

Disturbance Event Patterns: Alberta Foothills vs. Saskatchewan

From the outline of a natural wildfire event, it would be impossible to tell the difference between one from Saskatchewan from one from the Alberta Foothills – their shapes are similar. However, the internal structure of wildfire events from these two landscape is quite different.

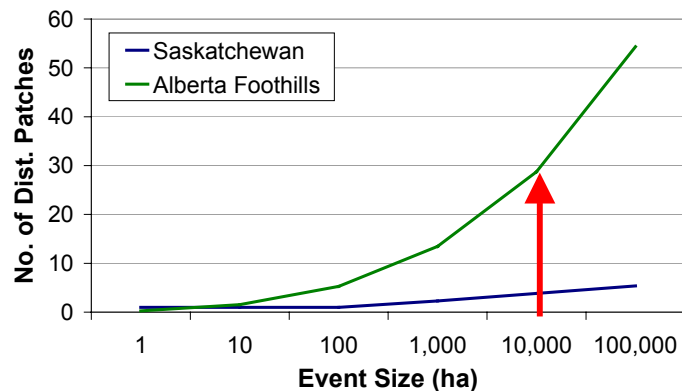
Alberta Foothills wildfires tend to be a cluster of many differently sized disturbed patches, while Saskatchewan wildfires are usually dominated by a single, very large, disturbed patch. For example, a 10,000 ha wildfire in Alberta averages 29 disturbed patches compared to only four for a Saskatchewan wildfire of the same size (see the red arrow in the Figure adjacent). Furthermore, the largest disturbed patch in a 10,000 ha Alberta wildfire will account for an average of 73% of the disturbed area, compared to 88% for Saskatchewan. In fact, there is less than a 50% chance that the Saskatchewan wildfire has more than one disturbed patch (see the green arrow in the adjacent Figure).

The contrast noted here is consistent with what we already know about other pattern metrics. Recall from Quicknote #42 that Saskatchewan wildfires tend to have far less area in *matrix remnants* than do Alberta Foothills wildfires. Recall also that matrix remnants include areas in corridors between disturbed patches. So there is a direct, logical relationship between the area in matrix remnants and the number of disturbed patches.

The obvious question this evidence raises is whether fire behaviour differs between the two areas. Are wildfires in the Foothills more likely to skip or “spot” relative to wildfires in Saskatchewan? Or are we mistaking a spatio-temporal phenomenon for a simple spatial one? For example, what if Saskatchewan wildfires spot just as often as do Alberta Foothills fires, but at different times during the burn? Similarly, perhaps high contrast “fire ending” weather events are less common in Saskatchewan (compared to more gradual fire weather shifts), which would allow wildfires more opportunity to physically join otherwise discrete disturbed patches before going out?

Many thanks to Mistik Management Ltd., the Saskatchewan Forest Centre, and Saskatchewan Environment for the use of their data for this Quicknote.

Number of Disturbed Patches per Event for Saskatchewan and Alberta Foothills Wildfires



Percent of Disturbed Patch Area Accounted for by the Largest Patch for Wildfire Events in Saskatchewan vs. Alberta Foothills

