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Hydrology and Earth System Sciences Discussions

Interactive comment on "Design flood hydrographs from the relationship between flood peak and volume" *by* L. Mediero et al.

Anonymous Referee #1

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General comments: This manuscript derives the design flood hydrograph for a specific return period which is defined as the maximum reservoir level exceeding w certain water level. The idea is useful to assess dam safety. However, the computing procedure is not clearly described and results are not well presented. The specific comments see below.

Specific comments: 1. The authors use the same symbol to represent different variables. For example, Vi in equation (4) (page 6) represents the weighted standard deviation of the at site sample L-moment ratio of ith order. However, the sample symbol Vi in the equation (9) (page 7) is the ith observed volume and the hydrograph volume between ti and ti+1 in equation (12) (page 9). The same symbol used to represent dif-

ferent variables may confuse readers. A list of symbols is also suggested to clarify the symbols used in the manuscript. 2. The authors stated that the observed hydrograph shape with the most similar ratio is selected to generate the synthetic hydrographs (last line of page 9 and first line of page 10). However, the relationship between the ratio of Q-V and hydrograph for the observed events is not shown in the manuscript. 3. Uses of equations (11) and (12) (page 9) associated with the histograms shown in Figure 5 (page 25) to generate hydrographs is not clearly described in the section of Generation of Hydrographs. 4. The authors should give an illustration of the shape of design flood hydrograph with a certain return period (say, 500 years) to show that a specific set of hydrographs can yield the same maximum reservoir level. 5. The legends of Figure 3 are too small to recognize the symbols.

Technical corrections: 1. Page 1, line 29: Cited reference WMO (1989) is not listed in the section of References. 2. Page 3, line 23: "Flood Design Hydrograph" should be "Design Flood Hydrograph".

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 4817, 2010.