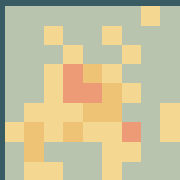


# Fire Growth Models

Comparing FireSTARR, Prometheus and Bigfoot  
Information current as of April 1, 2026

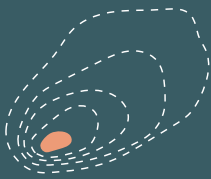
Anticipating fire growth across time and space improves wildfire response effectiveness and protects lives and property. This document compares three common modelling tools used by fire agencies across Canada.

## Models Overview



### FireSTARR

This newer model uses a probabilistic approach to project fire growth. Instead of projecting a fixed burn perimeter, the model generates a probabilistic map based on thousands of simulations, indicating the relative likelihood that a fire will spread to a given cell. This provides much more nuanced information on relative risk to points of concern. While FireSTARR is currently automated for fire modelling on a national scale, it is still under development and new features may be added.



### Prometheus

This long-standing fire growth model provides a snapshot of projected fire boundaries over time. Prometheus runs on local hardware and includes a user interface, which makes it easy to tailor the model parameters and data inputs to local conditions. This makes it particularly suited for tactical planning at the incident level. While Prometheus remains a favourite for growth modelling of individual fires, the model is no longer receiving updates.



### Bigfoot

This legacy tool automates the use of Prometheus to model all fires across Canada. It is intended to give fire managers fast and easy access to information on fires in their region, without needing to model every fire themselves. Because Bigfoot is limited to nationally available input data, its projections are a very coarse approximation.



Whatever fire growth model a fire manager uses, it is crucial to remember that all models have fundamental limitations.

- Models are only as good as their input data.
- Uncertain weather forecasts, poor fuel mapping, cloud or smoke-obscured satellite imagery, and other data gaps all impact the reliability of model predictions.
- Models require expert users. Users should have the skills and training required to understand how the model works, anticipate errors and interpret its outputs.
- Even using the best data possible, models never capture the full complexity of the real world. They are one piece of a larger information system that includes on-site assessments and first-hand accounts from on-ground personnel. Wildland fire veterans know that ultimately, “local knowledge is best knowledge.”

## Comparing FireSTARR, Prometheus and Bigfoot

Model/Tool	Description	Typical Use	Inputs	Outputs	Considerations
<b>FireSTARR</b>	<p>Probabilistic fire growth model that projects relative burn risk spatially.</p> <p>CFS/WIPS provides FireSTARR fire growth simulations at a national scale.</p>	<p>Risk assessment, strategic planning, and triage of multiple or individual fires. Currently suitable for national and regional scales.</p>	<p>Weather, fuel, topography and ignition (i.e., FBP System inputs).</p>	<p><b>Burn probability maps and CFFDRS FBP system outputs</b> of every fire in Canada, up to six times a day. Projected across timeframes of 1, 2, 3, 7 or 14 days.</p>	<p>Newer model still under development. Provides more detailed information for risk planning than Bigfoot, but challenging for non-experts to interpret.</p>
<b>Prometheus</b>	<p>User-driven deterministic fire growth model that provides a snapshot of projected fire perimeter.</p>	<p>Tactical planning at the incident level for individual fires.</p> <p>Exploring potential scenarios at the community level for strategic planning.</p>	<p>Weather, fuel, topography and ignition (i.e., FBP System inputs).</p> <p>Input data can be customized by the user.</p>	<p>Projects <b>fire perimeters</b> across user-specified timeframes and spatial resolution.</p> <p>Hourly resolution if weather data allows.</p>	<p>Easy to customize with high resolution data.</p> <p>Users must consider trade-offs with computational demand.</p> <p>MSWindows-dependent, no longer receiving updates.</p>
<b>Bigfoot</b>	<p>Tool that automates the use of Prometheus to model fire growth on a national scale.</p>	<p>Used for broad situational awareness of fire perimeters.</p> <p>Suitable for coarse comparison and triaging of multiple fires at national and regional scale.</p>	<p>Same as Prometheus but limited to nationally available datasets.</p> <p>No user customization.</p>	<p>Projects <b>fire perimeters</b> for every fire in Canada across fixed 24- and 48-hour timeframes.</p>	<p>Less accurate for individual fires than a customized Prometheus output using local data.</p> <p>Legacy system (automated national fire modelling will transition to FireSTARR).</p>

*This summary is part of a six-part series introducing Wildfire Intelligence and Predictive Services (WIPS), its suite of data products and three key tools.*