



Reduction of uncertainty for estimating runoff with the NRCS CN model by the adaptation to local climatic conditions

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Rainfall-runoff quantification is one of the most important tasks in both engineering and watershed management as it allows to identify, forecast and explain watershed response. For that purpose, the Natural Resources Conservation Service Curve Number method (NRCS CN) is the conceptual lumped model more recognized in the field of rainfall-runoff estimation. Furthermore, there is still an ongoing discussion about the procedure to determine the portion of rainfall retained in the watershed before runoff is generated, called as initial abstractions. This concept is computed as a ratio (λ) of the soil potential maximum retention S of the watershed. Initially, this ratio was assumed to be 0.2, but later it has been proposed to be modified to 0.05. However, the actual procedures to convert NRCS CN model parameters obtained under a different hypothesis about λ do not incorporate any adaptation of climatic conditions of each watershed. By this reason, we propose a new simple method for computing model parameters which is adapted to local conditions taking into account regional patterns of climate conditions. After checking the goodness of this procedure against the actual ones in 34 different watersheds located in Ohio and Texas (United States), we concluded that this novel methodology represents the most accurate and efficient alternative to refit the initial abstraction ratio.