

Survival zones for wildland firefighters: data collection in five experimental openings in grass

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UPDATE TO PROJECT PLAN

The scope of this project changed slightly after our first season of data collection. Originally this project sought to find the minimum size of a survival zone based on the height of the surrounding fuel. Now, the project includes the identification of the key characteristics a firefighter must consider when selecting a survival zone. We are also looking to characterize the size of the ideal survival zone in visual terms useful for firefighters such as “a landing site for a medium helicopter” or “a well site”.

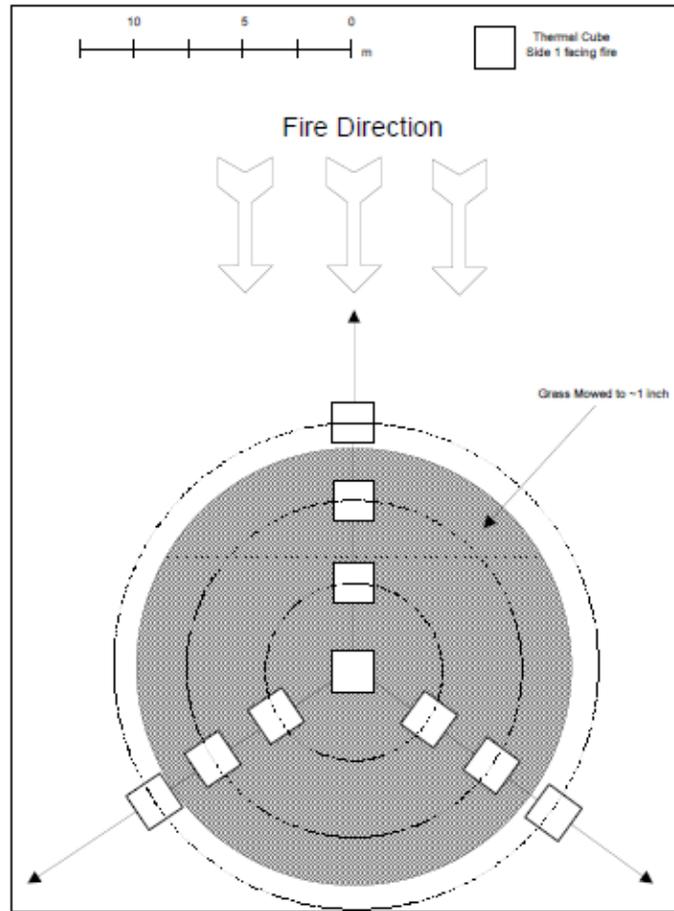
DATA COLLECTION

- Location: East of Slave Lake, Alberta on land owned by Vanderwell Contractor’s 1971 Ltd.
- Date: April 29, 2009
- Fuel Type: Grass
- Openings: One circular opening 5 m in diameter; four circular openings 10 m in diameter (Figure 1).



Figure 1. A 10 m diameter opening in grass fuels. Grass mowed to one inch.

Thermal cubes were placed within and 1 m outside the opening (Figure 2). These instruments collect fire intensity data in (kW/m²). Temperature data loggers were placed inside the opening to record temperature.



FINDINGS

Temperature Data

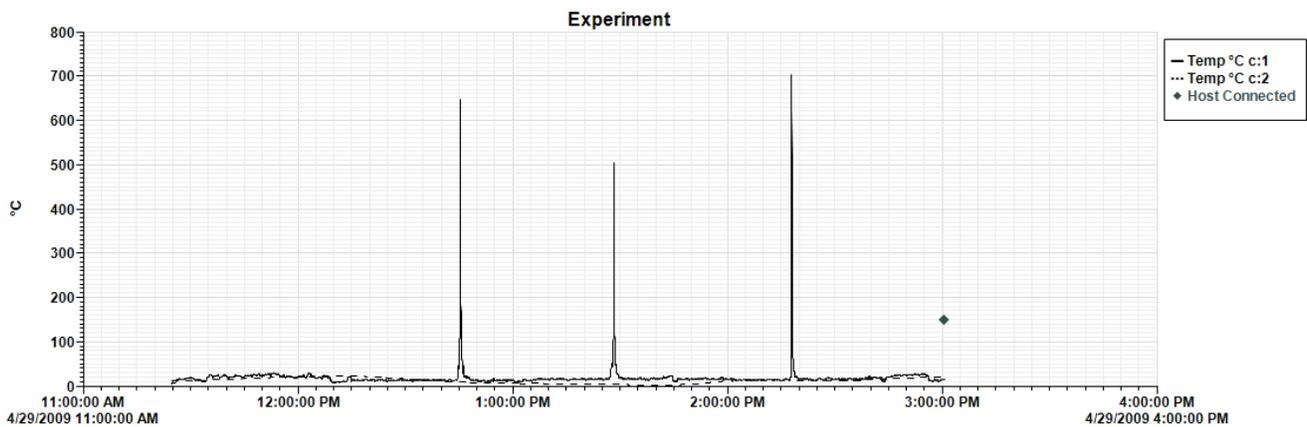


Figure 3. Temperature profile (in °C) 1 m from the front edge of a 10 m opening.

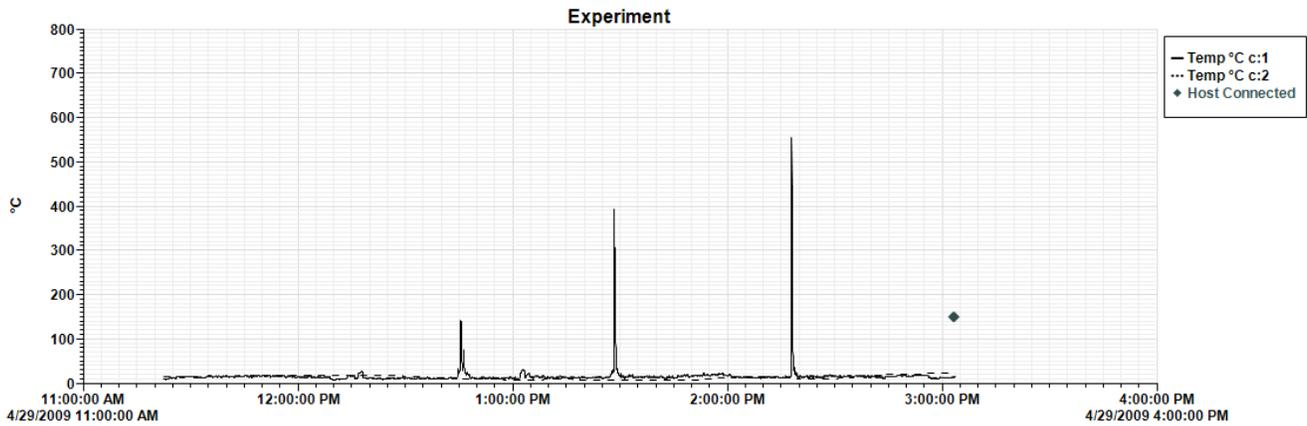


Figure 4. Temperature profile (in °C) 1 m from the edge at the back of a 10 m opening.

Fire Intensity Data

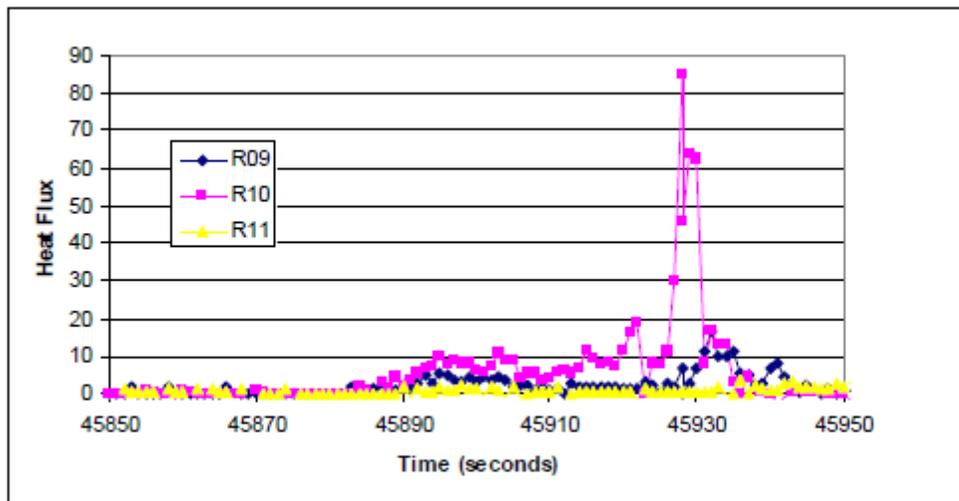


Figure 5. Radiation levels from three sensors within the opening. Both R09 and R10 recorded values higher than 7 kW/m². R11 was survivable.



Figure 6. A fire moving towards an opening.



Figure 7. A 10 m opening following a fire.

Some grass in the openings did not burn. We believe this is because the grass was trampled during the creation of the opening and the installation of the equipment.

The 5 m opening was too small to be survivable. Radiation values were greater than 7 kW/m^2 over the entire opening.

The data from the 10 m openings are still being analysed, but these fires appeared to be very intense suggesting that human survival was unlikely.