International Journal of Wildland Fire

Contents   **Volume 17**   **Issue 3**   **2008**

Fire danger indices evaluated from a regional simulation weather model were used to estimate probabilities of large fire events on monthly and 1-degree grid scales. This paves a way to assess the skill of climate forecast outputs in predicting wildland fire severity with known precision.

Lightning-ignited wildfires in the south-western United States are examined in conjunction with radar reflectivity and cloud-to-ground lightning data. Information pursued through the analysis included whether or not lightning-ignited fires occurred near the perimeter of stationary or non-stationary thunderstorms and tend to occur at the leading edges of thunderstorms in the early stages of the storm's development.

The present paper addresses how area burned and forest fire occurrences in Portugal are related to the weather and the Canadian Forest Fire Weather Index (FWI) System. Statistical analysis indicates that much of the area burned and the number of fires in Portugal is explained by the weather variables and the FWI system components.

Fire-scar and tree-recruitment chronologies were developed from two limber and bristlecone pine sites in Colorado. Population structures in both sites document relationships with disturbances and changes in climate and land use over the past several centuries, and provide the longest such records yet developed for this area of North America.

We used the climate signal recorded by tree growth for reconstructing the regional fire activity further back in the past. The climate pattern controlling regional fire activity has been relatively stable since 1904 and may be used to forecast the severity of the fire season a few weeks in advance.

Five fuel sampling techniques were compared across six fuel classes. We explored how fuel loading values differ using each technique, how each method's results compared with a reference sample, and how prior experience in fuel load sampling affects some results. We also addressed the tradeoffs associated with using each method.

We present a simple non-destructive technique for assessing wildland fuels by visual obstruction. Calibration gives relevant information on fuel load, vertical fuel structure and spatial heterogeneity. This 'FuelRule' method is tested in *Calluna vulgaris* heathlands but could be calibrated for other habitats where vegetation is up to 1 m high.

We mapped the departure of existing vegetation structure conditions from the natural range of variability in the Mount Grant area of western Nevada, USA, to plan fuels restoration projects to meet resource management goals. Fire-sensitive woodlands were found within the natural range of variability, whereas departure increased for shrubland and riparian systems.

Seed predation is an important factor for many plant species. We showed that *Pinus halepensis* seed predation is mainly carried out by rodents, and has large spatial and temporal variability in both burned and unburned areas. A few years after fire, seed predation may be a factor affecting seedling establishment in burned areas.

Methods for evaluating fuel treatment effectiveness are illustrated with an example from an escaped prescribed fire that burned into an area previously treated with repeated prescribed fires. Moderated fire severity in the treated area is attributed to an altered fuel profile created by the repeated prescribed fires.

The relative importance of fine-scale fuel mosaics in prescribed burning with respect to treatment level and spatial patterning of treatment units was determined using the computer simulation model FIRESCAPE-SWTAS in the World Heritage Area of south-west Tasmania, Australia. Fire size distributions, fire incidences, mean annual areas burnt, and risks to defined values in the landscape were assessed.

This study aimed to develop a method to map the severity of forest fire by employing Very High Resolution satellite imagery. A model that would distinguish between different degrees of fire severity was developed and the accuracy of the results was verified by employing field collected data. Overall accuracy was estimated to be 83%. The main conclusion drawn from this work was that the built classification model has the potential to produce accurate maps of fire severity, especially in the case of the open Mediterranean forest.