

## High Performance Wildfire Prediction Technology use in Western Australia

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*Australis* is a wildfire simulation system used to predict all wildfires in Western Australia (WA). WA has wildfires throughout the year, caused by lightning strikes, and is a third the size of the USA. The remoteness of many communities, with poor communication infrastructure, has prompted our development of *Australis-in-the-Truck*. This autonomous prediction technology can be used on the fireground to determine optimal suppression tactics, and provide early warnings to both communities and firefighters. The system permits users to adjust the scale of resolution, at multiple kilometer resolution in sparsely populated homogeneous northern tropical savannas, down to 100 meter resolution in the urban/wildland interface in the populated SW.

The system is self-contained and runs on a high-end tablet mounted in the cab of a truck. Fire locations are entered on the touch-screen map along with current and forecast weather. The system

Automatically calculates fire spread using algorithms that account for fuel load/type, wind direction/speed and slope, rapidly generating maps with future fire perimeters overlaid.

Performing wildfire prediction *in-the-field* has advantages over a centralised service. These include use by firefighters with local knowledge and awareness of the current fire location, and avoidance of communication difficulties between the fireground and a central server. The high-performance feature of *Australis* permits alternative weather scenarios to be rapidly evaluated, allowing variation in forecasted wind speeds and direction to be examined. *Australis* has been extensively validated using historical fires where high-quality post-fire data is available; such a large-scale wildfire replication will be presented and discussed.