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Firebrand transport from a novel firebrand generator: numerical simulation of laboratory experiments

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We use a tree-ring network from southeastern Australia to reconstruct the number of high fire-danger days in January–March, as reflected in the Forest Fire Danger Index (FFDI). Highest quality reconstructions in southwestern Tasmania indicate that the recent persistent increase in seasonal fire danger is unmatched over the past 430 years.

We explore the utility of next-generation satellite observations of fire intensity during the Black Summer Fires. We found that these new datasets capture similar patterns to the previous generation earth-observation data but offer greater temporal detail. These results are significant as they open new opportunities for active fire monitoring.

This study analysed loss data from the 2018 Camp fire and found numerous building characteristics that were important determinants of structural survival, including double paned windows, enclosed eaves, ignition-resistant roofs/siding, age of structure, lack of vents, improvement value, and decks. Defensible space had only weak associations with structure loss in this data set. Mobile homes were far more likely to be destroyed.

This study examines wildfire prevention by rural residents in the Edson Forest Area, Alberta, Canada. Awareness of the wildfire risk was high, but there was little recognition that using fire for agricultural purposes contributed to wildfires in the area. Many respondents undertook wildfire prevention activities while using fire for agricultural purposes. Many fire users had not applied for a fire permit. Information about fire permits – and experiencing a wildfire in the Edson Forest Area – influenced wildfire prevention activities.

Peatlands need acidic soil conditions for maintaining proper health and functioning. Wildfire-produced ash is often alkaline, thus potentially impacting soil pH. We observed that soil pH was not affected by the ash generated during a peatland wildfire.

We explored bird responses to fire in threatened *Banksia* woodlands in south-western Australia and found post-fire age had little or no effect on the overall bird community. Two species responded to post-fire age but were most abundant early post fire, suggesting the bird community is adaptable to a range of prescribed burning regimes.

A combined experimental and numerical study of firebrand transport is presented. A novel firebrand generator was built to produce specific-shaped burning firebrands and measure landing distributions. A physics-based model is used with four different drag sub-models to reproduce experimental results and results are obtained with various degrees of fidelity.

Corrigendum to: Firebrand transport from a novel firebrand generator: numerical simulation of laboratory experiments

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The 2006 'Eastern Shore' fire in southern Tasmania, see Allen *et al.* pp. 559–571. Photograph by Ian Stewart.