



## **Analysis of the influence of spatial variability on the hydrologic response of a watershed**

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Many hydrologic studies simplify natural conditions assuming a uniform spatial distribution of soil, plant cover, and rainfall properties. However, none of these characteristics are always homogeneous, rather they frequently show important variations inside a watershed. Soil properties are variable in the spatial domain. Changes can be found in soil cover both in the spatial and in the temporal scale, this latter following the march of seasons. Also storm properties are frequently variable in time and space. Additionally, unexpected events like wildfires produce a time-variable change contributing to the difficulty of the hydrologic analysis. In this work we present an integrating CAD-mathematical software package which uses the Geomorphologic Instantaneous Unit Hydrograph, GIUH, to analyze the hydrologic response of a watershed under conditions of spatial variability by distribution of the effective rainfall rate in the sub-watershed units. The convolution of the distributed GIUH and the effective hyetographs allows an easy study of the effects of spatial variability in the watershed response to a rainfall event, as well as the relative importance of some GIUH parameters.