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Wildland Fire Effect on Hillslope Erosion of Monogenetic Volcanoes in Semiarid Climate

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Wildfire Impact on Cinder Cone Degradation in a Semiarid Climate: Event and Decade Scale

A study to quantify event scale erosion due to natural rainfall on a natural cinder cone hill slope (2 to 30 degrees) surface was conducted from 1996 to 2001. Additional measurements of gully activity were added to the study in 2007. Two cinder cones in the San Francisco Volcanic Field, AZ were chosen for the purpose of the study due to their geomorphological activity and their symmetrical shape. Rain splash and overland flow erosion rates were obtained with help of splashboards and erosion pins respectively. Is wildland fire the major erosion process on a decade scale? How does the data compare to long-term models predicting landscape evolution over thousands of years? While rain splash erosion rates are influenced by vegetation growth through the rainy season as well as the type of cover left by a wildland fire of low, medium or high severity, overland flow has a less strong response to low or medium severity fire damage. High severity fire damage, on the other hand, combined with high intensity rainfall has dramatic consequences on the hill slope erosion.