

Hydrological Response of Two Tropical Runoff Units with Different Degrees of Degradation in Southeastern Mexico

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The hydrological response of a watershed or runoff unit is one of the main indicators of the balance between natural resources and their exploitation; an inadequate balance reduces the quantity and quality of natural resources. In this regard, the role of vegetation in the preservation of water resources and the transfer mechanisms between soil and vegetation has been recognized. Usually, degradation starts as a result of human activities that disturb, destroy or decrease vegetation cover, subsequently leading to soil degradation by the effect of different erosion agents. This study contributes to a better understanding of the interaction of precipitation, vegetation, and runoff using a model of two runoff units from a tropical basin in southern Mexico. Specific attention was paid to the importance of vegetation as a regulatory element in hydrological processes. According to the results, the hydrological response in tropical watersheds depends largely on factors such as the degradation state of the vegetation cover as well as variables related to the maximum and average intensity of precipitation. The results provided quantitative information about the importance of variables such as peak flow, peak intensity, average intensity and total precipitation, for a better understanding of the rainfall-runoff relationship in different vegetation conditions, and their potential use in implementing best practices for water management and soil conservation.