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Flame characteristics, temperature–time curves, and rate of spread in fires propagating in a bed of *Pinus pinaster* needles ***José M. C. Mendes-Lopes*, *João M. P. Ventura and José M. P. Amaral*** 67–84	An extensive set of experiments was carried out in order to collect data in beds of *Pinus pinaster* needles to validate surface fire propagation models. The experiments were performed in a dedicated wind tunnel where wind velocity, fuel moisture content and slope were varied. Information on flame geometry (i.e. flame height, flame length and flame angle) and rate of spread was obtained from video recordings. Temperature was measured by six thermocouples at different heights above the fuel bed. The results obtained provide a good database for the assessment of surface fire propagation models.
Modeling potential erosion due to the Cerro Grande Fire with a GIS-based implementation of the Revised Universal Soil Loss Equation ***Jay D. Miller*, *John W. Nyhan and Stephen R. Yool*** 85–100	A geographic information system (GIS) based implementation of the Revised Universal Soil Loss Equation (RUSLE) was used to model pre- and post-fire soil loss conditions due to the Cerro Grande fire (6–31 May 2000). Spatial data were derived for all RUSLE factors from satellite data, existing databases, and plot-level field data. It is estimated that average post-fire erosion rates with annual average rainfall conditions may increase by more than a factor of 100 in some subwatersheds, depending on the extent and severity of the fire.
A review of radiant heat flux models used in bushfire applications ***A. L. Sullivan*, *P. F. Ellis and I. K. Knight*** 101–110	Radiant heat flux (RHF) models based on the Stefan-Boltzmann equation of radiative heat transfer require a number of assumptions about the nature of bushfire flame fronts in order to make them practical for wildland fire applications. These assumptions are examined in detail and the common implementation of bushfire flame front as an isothermal rectangular emitting surface with an emissivity of unity (i.e. an 'opaque box') is compared with the measurements of RHF emitted by a stationary propane-fuelled artificial bushfire flame front.
Wildland firefighter load carriage: effects on transit time and physiological responses during simulated escape to safety zone ***B. C. Ruby*, *G. W. Leadbetter III*, *D. W. Armstrong and S. E. Gaskill*** 111–116	The hypothesis that transit time would be significantly impaired during load carriage was investigated. Data presented demonstrate that load carriage can impair transit time during a simulated escape to safety zone by nearly 25%. These data also demonstrate that transit time is inversely related to aerobic fitness regardless of load carriage and gender and further emphasize the need for rigorous fitness standards for fireline employees.