

# THE WHEN AND WHERE OF FUTURE FIRE: TOWARDS AN AUSTRALIAN FIRE OCCURRENCE MODEL

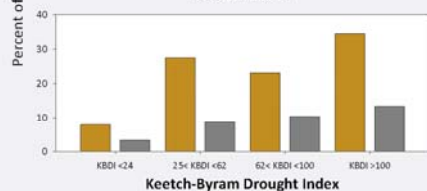
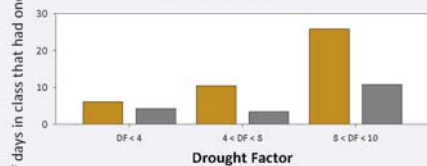
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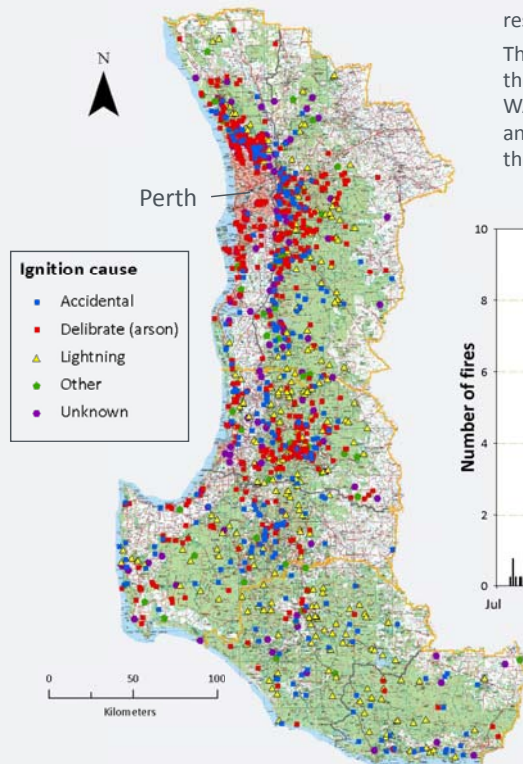
## Introduction

This poster presents an overview on fire occurrence research being undertaken as part of the new “Fire development, Transitions and Suppression” project. Fire occurrence can be defined as the number of fires started in a given area over a given period of time. Fire occurrence research has traditionally been conducted as regional case studies that compare fire incidence data with fire weather parameters and spatial attributes such as terrain, land cover, land tenure, and population density. International studies have used regional fire occurrence statistics to predict the probability of ignition risks at spatial and temporal scales. These studies have been used to identify priority locations for fuel treatments and suppression resource bases, develop tools for setting resource preparedness levels and predict the effects of climate change on fire regimes and fire risks. International research studies have found numerous factors to influence fire occurrence, findings that reflect their diverse environments and cultures. Limited fire occurrence research has been undertaken in Australia. This fire occurrence research project will enhance knowledge of fire patterns in Australian regions and provide practical outputs that will benefit local fire management.



## Case study: Southwest Western Australia

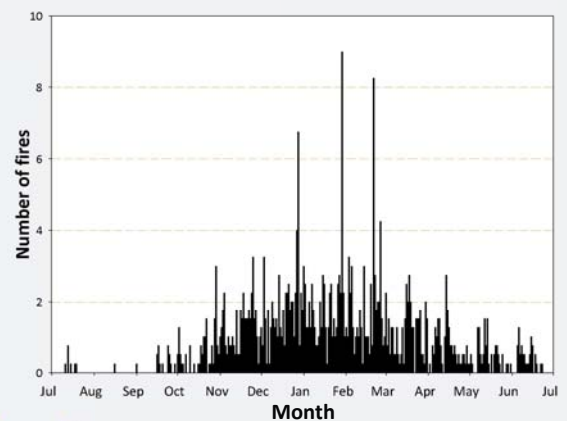
A case study for the southwest of Western Australia is currently being developed by collating fire incident records (Fire and Emergency Services Authority and Department of Environment and Conservation), weather data (Bureau of Meteorology) and geographical data for analysis and modelling. This region was selected for the initial case study because of the availability of fire incident data, the high number of ignitions, geographic isolation, and relatively uniform terrain and climate.



The aims of the case study are:

- 1) To determine the spatial and temporal factors affecting fire occurrence;
- 2) To model the probability of a fire day (day with one or more fires detected) and days with moderate and high numbers of new fires;
- 3) To develop spatial ignition risk maps based on geographic attributes;
- 4) Investigate the application of fire occurrence model outputs for suppression planning and resourcing.

This case study is a collaboration between CSIRO, the Department of Conservation and Environment, WA, Fire and Emergency Services Authority, WA and the Canadian Forest Service and is funded by the Bushfire Cooperative Research Centre.



**Figures:** The figures on this poster show data from fires on Department of Environment and Conservation managed lands during the 2004/05 to 2007/08 fire seasons.

**Left:** Fire occurrence with Forest Fire Danger Rating, Drought Factor and Keetch-Byram Drought Index

**Above:** The spatial distribution of ignitions by cause across the case study region

**Above right:** Average number of fires by calendar day

## Further case studies

Further fire occurrence case studies will be undertaken provided there is sufficient time available within the project. Preferred areas for further case studies would have different environmental conditions and ignition profiles to those in the first and could include areas with different vegetation (e.g. grasslands), terrain (e.g. mountainous areas), or ignition sources (e.g. high proportion of lightning ignitions). Contact Matt Plucinski (matt.plucinski@csiro.au) if you are interested in participating.