



How well does the Post-fire Erosion Risk Management Tool (ERMiT) really work?

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The decision of where, when, and how to apply the most effective postfire erosion mitigation treatments requires land managers to assess the risk of damaging runoff and erosion events occurring after a fire. The Erosion Risk Management Tool (ERMiT) was developed to assist post fire assessment teams identify high erosion risk areas and effectiveness of various mitigation treatments to reduce that risk. ERMiT is a web-based application that uses the Water Erosion Prediction Project (WEPP) technology to estimate erosion, in probabilistic terms, on burned and recovering forest, range, and chaparral lands with and without the application of mitigation treatments. User inputs are processed by ERMiT to combine rain event variability with spatial and temporal variabilities of hillslope burn severity and soil properties which are then used as WEPP inputs. Since 2007, the model has been used in making hundreds of land management decisions in the US and elsewhere. We use eight published field study sites in the Western US to compare ERMiT predictions to observed hillslope erosion rates. Most sites experience only a few rainfall events that produced runoff and sediment except for a California site with a Mediterranean climate. When hillslope erosion occurred, significant correlations occurred between the observed hillslope erosion and those predicted by ERMiT. Significant correlation occurred for most mitigation treatments as well as the five recovery years. These model validation results suggest reasonable estimates of probabilistic post-fire hillslope sediment delivery when compared to observation.