

Statistical Predictions of Fire Occurrence and Spread

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How well can fire occurrence in the next week be predicted? Once a fire has started, how well can its behavior be predicted over the course of hours and days? I will present statistical models for predicting fire on multiple spatial and temporal scales; from the spread of a single fire in the upcoming hours to the probability of significant fires in the upcoming week at the State or National scale. The talk will focus in particular on the estimation and characterization of uncertainties for random variables with highly skewed distributional properties where standard distributions, including extreme value distributions, are not adequate. Adequate uncertainties are essential for assessing the utility of fire occurrence and spread forecasts. I will present examples where fire danger indices are used to forecast fire occurrence in the next week and where fire weather is used to predict spread over the course of hours and days.