

1 **Stochastic rainfall analysis for storm tank performance**
2 **evaluation**

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5 **Status:** Open Discussion on HESSD

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7 **Response to Referee Comment RC395 – Anonymous Referee #1**

8 First of all, on behalf of co-authors, I thank gratefully Anonymous Referee #1 for his
9 constructive and useful comments. Then, here are the responses for specific referred issues.

10

11 **1. Rainfall seasonality**

12 We agree that rainfall regimes in Valencia and Santander follow strong seasonal behaviours.
13 Consequently, we also agree on the importance of seasonality especially with regard to
14 pollutants build-up and washoff processes. Nevertheless, the main scope of the paper is on
15 runoff volumetric efficiency and overflow reduction efficiency (robust) estimation in the long
16 term. This is why the analysis of the overall series is herein preferred, which leads to
17 minimising the involved parameters and therefore uncertainty.

18 However, we are pleased to include here, and even in the revised manuscript if the Editor
19 finally agrees, the main results achieved in the paper but taking seasonality into account.
20 Analysis has been performed at Valencia for the 4 seasons, fitting seasonal probability
21 distribution functions for event rainfall depth.

22 First of all, we found that the Pareto model still fits more satisfactorily than the exponential
23 one. As an example, see Figure 1 for the spring season (March to May) and Figure 2 for the
24 fall season (September to November).

25 Furthermore, tank performances are recalculated taken into account seasonality. For each
26 season, a volumetric and overflow reduction efficiency curve is obtained (figures 3 and 4) and
27 compared towards those reflected in figure 8 of the original manuscript. We note that the
28 effect of seasonality is indeed noticeable, but the essence of the results does not change much.

1 **2. Correlation between v and d**

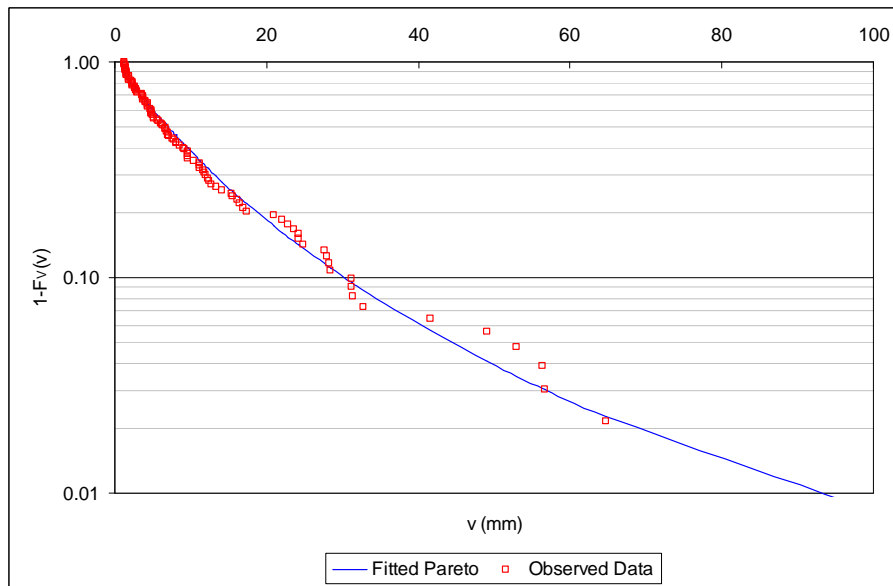
2 We also agree with adding for correlation analysis the mean intensity v/d versus d as a more
3 plausible independent couple of variables (Figure 5).

4

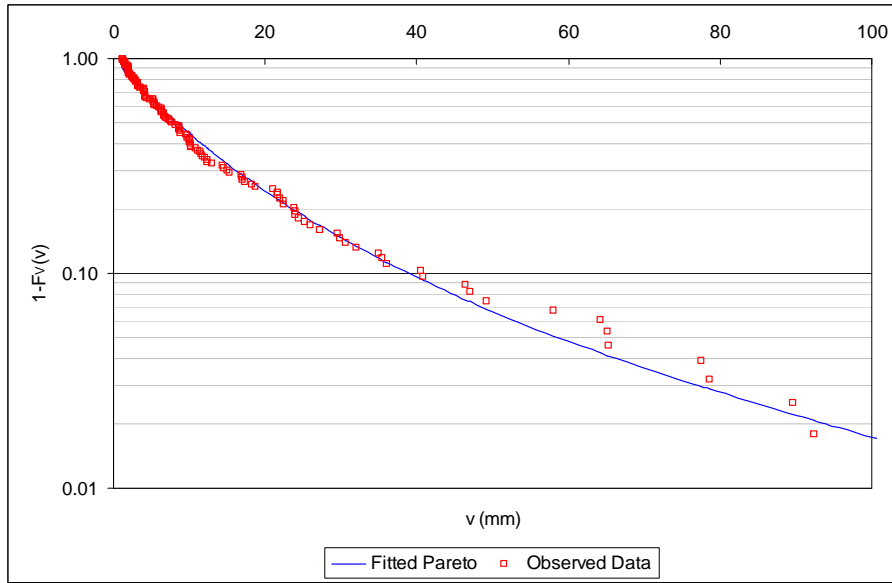
5 **3. About the Valencia Municipality criterion**

6 Discussion of the traditional criterion will be included in the final revised manuscript, by
7 analysing the performances finally achieved with this specific tank volume.

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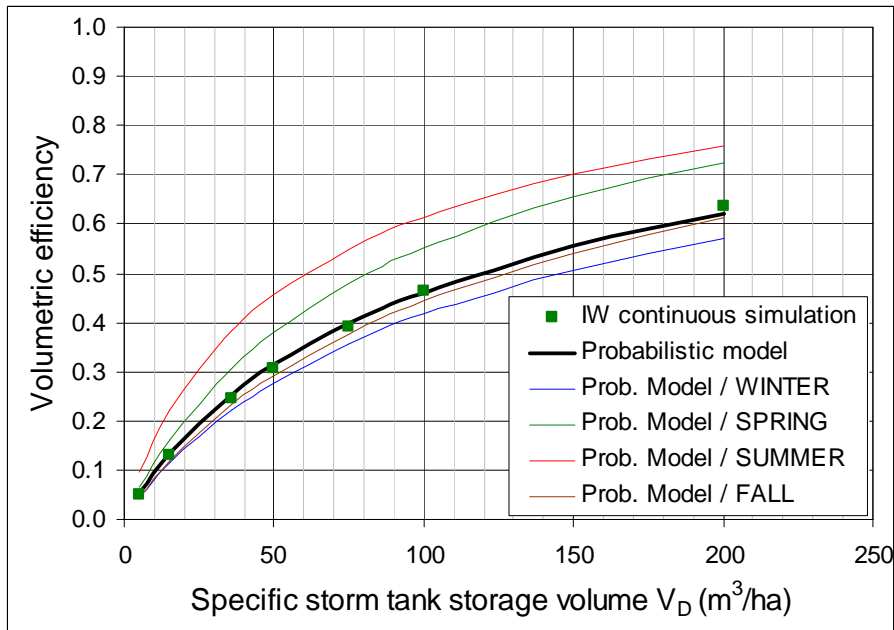


2 Figure 1. Pareto probability distribution for rainfall event depth in spring (Valencia
3 raingauge).

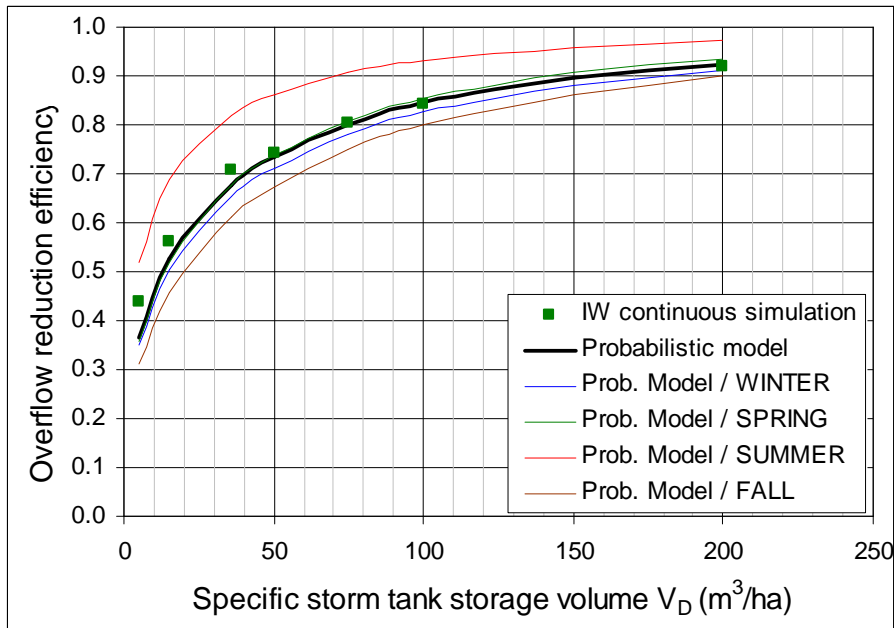


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2 Figure 2. Pareto probability distribution for rainfall event depth in fall (Valencia raingauge).

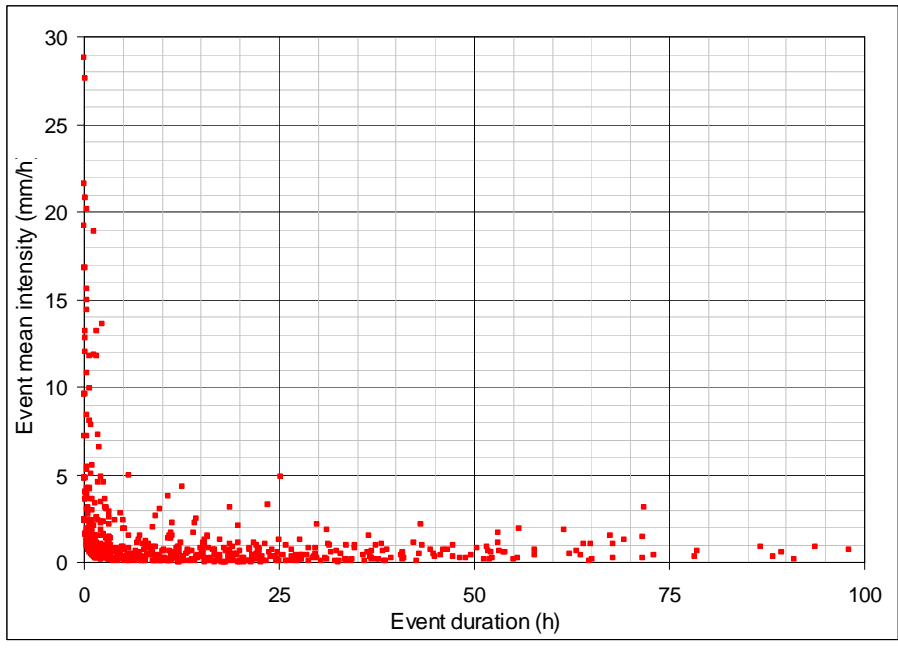


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 2 Figure 3. Volumetric efficiency. Overall probabilistic model and simulated original results
 3 and seasonal curves.



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2 Figure 4. Overflow reduction efficiency. Overall probabilistic model and simulated original
 3 results and seasonal curves.



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2 Figure 5. Scatterplots of v/d versus d (left) for the Valencia raingauge.