

## ***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.***

**K. X. Soulis et al.**

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We would like to thank the anonymous referee #1 for his/her comprehensive review. We really appreciate and respect his/her professional opinion. Following we would like to provide an answer to the general comments of the referee. The specific comments will be taken into account for the preparation of the revised version of our manuscript.

The main motivation behind our study was the fact that in the studied experimental watershed there is a clear correlation between the CN values and the rainfall depth. Previous studies attributed this correlation to the existence of an impermeable area in the basin, which mainly contributes to the total direct runoff. Furthermore, in previous studies several watersheds were presented, in which it is not possible to estimate a

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single CN value and thus the use of the SCS-CN method is not possible. In the previous studies, the criteria developed for the applicability of SCS-CN method require essentially the knowledge of runoff data. However, the SCS-CN method was mainly developed to be applied in ungauged watersheds and it is very commonly used by engineers and practitioners. In countries like Greece, where hydrological information is very scarce, the method is routinely applied without any validation. For the above reasons, we tried to systematically analyse the key characteristics of the watershed that are responsible for this behaviour. With this approach we intended to provide some indicators that could facilitate the evaluation of the applicability of the SCS-CN method in ungauged watersheds. At the same time we evaluated a simple model, which seems to perform much better in watersheds presenting this behaviour. One of the methods that were used to achieve the above targets was the analysis of the direct runoff generation mechanism. Even if this analysis is an important part of our study, it wasn't our intention to put the main focus on it.

In our Manuscript it is may given the impression that it is mainly focused on the analysis of the runoff generation mechanism, while the analysis carried out was a mean for the investigation of the SCS-CN method applicability in a special type of watersheds.

As a conclusion in the revised version of our manuscript we will make clearer that the main focus is the investigation of the SCS-CN method applicability through the analysis of the runoff generation mechanism and that our analysis concerns the direct runoff. We will also rephrase the sentence: "These results provide physical evidence for the hypothesis that...", as following "These results support the hypothesis that..." because we agree that the hypothesis was not proven but strong indications for its validity were given.

We also took a note that both referees suggest the addition of more data concerning the watershed and especially data about the base flow. For example a more detailed description of the dense hydrographical network that characterizes the watershed will better explain that the impermeable part of the watershed is most of the times directly

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connected to the hydrographical network. We will include these data in the revised version of our manuscript and we will also take into account all the specific comments.

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

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