

# Incorporating a Rainfall Intensity Modification Factor $\gamma$ into the Ia-S Relationship in the NRCS-CN Method

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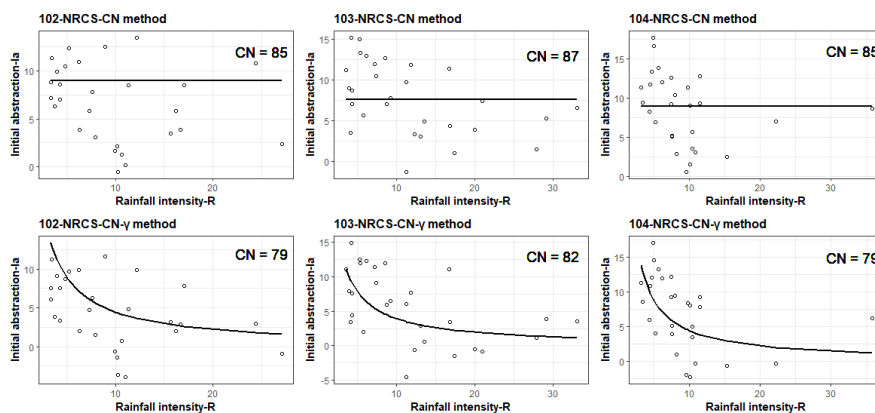
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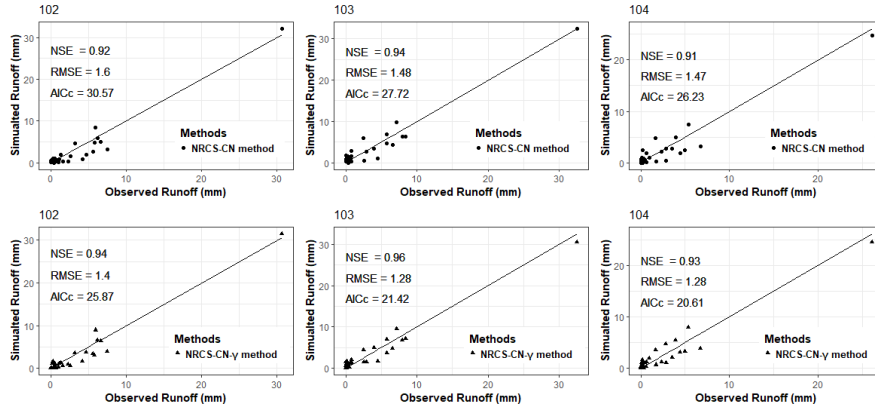
## Abstract

Rainfall intensity is a key factor that influences the processes of infiltration and runoff generation on the surface soil. However, the Natural Resources Conservation Service runoff curve number (NRCS-CN) method, which is widely used to simulate direct runoff, does not consider the impact of rainfall intensity on the simulation results. Hence, this study incorporates a rainfall intensity modification factor ( $\gamma$ ) into the Ia-S relationship in the NRCS-CN method. The results show that the modified method, the NRCS-CN- $\gamma$  method, improves the efficiency, reduces the impact of variable rainfall intensity on the simulation results and reduces the relative errors caused by the changes in CN to approximately one-third of the original errors in the NRCS-CN method. Consequently, the NRCS-CN- $\gamma$  method contributes to a more accurate simulation and prediction of direct runoff in monsoon regions where rainfall intensity greatly varies, especially under climate change.

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