify their spatial correlation characteristics. The importance of this study is significant because such large rainstorms may trigger landslides and therefore their effects need to be considered when undertaking relevant landslide hazard analysis and risk management.

This Reviewer is a geotechnical engineer with experience in modelling landslides and associated coupled soil-water interactions, but with limited experience in the hydrological aspects of the problem.

The paper seems to present a thorough study of the spatial variations and correlations of large rainstorms and the study conducted is decent and worth for publication. The results are useful as an input in landslide hazard assessment. However, there is rather

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limited connection between the spatial rainstorm variation and the potential for triggering a landslide. At the moment, the paper is a well presented study of the rainstorm that is perhaps poorly linked to the downstream application of landslide hazard analysis.

It is suggested that the Authors strengthen this relation by mentioning what other (e.g. geotechnical, environmental etc.) factors may ultimately affect the potential triggering of a landslide apart from rainfall intensity, e.g. slope inclination, rock/soil formations, vegetation, existence of civil infrastructure etc. Perhaps some examples of such factors may be added/reported from the studied area in Hong Kong.

Overall, the topic is relevant to HESS, the work is well-presented but there are a couple (additional to the technical issue discussed above) minor editorial issues that need to be addressed before the paper is accepted for publication:

1. Fig. 2 & 3: Is this from AECOM (2011) or AECOM & Lin (2015)? Apparently, the Reviewer cannot find the former citation in the Reference list.

2. Fig. 6: why the 1994 event shows larger rainfall mm values in 24h PMP than the 2008 event, whereas it shows smaller values in the 4h event?

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