

Project Proposal Form

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Submission Date:

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Proposal Number:

e.g. FPL-2013-01

Champion:

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Background:

Wind events are the primary cause of wildfire blow-ups. But in the absence of wind, wildfire blow-ups have been correlated to the occurrence of a super adiabatic lapse rate. A super adiabatic lapse rate occurs when the temperature change with height is faster than 10°C per kilometer (the rate at which a parcel of dry air cools as it rises or warms as it falls).

Lapse rate data isn't used much in Canadian wildfire operations because there are too few data collection points and an insufficient number of collection periods. For example, there are only four collection points in British Columbia with twice daily measurements. In 2009, we investigated whether we could collect the data necessary to calculate the local adiabatic lapse rate using a series of remote access weather stations (RAWS) placed up a mountainside. After a summer of data collection we determined that we did not have the tools we needed to move the project forward.

In September 2013 we learned that Forest Protection Limited—a private company owned by a group of New Brunswick stakeholders—has installed research-grade meteorology equipment on their fleet of AT-802s.

Issue:

Can the real-time weather data collected using firefighting aircraft be used to calculate the local adiabatic lapse rate.

Objective(s):

Determine whether the equipment can collect the necessary weather data, i.e., can the aircraft fly at an altitude sufficient to produce useful data?

Determine the frequency with which weather data needs to be collected.

Approach:

Have firefighting aircraft collect temperature data while following an Environment Canada weather balloon (which collects temperature data at altitude). Compare the aircraft data to the Environment Canada data to see if the aircraft data is accurate enough to calculate an adiabatic lapse rate.