Empirical analysis of spot-fire and ember behaviour during extreme fire weather conditions

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SPOTTING IS ONE OF MOST DANGEROUS ASPECTS OF MAJOR FIRES. EMPIRICAL ANALYSIS CAN IMPROVE OUR ABILITY TO PREDICT AND MANAGE SPOTTING.

THE SPOTTING PROBLEM

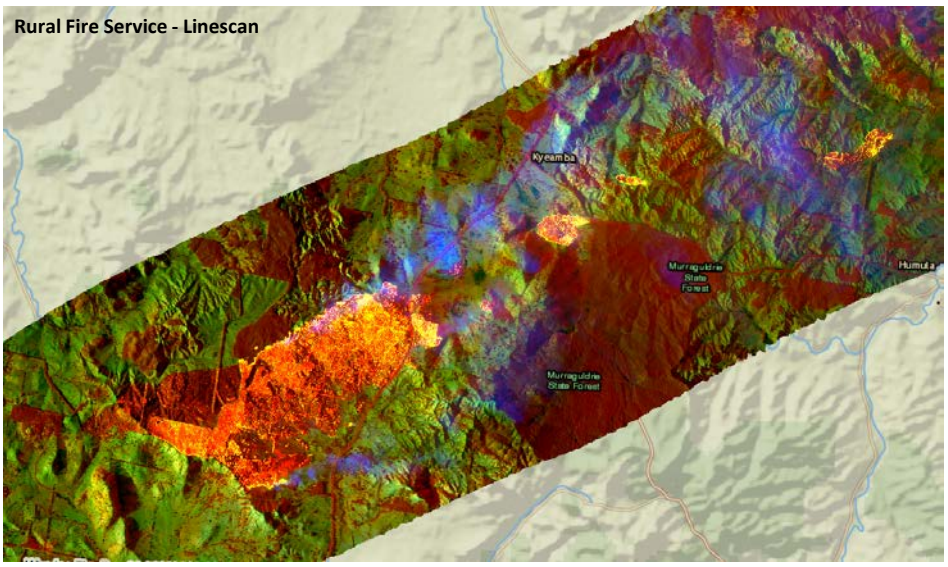
Spot-fires and embers contribute to extreme fire behavior and pose several problems for fire control:

- Embers cross fire control lines and ignite new spot-fires
- Embers are a major cause of house loss
- Spotting influences fire spread in ways that are still poorly understood.
- Spotting is difficult to predict; current models have mixed results.

SPOTTING PROCESS

- **Generation** of embers from an active fire
- **Transport** of embers via ambient winds and smoke plumes
- **Ignition of recipient fuels** such as forest litter, fuels in garden or combustible building components.

It has been very difficult to study these mechanisms in fast-moving major fires. Certain parts have been studied previously, usually in laboratory conditions or in mild weather fires. Detailed observations of spotting in more extreme fires have been rare.



WHAT CAN BE DONE

Different parts of the spotting process in major fires are now being captured more often by fire crews and the public; for example multispectral linescans, infrared video, cameras on personal phones, GoPros, photos from air observers, security camera footage.

The plan for this project is to build an empirical dataset of spotting and ember behavior using this type of evidence that can be analyzed in a number of ways

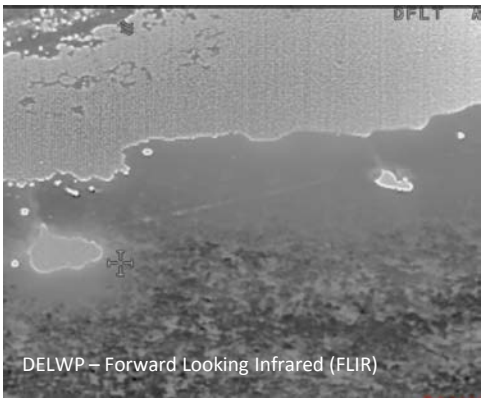
PROJECTED OUTCOMES

This project is in its initial stages. Projected outcomes in 3-4 years include:

- Empirical dataset of spotting distance, ember densities and other spotting parameters during major fires
- Empirical modelling of spotting/ember behavior during major fires.
- Empirical modelling of ember density during ember attack in suburban areas
- Comparison with and improvement of other models of spotting behaviour.

WE WANT YOUR VIDEOS/PHOTOS!

We are interested in obtaining video footage, photos, reports and other evidence of spot-fire and embers from fires during severe- extreme weather. If you can assist, please contact Michael Storey **mas828@uowmail.edu.au**


DELWP – Forward Looking Infrared (FLIR)


Youtube Video


Photo by Wayne Rigg - CFA

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