

# Modelling Fire Ignition Probabilities using Logistic Regression

Andreia de Avila Siqueira<sup>1</sup> and Alen Slijepcevic<sup>2</sup>

1 Department of Sustainability and Environment, Level 3 - 8 Nicholson Street - East Melbourne, Victoria, 3002, Andreia.Siqueira@dse.vic.gov.au

2 Department of Sustainability and Environment, Level 3 - 8 Nicholson Street - East Melbourne, Victoria, 3002, Alen.slijepcevic@dse.vic.gov.au

Victoria has one of the most fire-prone environments in the World. Human caused changes to our climate and built environment have increased the likelihood and consequence of bushfires. Every year large areas of Victoria are impacted by bushfires with consequences on its ecosystem functions and economy. This study aims to develop and validate models to predict the spatial distribution of fire ignition in Victoria's public land by using logistic regression. Logistic regression was chosen as the most appropriate method to carry out this study because it can model a binary event using multiple independent variables. The models will be built by investigating the relationship between ignition locations (dependent variable) and climate (fuel moisture and drought factor), environmental (fuel load and distance to forests) and geographical (slope, aspect, distance to roads, distance to towns and distance to camp sites) independent variables. A raster database containing the dependent and independent variables have been created using ArcGIS 9.2. Statistical analyses will be carried out using SPSS and after they will be transferred into a geographic information system environment - GIS. The final products will be displayed as GIS layers showing areas where fires are more likely to occur.

## Key Words

Logistic Regression, Modelling, Fire Ignition, Probabilities