



Hydrological modelling to distinguish among different extreme erosion processes and their effects

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Although nowadays it is generally accepted that soil erosion processes are usually linked to land and soil hydrological processes, still there is some confusion about the distinct hydrological processes involved in the two main recognized mass and surface erosion processes. This confusion extends to the so-called gully erosion as a separate process, while it is only a distinct feature of both the surface and mass erosion processes. The above confusion frequently leads to wrong evaluations of the climate (amounts and characteristics of the rainfall), soils, vegetation cover, topography and land management, and their interactions, leading to the different erosion processes and derived effects. As a consequence, in many cases there have been recommended and applied non appropriate conservation and prevention practices, usually with catastrophic results. An adequate identification and evaluation of the hydrological processes involved in each case is required to avoid such confusion. There are presented case studies in Colombia, Venezuela, México and Spain, under very different climate, soils, topography and land use and management, where the use of a proposed modelling of the hydrological processes involved in each case, has allowed to identify, evaluate and predict, without any confusion, the different erosion processes and their potential effects.

Key words: Soil erosion, hydrological processes, modelling.