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Hydrology and Earth System Sciences Discussions

Interactive comment on "Forest cover influence on flood assessment in Italian catchments" *by* F. Preti et al.

Anonymous Referee #3

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The manuscript proposes an analysis of the influence of forest cover on the runoff coefficient of Italian catchments. This is an interesting subject to understand runoff behaviour and can be useful to the research question of PUB. Unfortunately the study is based only on six parameters describing catchment characteristics without discussing the selection of parameters and results.

Therefore I recommend major revision for this paper.

The rational formula is usually limited to small catchments, less than 50 or 100 km^2. Please give reasons for the use of this method for the studied much larger catchments and discuss advantages and problems of the method.

Why is only forest cover responsible for deltaC? What about other catchment characteristics with an influence on runoff, e.g. climate, topology, geology, soils, drainage density, other land uses than forest, type of forest ....? Please discuss the choice of parameters. Bear six parameters (A, Zm, hc, Q, SP and Sb) comprehensive information to calculate the influence of forested areas? (All other parameters are calculated from the six parameters!)

A discussion of the result and their significance is missing.

There are many references to literature, especially in the introduction, not listed in references.

p. 4894: equation 1: A?

2. Study catchments: The reader gets no information about the studied catchments. Are there different catchments characteristics between catchments concerning catchment size, topology, geology, soils, drainage density, land use, degree of urbanization or climate? This information is important to assess catchments and differences/similarities between them.

I think the headline "Study catchments" is not meaningful when a description of used Variables and no description of catchments follows.

Line 5: " ... we evaluated parameters ..." Are this the parameters described on page 4896? Most of the readers are not familiar with the Italian flood assessment procedure and not able to understand Italian literature.

Line 19 to 23: How does this affect the studied catchments? What are the differences in spontaneous vegetation, land cover, climate between the studied catchments.

Equation (1) is redundant to eq. (3). I my opinion, eq.(1) is unnecessary in the introduction.

Runoff coefficient CL estimated from the catchment lithology only (page 4896) ac-

cording to different regional regression models – please describe the method(s?) for calculating CL. A high correlation between CL and SP is consequent if their calculation is based on the same data!

p.4898/l1: “smaller catchments are characterised by higher slope ... and smaller critical rainfall depth” are these special characteristics of the studied catchments?

3.2 cluster analysis: are the clusters spatial related, for example as a result of climatic, topologic or geologic influences or do they show other similarities?

3.3 Correlation structure: a reference to table 8 is missing

Page 4900, line 3 and Fig. 6: (iii)

Page 4900 lines 24-27: is the difference Cobs-CL significant higher for small catchments or random, because of very few large catchments/high tc?

Page 4901, equation 6: why you defined ME and MAE? – no reference in text.

All figures, especially Fig 4: labels are very small, difficult to read

Fig. 6: legend inside the last diagram overlaps large parts of the diagram and please explain “Sinf” and “Ssup”.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 4891, 2011.