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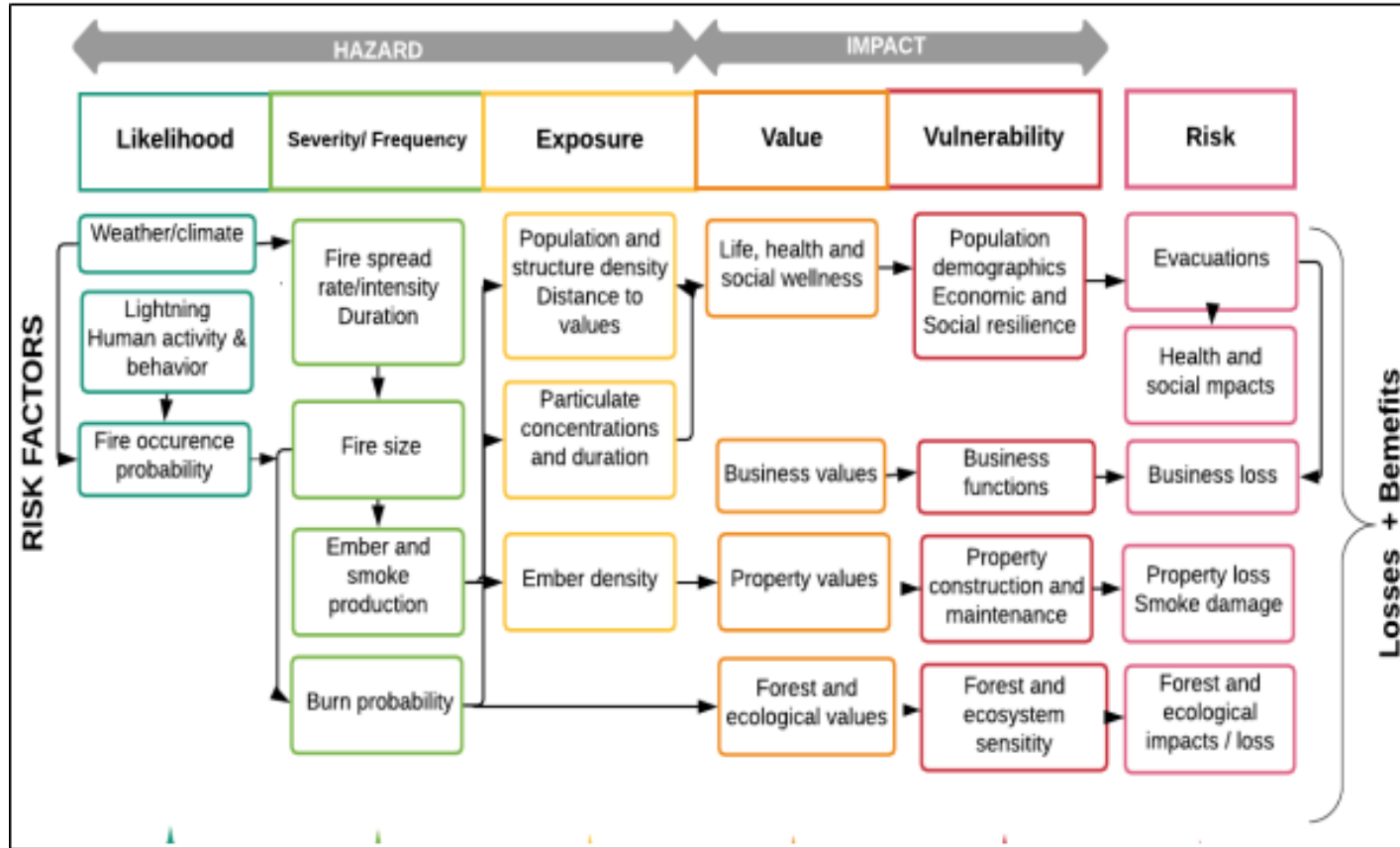
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Wildfire Risk Work at Natural Resources Canada

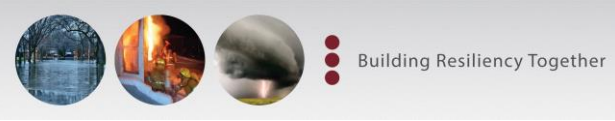
Brad Stennes
Natural Resources Canada

Understanding Risk BC Symposium
November 2 2020

Factors Contributing to Wildfire Hazard and Risk



Source: D.D. Xi, S.W. Taylor, D.G. Woolford and C.B. Dean 2019.



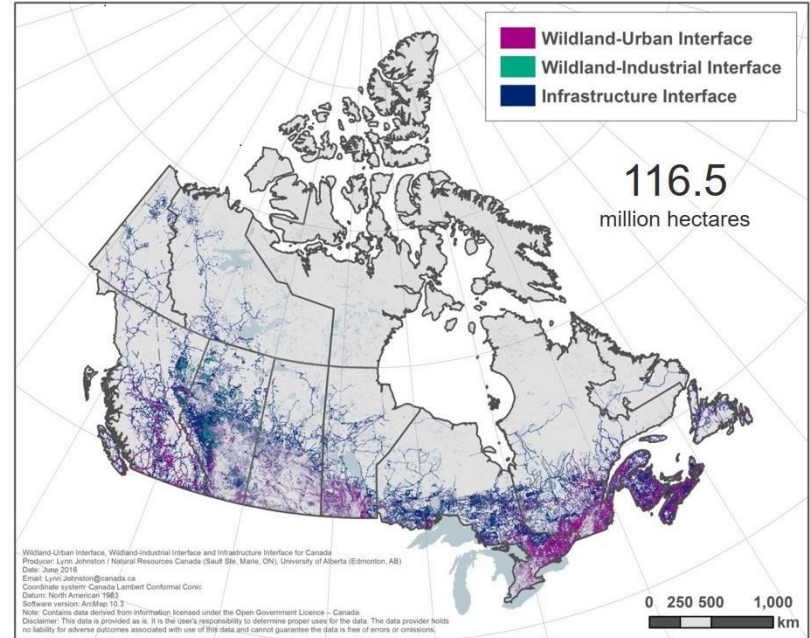
Wildland Fire Hazard: what we know

- CFS has a long history in fire science, this research has allowed for an understanding of wildfire behaviour, including fire ignition and spread, fire fuel management and fire occurrence patterns.
- CFS science includes research on the ecological role of fire and how a changing climate will affect the occurrence of wildfire.
- CFS capacity more developed on hazards than on key factors contributing to impact.



Mapping the Interface

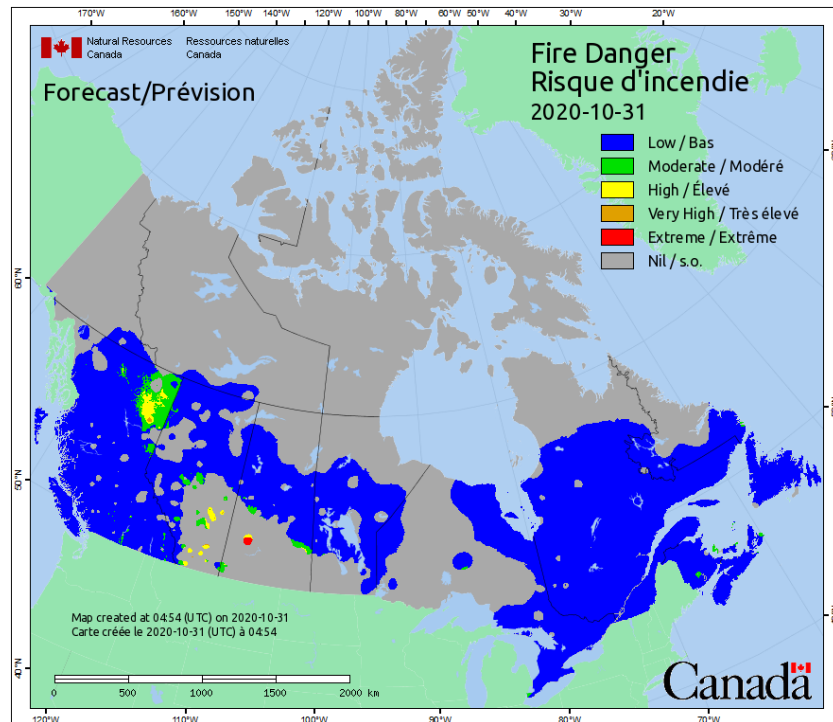
- Interface is where human structures are interspersed with burnable forests.
- First mapped nationally in 2016.
- Increased risk as more people move into rural areas.

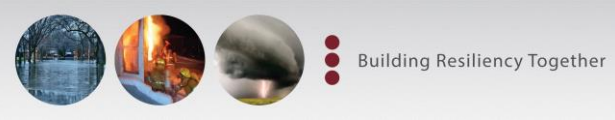




Wildland Fire Hazard: knowledge at work

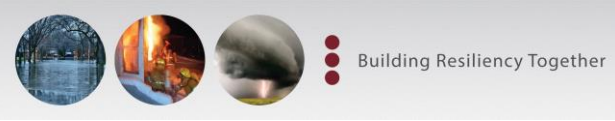
- CFS knowledge and tools allow for assessing the level of wildfire hazard, tracking fires that are underway, and evaluating the risk of new fires starting.
- This situational knowledge supports all aspects of wildland fire management—from developing prevention strategies, forest management practices, and supporting the efforts of the jurisdictions responsible for firefighting.





Going Forward: Wildfire Hazard to Wildfire Risk

- A standardized framework for wildfire risk analysis;
- Burn probability maps for Canada;
- Assessing risk around communities;
- Mapping future wildfire risk in Canada;
- Fire risk and evacuation capabilities in isolated communities;
- Framework of fire impacts quantification in the wildland interface.

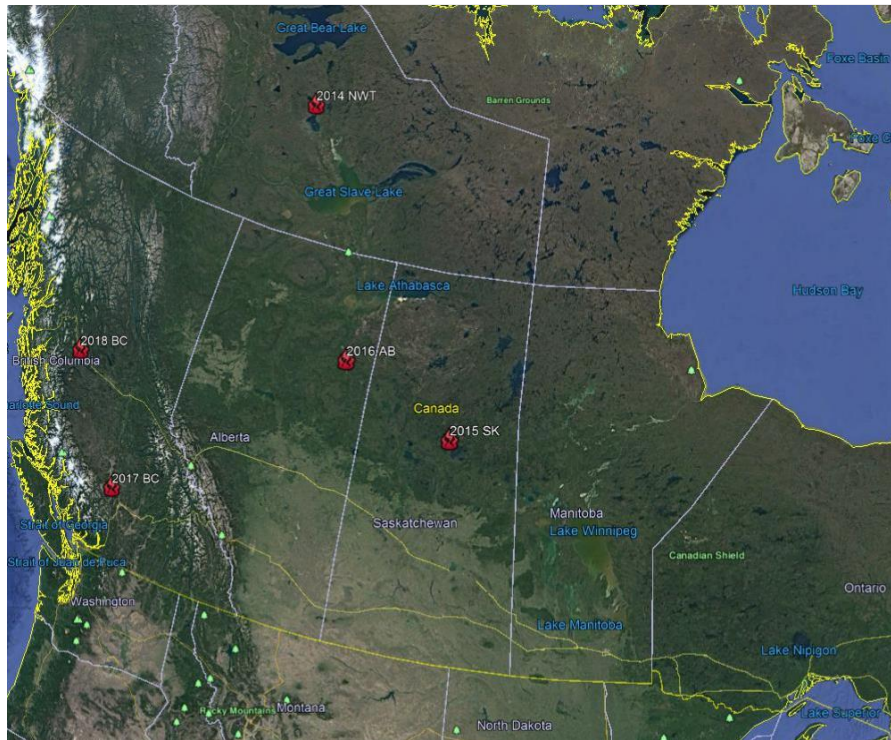


Going Forward: Wildfire Hazard to Wildfire Risk (II)

- Creating a database of values at risk that to help identify high-priority mitigation and suppression areas;
- Community-level cost benefit analysis of FireSmart activities;
- Impact of wildland fire on municipal water supplies
- Work on evacuation database to help understand the community costs and level of disruption due to wildland fire.
- A standard framework to estimate the full direct and indirect impacts of wildfire.



Understanding costs of wildfire events

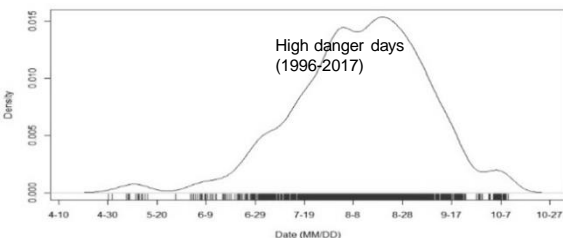
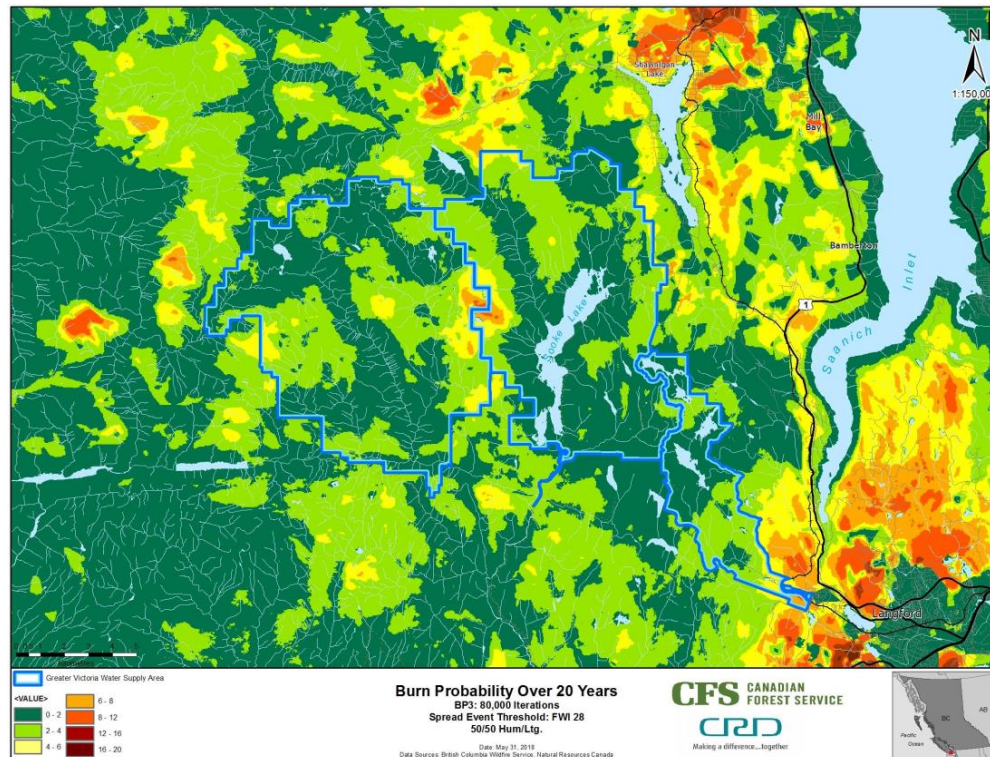


➤ Accounting for five recent and extreme wildfire events in Western Canada using ‘Best Available Science Information’

Fire Event	Year	Total Cost
Kakisa Fire, NWT	2014	\$0.09 B
La Ronge, SK	2015	\$0.19 B
Horse River, AB	2016	\$6.89 B
Interior Fires, BC	2017	\$1.83 B
Northwest Fires, BC	2018	\$1.04 B

Fire Risk Work – Victoria Watershed

- Greater Victoria Water Supply Area example
- Fire risk analysis for southern Vancouver Island (including GVWSA):
 - Fire season timing, recent escaped fires, burn probability analysis (Burn P3), fire severity
- Fuel types and fire behaviour highly uncertain for coastal forests; analysis glossed over highly variable overstory/understory structure
- Final map offers some value, but acknowledged weakness due to uncertain fit with FBP fuel types
- In possible future project, NG-FBP to be adapted into spatial BP model (NG-BP3?)
- How to estimate daily burn probability?



Source: Perrakis et al. In prep



Wildfire Scenarios – All Hazards Risk Assessment

- CFS researchers developed wildfire disaster scenarios at various magnitudes to assist the development of the All Hazards Risk Assessment (AHRA) approach and in testing risk assessment methodologies at the upcoming virtual workshops.
- These scenarios included fire growth maps that will enable a realistic and robust cross-government conversation on the core capabilities of the various levels of government.