



Scaling and correlations in the dynamics of forest-fire occurrence

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Forest-fire waiting times, defined as the time between successive fires above a certain size in a given region, are obtained for Italy. The probability densities of the waiting times are found to verify a scaling law, despite that fact that the distribution of fire sizes is not a power law. The meaning of such behavior in terms of the possible self-similarity of the process in a nonstationary system is discussed. We find that the scaling law arises as a consequence of the stationarity of fire sizes and the existence of a nontrivial “instantaneous” scaling law, sustained by the correlations of the process; as a consequence, the nonstationary Poisson process model does not account for all the complexity of the structure of fire occurrence.