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Branching Out
from the Canadian Forest Service - Laurentian Forestry Centre

Forest fires: Not totally random!

Fire is a disruptive element in the dynamics of Canada's boreal forest. In 2015, some 7,000 fires consumed almost 4 million hectares of forest across the country. That is the equivalent of more than 100 times the area of the island of Montreal. Do these fires break out at random? That is the question researchers at the Canadian Forest Service set out to answer.

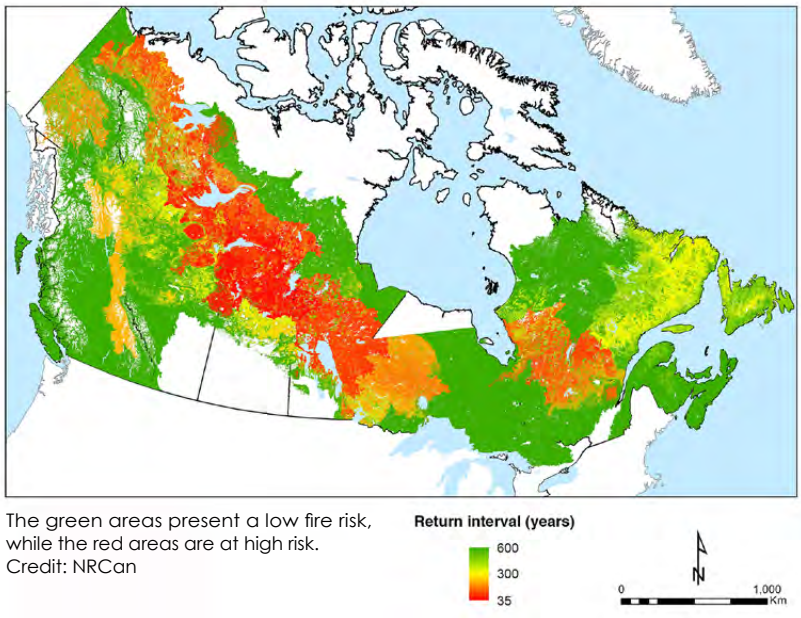
Remote sensing to the rescue

In their quest for an answer, the researchers laid maps of fires for the 2002-2011 period on top of maps showing the proportion of deciduous/conifer trees, the quantity of biomass and stand age at the national scale. They were then able to quantify the fire risk according to those parameters.

The researchers observed that fire does not occur totally at random in a given area. In fact, the greatest risks of fire are found among conifers, and the lower risks are found among deciduous trees. The age of the stand also has a bearing on the risk of fire: the older the stand, the greater the risk, whether it be a conifer, deciduous or mixed stand. With the expected increase in regional fire risk due to climate change, fire would have a negative feedback effect on itself; that is, the more it would burn, the more it would rejuvenate the forest, thereby reducing the risk of fire.

Mapping the puzzle

Based on these results of fire selectivity, the researchers produced a Canada-wide map showing areas of fire risk by combining the regional fire regimes with fire selectivity according to forest characteristics.



The green areas present a low fire risk, while the red areas are at high risk.
Credit: NRCan

One more piece in the puzzle

Forest dynamics are complex, and fire adds another layer to this complexity. The information produced from these studies is like finding a missing piece in a jigsaw puzzle. It should help foresters refine their assessments of current and projected fire risks. This would be as positive for forest communities as for forest management. In addition, it would facilitate the development of mitigation and adaptation strategies to deal with these risks.

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