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Hydrology and Earth System Sciences Discussions

Interactive comment on "Analysis of the runoff generation mechanism for the investigation of the SCS-CN method applicability to a partial area experimental watershed" *by* K. X. Soulis et al.

Anonymous Referee #1

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This paper shows that the classical SCS Curve Number method for estimating event runoff volume fails to provide acceptable results when applied to the small Lykorrema basin. From the soil information and the results of a test using a one-dimensional infiltration model, the authors propose the hypothesis that nearly all the runoff comes from the impervious area of the catchment. Subsequently they show the good performance of a very simple model based on this hypothesis.

Although uncomplicated, this part of the paper, after revision, may deserve publication in a peer-reviewed journal, as it shows that simple models fitted to the characteristics of an ungauged basin may provide much better results than models supposed for wide-

ranging application.

Nevertheless, the authors claim that 'these results provide physical evidence' for the validity of this hypothesis, whereas first, the scientific method claims that the hypotheses may be refuted but not evidenced as certain and, second, it is well known in Hydrology that diverse (even wrong) models or the same model with diverse parameter sets may provide good results for basin discharge at the event scale.

Models are indispensable tools for prediction but they only contribute to the advancement of knowledge when they do not succeed to reproduce the observations: indeed the authors succeed to provide evidence for the inadequacy of the assumptions beneath the SCS method in the Lykorrema basin.

Because of these reasons, research on runoff generation processes may not be made with these methods and at these spatial and temporal scales. Research basins are commonly used for these purposes, through qualitative and quantitative observations of processes, flows and states within the basin. The authors are kindly invited to check the classical and recent literature on this subject, particularly in Mediterranean areas, and to attend the meetings of the research catchments community such as the ERB assemblies http://www.ih.savba.sk/ihp/friend5/erb7.htm.

Specific comments:

All the paper should be revised from the title in order to delete or minimize the focus on runoff generation research as discussed before.

The authors do not show relevant information on the catchment that is necessary to get a general idea of the functioning: mean annual precipitation and reference evapotranspiration, seasonality, relative role and duration of baseflow, time characteristics of the response...

The existence of long-lasting baseflow might be difficult to conciliate with the proposed hypothesis.

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Interactive Comment

The bare rock areas are near the upper divides of the basin, so if they are not well connected to the drainage net, overland flow produced on them might re-infiltrate when arriving in soil covered areas.

Technical corrections

The English style should be revised and the parts of the paper should be better organised; there are, for instance, some sentences in the last part of the introduction that correspond to results or conclusions.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 6, 373, 2009.