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 #2

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The paper presents a procedure to estimate the hydrograph associated to a given return period, given the frequency curves of peak, volume and duration extracted from streamflow data. The procedure has application to dam design, and makes an interesting contribution by presenting a methodology to associate the return period of a hydrograph to the exceedance probability of the water level in the reservoir. The topic of the paper is relevant for HESS but also for civil protection objectives. The description of the work is complete; the paper is well written and includes appropriate bibliography. Then, it is a useful paper that is strongly recommended for publication in HESS after some minor changes.

Some comments are suggested as follows: General Comments The paper should be

revised by a native English translator.

It is difficult to follow the argument presented in the Introduction and I would recommend the authors to re-write it.

Marginal distributions of peak flow are fitted by a regional method applied to a homogenous region identified in the Tagus basin. Heterogeneity tests and regional statistics of the AMD series should be included in the paper, in the same way as it has been done with AMV series.

Two types of regressions are fitted to peak-volume pairs, one at each station and one in the whole homogeneous region by means of standardization. Both regression equations are well explained in the paper, but the calculation of their residual variance (σreg) should be better explained as Eq. 9 uses Vi, while this symbol is the weighted standard deviation of the at site sample L-moment ratio in Eq. 3 and 4, and there could be some differences between both methods.

Smaller comments: On page 4821, line 16, please, introduce the name of the reservoir after the reference number of each station.

On page 4821, line 14, you say that the three reservoirs belong to the 32nd homogeneous region, but there are only 30 regions. Then, I suppose that it is region 3.2

On page 4822, line 19, it seems that "CV" should be "L-CV"

On page 4823, line 3, "maximum instantaneous discharges" should be changed for "instantaneous maximum discharges"

On Table 3, "AVD" should be "AMV"

The location of the three selected reservoirs cannot be seen in Figure 1

The legends on Figure 3 are difficult to read

The legends on Figure 7 are difficult to read

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Pay attention to the symbols applied to represent different variables. In some occasions there are the same although variables are different

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

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