

## The Interaction of Firebrand Showers and Vegetation in the Presence of Wind

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**Initial Ignition from firebrand showers**



**Ensuing combustion from firebrand ignition**

An important component in rapid spread of large outdoor fires is the production or generation of new, far smaller combustible fragments from the original fire source referred to as firebrands. Firebrands signifies any hot object in flight that are capable to ignite other fuel types. Firebrands are produced or generated from the combustion of vegetative and structural fuels. Firebrand processes include generation, transport, deposition, and ignition of various fuel types, leading to fire spread processes at distances far removed from the original fire source. Experiments were conducted using wind facilities at the National Research Institute of Fire and Disaster (NRIFD) in Japan. In these images, firebrand showers using a custom firebrand generator were directed at a Noble-fir tree of 1.5 m in height exposed to a wind field of 3 m/s to determine if firebrands alone may ignite real-scale vegetation. The initial ignition process and ensuing combustion process is shown. Beautiful flame structures are shown and the dangers of vegetation combustion in the presence of wind is readily apparent.