



Hydrologic analysis of flash floods in a mountainous basin.

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Flash floods keep a high ranking in nature's most catastrophic phenomena. Better understanding of the generation mechanisms of flash floods is essential for improving our prediction ability and developing more accurate warning systems. This study focuses on the hydrologic analysis of two major flash floods recorded in a small scale mountainous basin (Posina) in Northeastern Italy, during August 1999 and November 2002. A physically-based distributed hydrologic model is used to investigate the dominant mechanisms for runoff generation. Simulation results are used to evaluate the dynamic characteristics of the hydrologic processes associated with the flash flood events. The sensitivity of flash flood generation to i) initial soil moisture conditions and ii) land use/cover change is examined through simulations for different scenarios of initial soil moisture and vegetation patterns. Similarities and differences are discussed for the different investigating scenarios and possible links with the state of initial conditions and rainfall forcing structure is investigated.