

PROJECT UPDATE

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Developing an instrument to measure wildfire intensity: next steps

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PROGRESS TO DATE

Erik Sullivan from the University of Alberta Mechanical Engineering Department completed his work on this project in early 2014. His results were published in the International Journal of Wildland Fire under the title “*Mathematical model and sensor development for measuring energy transfer from wildland fires*”¹. Sullivan found that the mathematical model he developed produced errors for low heat fluxes. So, in the summer of 2014, two U of A students, Shammawi Anderson and Razim Refai, worked together to explore ways to reduce these errors. They discovered that by wiring a thermocouple to read the temperature difference rather than two individual temperatures they could reduce the errors for low heat fluxes by 40%. Details of their work can be found in their progress report titled “*Error reduction in the heat flux sensor “thermal cube” used in forest fires*”.²

NEXT STEPS

The field-testing done by Anderson and Refai in 2014 (Figure 1) showed that the sensor was an extremely useful instrument, but it was cumbersome to deploy. In 2015, student engineers with U of A’s Mechanical Engineering Department will design and build a simple, yet robust package that can house the sensor. FPIinnovations researchers will test a prototype at the Canadian Boreal Community FireSmart Project site near Fort Providence, NT in late June 2015.

¹ <http://www.publish.csiro.au/?paper=WF14016>

² http://wildfire.fpinnovations.ca/148/FireIntensityInstrumentProgressReport_3_McDonald.pdf



Figure 1. Heat flux sensor testing in the Northwest Territories (2014).