

5th Wildfire Detection Workshop Summary

Rex Hsieh and Brandon MacKinnon

The 5th Wildfire Detection Workshop was held in Edmonton, Alberta, Canada on February 28 and March 1, 2023. The workshop provided Canadian Federal, Provincial, and Territorial wildfire agencies with an opportunity to exchange ideas and information related to the state of wildland fire detection in their jurisdictions.

Current approaches to wildland fire detection

There is a wide range of strategies for wildland fire detection across Canadian wildfire agencies. The different approaches often consider regional differences in fire occurrence frequency, fuels, population, industry distribution, wildland interface variability, land use objectives, jurisdictional management objectives, and risk tolerance. Some jurisdictions report all small fires by using fixed tower networks, public reporting, and aerial patrols to increase initial attack success. While others may not suppress all fires depending on locations and therefore utilize passive detection such as public reporting and satellite data.

Public reporting and planned aerial patrols are the most relied upon detection methods. Yukon, Alberta, and Saskatchewan are utilizing fixed detection systems, such as human observers and cameras on towers. Furthermore, most agencies use satellite technology for monitoring remote areas.

Each agency has a unique approach to allocate and position detection resources. Regardless of the exact

methods, all agencies employ a strategy where human life and community protection are top priorities.

Discussions on technologies

The results of the Alberta Wildfire Detection Challenge were presented at the workshop. The challenge selected six commercially available fixed detection systems for a demonstration in Slave Lake, Alberta, Canada during the 2022 wildfire season (Hsieh, 2023). The presentation provided insight on the performance of these systems.

Natural Resources Canada provided an update on WildFireSat. One of the roles of WildFireSat is to provide information to the agencies at least twice a day for monitoring wildfires: one in the early morning, and another during peak burn. This will provide agencies with unprecedented fire intelligence at critical times in the planning cycles, allowing more efficient and thorough monitoring of fire growth and other characteristics of a fire. The Canadian Wildland Fire Information Framework will likely be designated for agencies to access the operational products of WildFireSat. WildFireSat is expected to be launched around 2029.

Discussions on challenges and opportunities

Aerial detection

Two challenges for aerial detection were identified in the discussions: an aging fleet of aircraft and pilot shortages. High-wing aircraft are currently preferred for detection operations due to increased visibility. Many of these aircraft are aging and will need replacement soon. Furthermore, pilot attrition due to a reduction in recruitment and retention results in increased pressure on the industry. It is getting more difficult to find and keep qualified pilots in a competitive market. The agencies are

expecting these issues to affect aerial detection operations in the future.

Multiple agencies are exploring different aircraft to address the potential shortage. SOPFEU is collaborating with a flight school to operate aerial detection. This could be a model for other agencies to consider while helping to support the industry, build pilot experience, and create career pathways. Agencies also see a complementary role for Remotely Piloted Aircraft Systems (RPAS) and advanced satellite detection solutions in the future. There is an interest in advocating for the necessary technology and regulatory means for beyond visual line of sight RPAS detection solutions.

Detection strategy

Multiple agencies are conducting reviews on their detection strategy. One area of focus is cost effectiveness of the operations. Vaibhav Manawat, from the University of Alberta, presented on the economics of wildfire detection; and Dr. David Martell, from the University of Toronto, presented on the cost effectiveness of detection systems. Both presentations highlight the possible methods for measuring the cost and benefit of such activities. However, the following items still present challenges:

- Defining detection strategy success
- Defining a meaningful detection target
- Quantifying savings on the cost of wildland fire operations
- Accumulating, and sharing detection data for analysis
- Balancing detection costs and the associated operational benefit

National wildfire detection collaborations

Several opportunities were identified for national collaborations:

- Building a national public reporting mobile app
- A testing site for new technology

- A platform or mechanism to provide feedback to vendors and innovators
- Performance standards on detection technology
- A broker for sharing information among wildland fire agencies
- Inclusion of detection in the broader context of sharing resources amongst agencies

In conclusion

Over 60 people from Canadian wildfire agencies participated in the detection workshop in Edmonton. During the workshop, the agencies exchanged the information for future strategy analysis and lessons learned from the current practices. The results of Alberta Wildfire Detection Challenge and the update of the future WildFireSat provide information for future technology adaptation. Participants also identified the challenges of aerial detection program and strategy reviews. Furthermore, there was interest to pursue collaborative solutions for problems that many agencies are facing.

Overall, the detection workshop achieved its objective to function as an information sharing platform due to the willingness of the agencies to share and engage in open discussion.

Acknowledgement

We gratefully acknowledge the financial support of the Province of British Columbia through the Ministry of Forests and the Province of Alberta through the Ministry of Forestry, Parks, and Tourism. The workshop venue in Edmonton was provided by Alberta Innovates. Special thanks to Michael Kakoullis (Alberta) and Colin McFayden (Canadian Forest Service) for their contributions to the organizing committee of this workshop.

Reference

Hsieh, R. (2023). *Alberta Wildfire Detection Challenge – Operational Demonstration of Six Wildfire Detection Systems*. Edmonton: FPIInnovations. Retrieved 3 20, 2023, from <https://library.fpinnovations.ca/en/permalink/fpipub10353>

For more information

Rex Hsieh
rex.hsieh@fpinnovations.ca

wildfire.fpinnovations.ca