

Mathematics for Urban and Forest Fires

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Statistical models of the radiative power released by vegetation fires and their application to fire prevention and suppression

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The intensity of vegetation fires is conveniently characterized by the Fire Radiative Power (FRP) a quantity derived from radiometers on-board satellites. We show that the logarithm of FRP is modelled by means of a two generalized Pareto (GP) tail lognormal body distribution. We further show that the fit to the upper GP tail is improved by incorporating, as a covariate of the scale parameter, the Fire Weather Index (FWI), an indicator of meteorological fire danger. Finally, we show that this type of models is useful to define classes of fire danger to assist fire prevention and suppression activities.

References

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