Natural Hazards Research Australia

Translation of observed and modelled extreme bushfire behaviours to improve fire prediction and fireground safety

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Extreme Fire Behaviour during black summer

- → Intense fires interacting with the surrounding environment led to extreme winds at the surface which resulted in fatalities and rapid spread
- → Black Summer reconstructions - coupled fire atmospheric modelling explained what happened in terms of wind and fire behaviour outcomes (Peace et al. 2021)
- → This project – seeks to share the learnings in applied way

30 December 2019 - Looking North West across the Green Valley, NSW – Reconnaissance Aircraft

How to put research in context for decision makers?

Development of training materials to contextualise learning in operations

Goals

- → Enhance the ability for Fire Meteorologists Fire Behaviour Analysts to evaluate and communicate key risk factors for some extreme fire behaviours.
- → Disseminate findings from the Black Summer project Peace et al. 2021.

Approach

- → Engaged an external provider with training development expertise. Researchers, FireMets, FBANs and learning specialists working together.
- → Scenario based learning drawing on black summer case studies
- → 3 E-learning modules for fire behaviour analysts and fire meteorologists

Introductory Module

Participants will learn…

- What is extreme fire behaviour
- Principles for the **evaluating** and **communicating** the risks of extreme fire behaviour
- How Fire Mets and FBANs can collaborate – the information, tools available to each group and their skills and knowledge.
- Introduction to coupled fire atmospheric modelling for interpretation of case studies in modules 2 and 3

Low Level Jets

Through case studies participants will learn…

- to look at the wind structure above the surface and understand the potential for plume mixing processes at a large fire.
- How the energy release of a fire may interact with boundary layer winds

Fire Generated Vortices

Through case studies participants will learn…

- What FGV are and how they form
- Hazards and risks presented by FGV
- Identify when conditions are favourable for an FGV to occur

Where to from here

- → Inter-disciplinary contributors – working together to contextualise detailed science in an accessible and engaging manner.
- → Training modules available for FBANs and Fire Mets before next bushfire season
- → NHRA will garner feedback and evaluate - potential for further training modules for research utilisation in the future.