

# Understanding Wildfire Exposure: Landscapes and Values

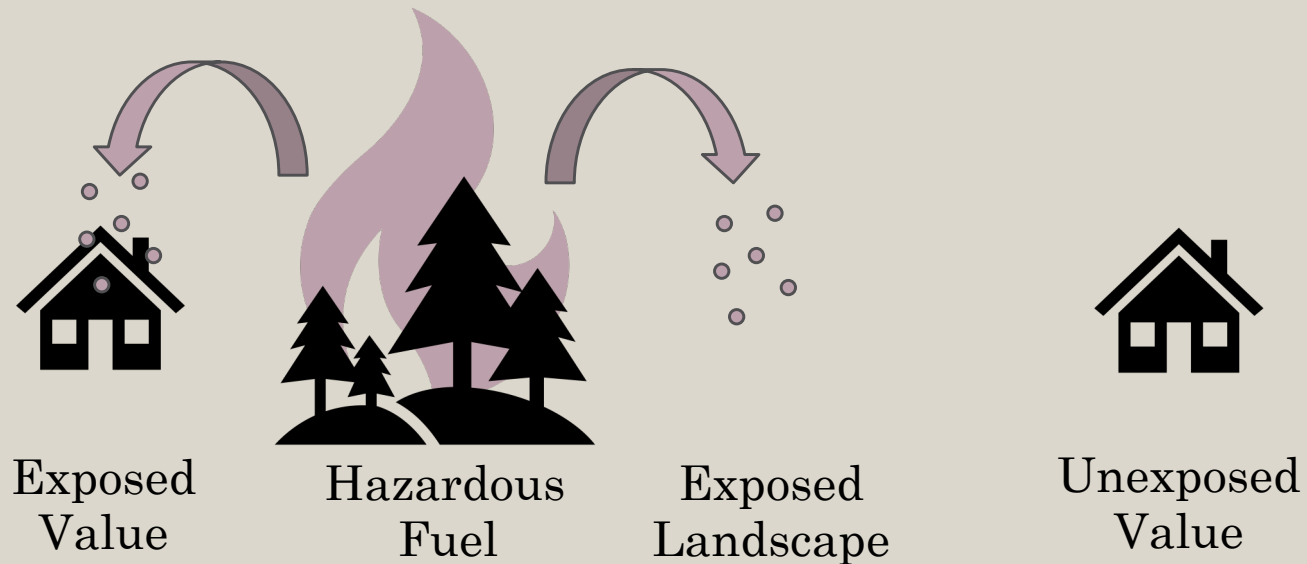
Air Forbes | PhD Candidate



WILDFIRE ANALYTICS

# What is wildfire exposure?

- A method to assess surrounding hazard
- Adds additional context to fuel data



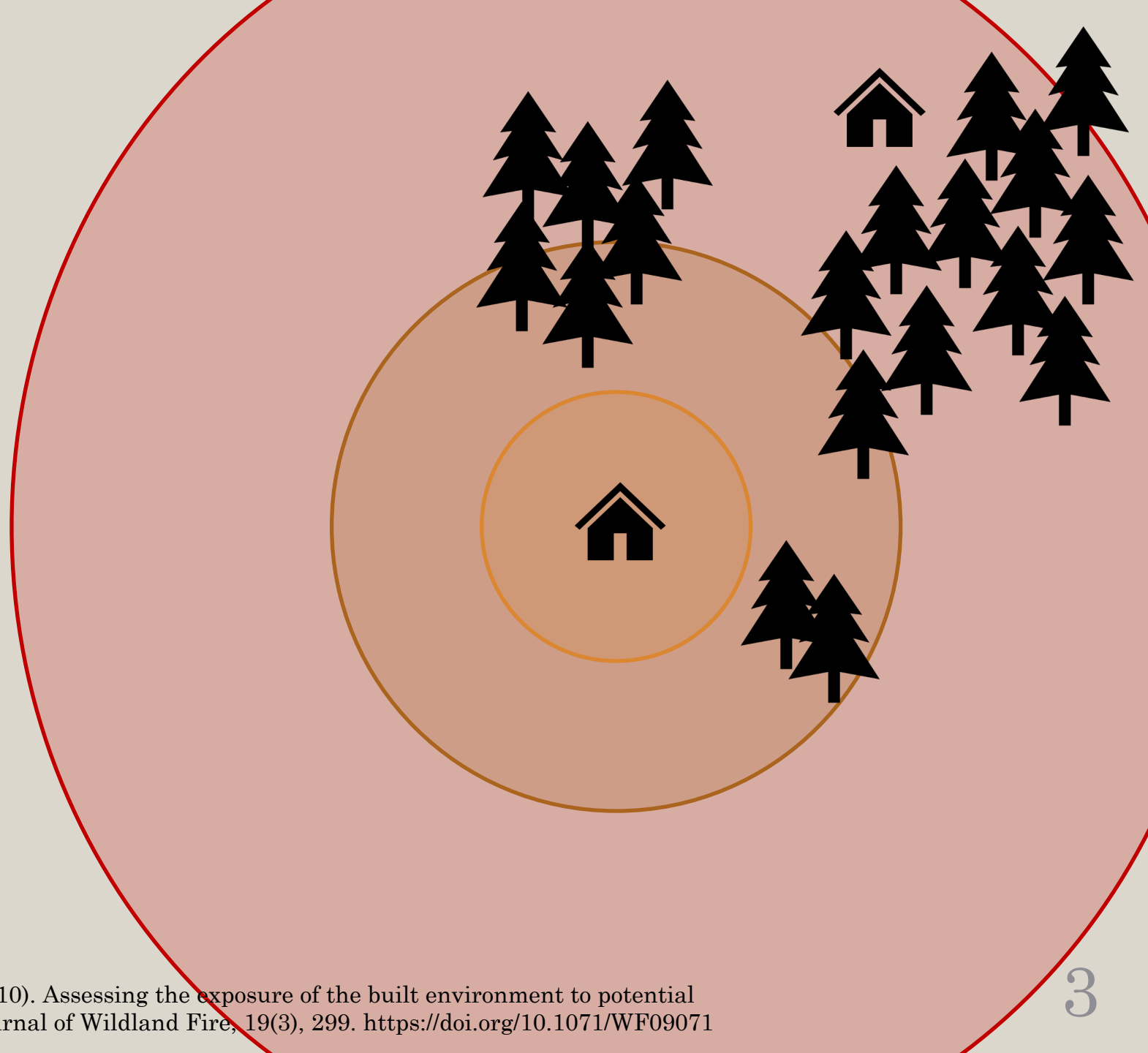
Available online from FireSmart Canada

# Exposure transmission distances

Radiant Heat (30 meters)

Short Range Embers (100 meters)

Long Range Embers (500 meters)

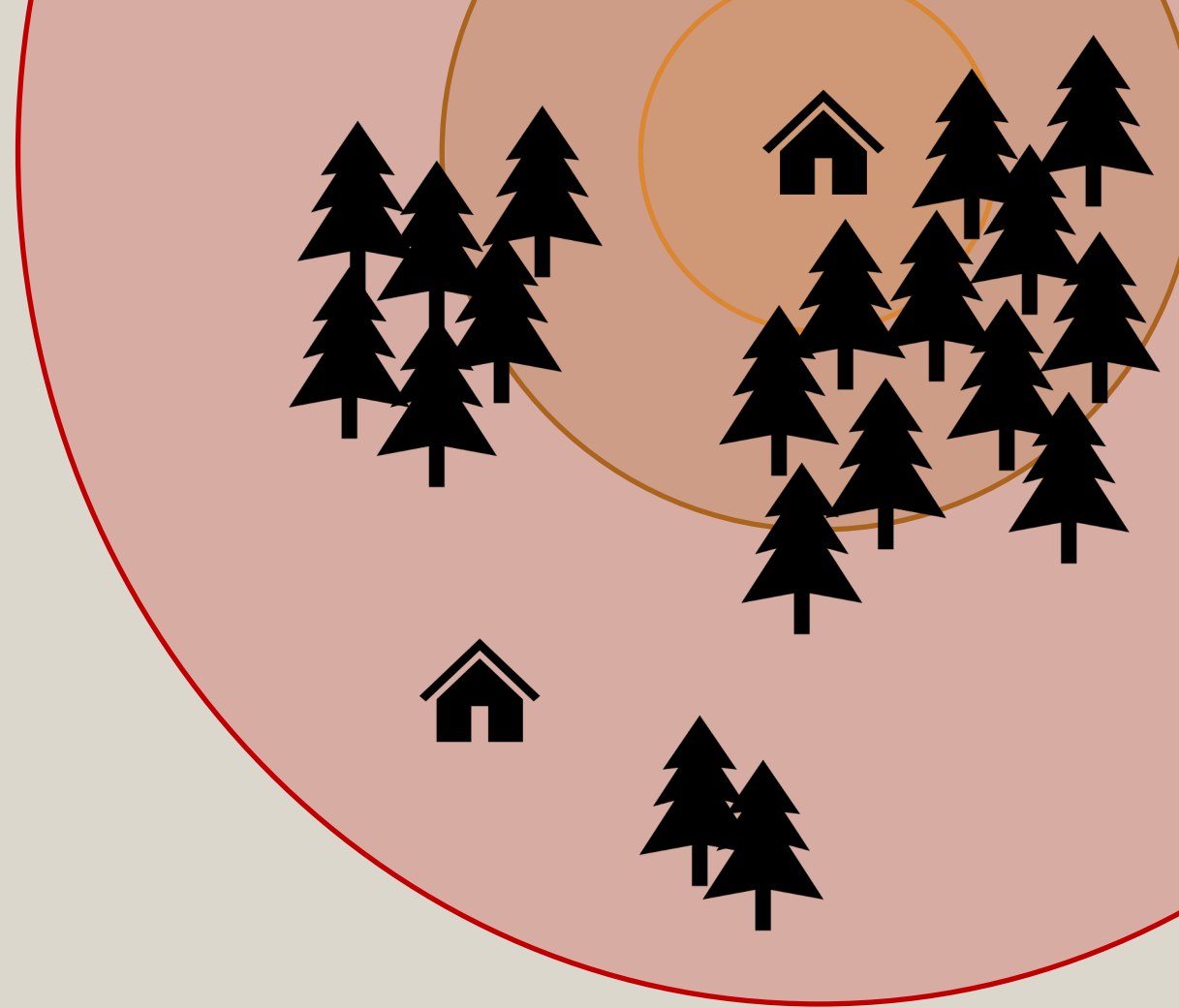


# Exposure transmission distances

Radiant Heat (30 meters)

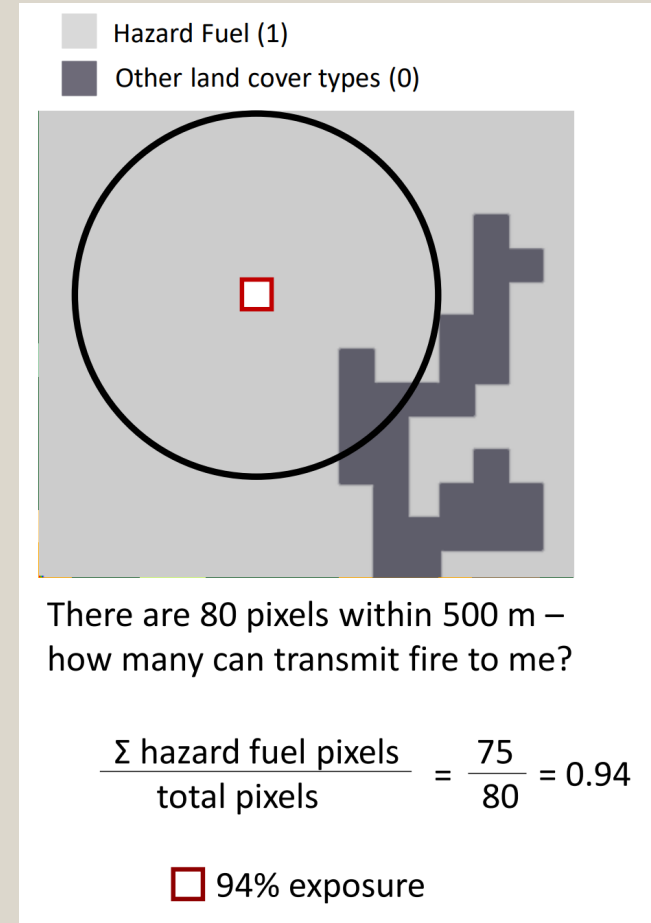
Short Range Embers (100 meters)

Long Range Embers (500 meters)



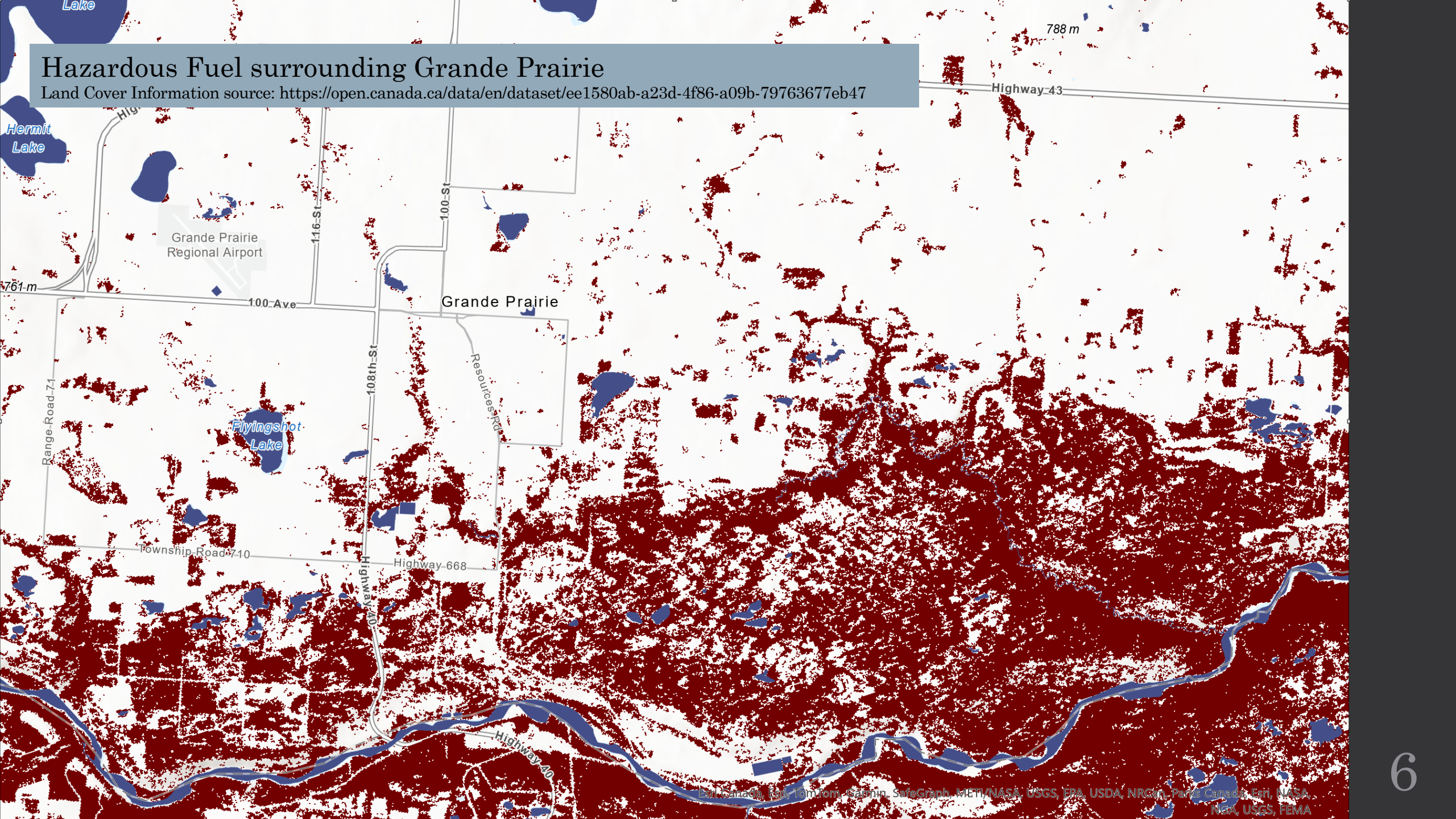
# Landscape fire exposure

“A numeric rating of the potential for fire transmission to a location given surrounding fuel composition and configuration, irrespective of weather or other fire controls.”



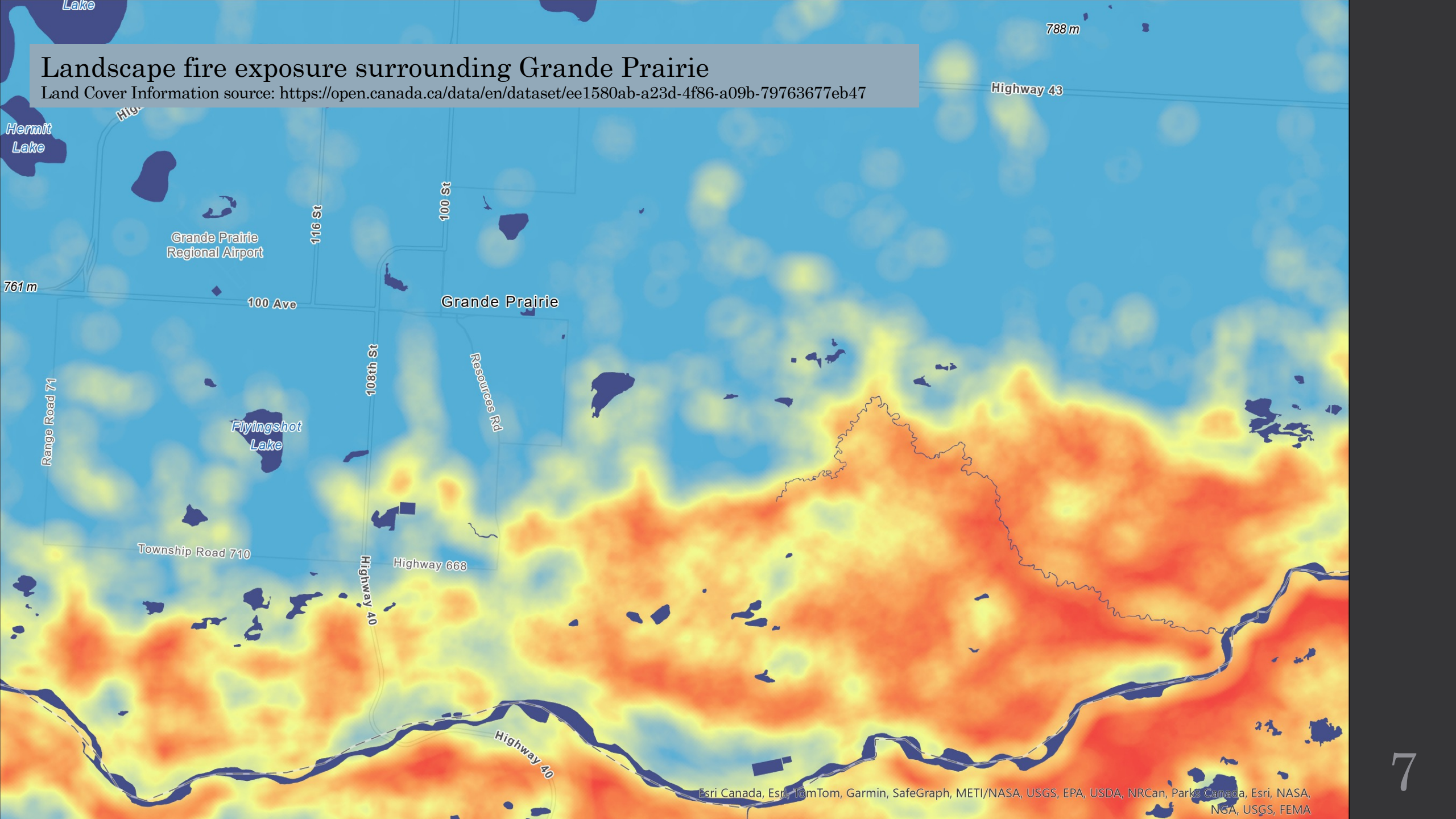
# Hazardous Fuel surrounding Grande Prairie

Land Cover Information source: <https://open.canada.ca/data/en/dataset/ee1580ab-a23d-4f86-a09b-79763677eb47>

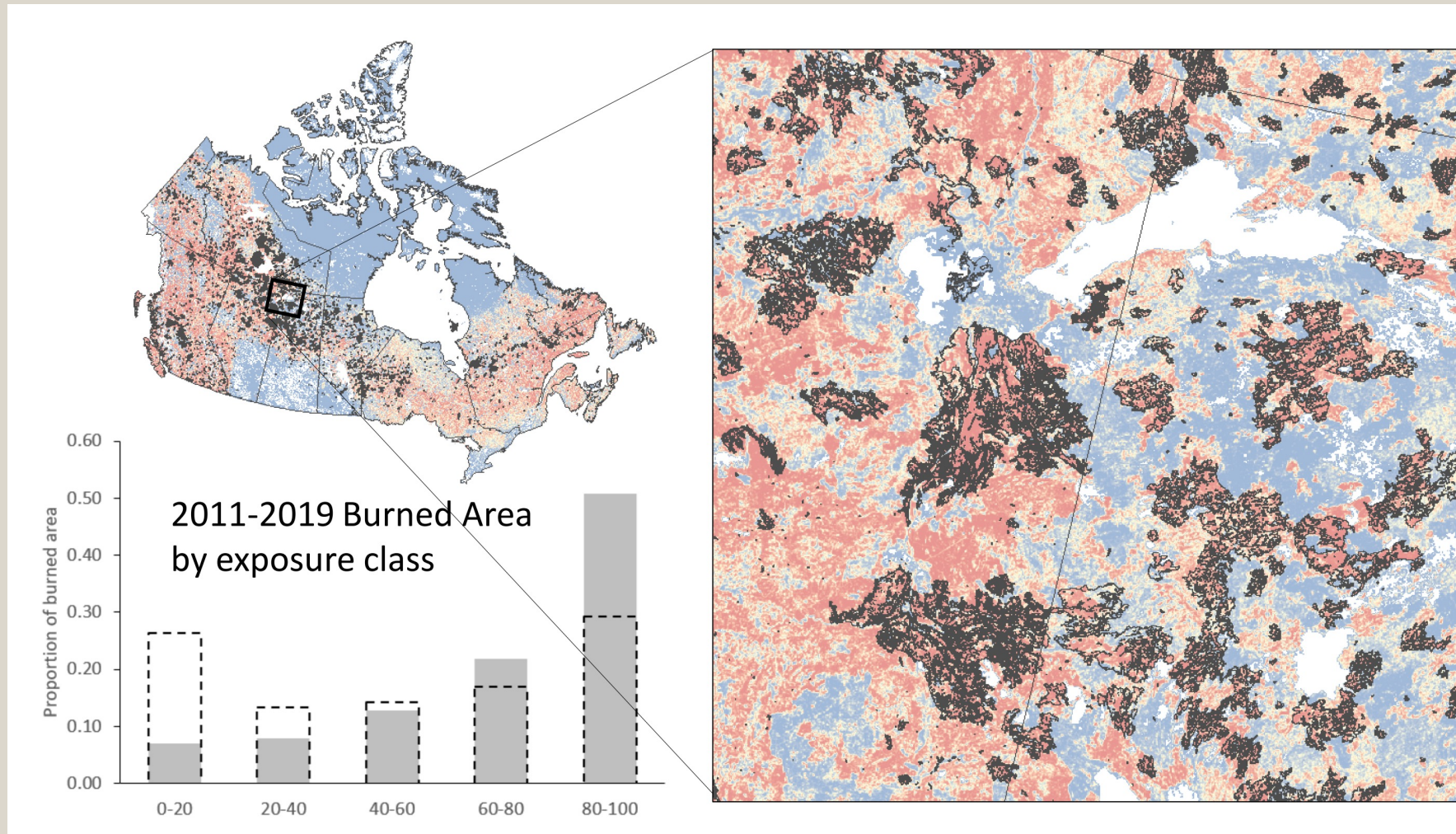


# Landscape fire exposure surrounding Grande Prairie

Land Cover Information source: <https://open.canada.ca/data/en/dataset/ee1580ab-a23d-4f86-a09b-79763677eb47>



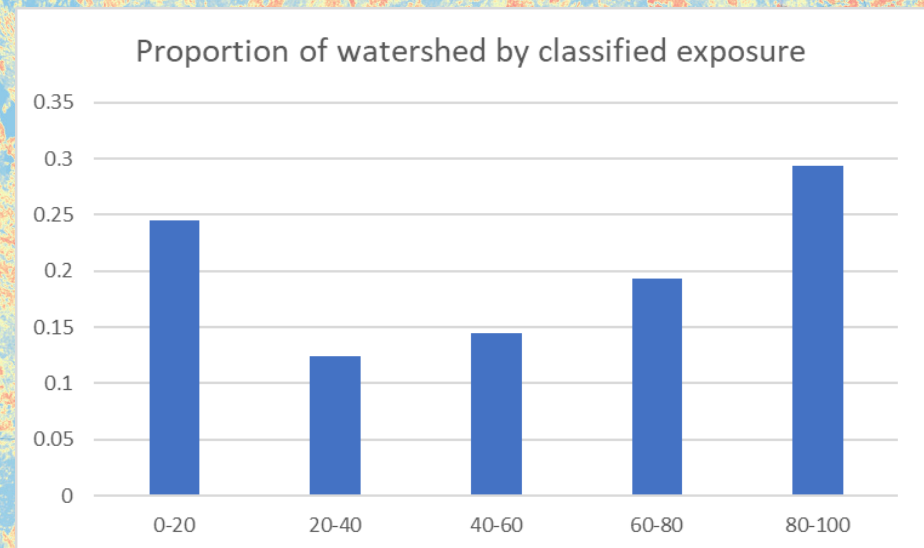
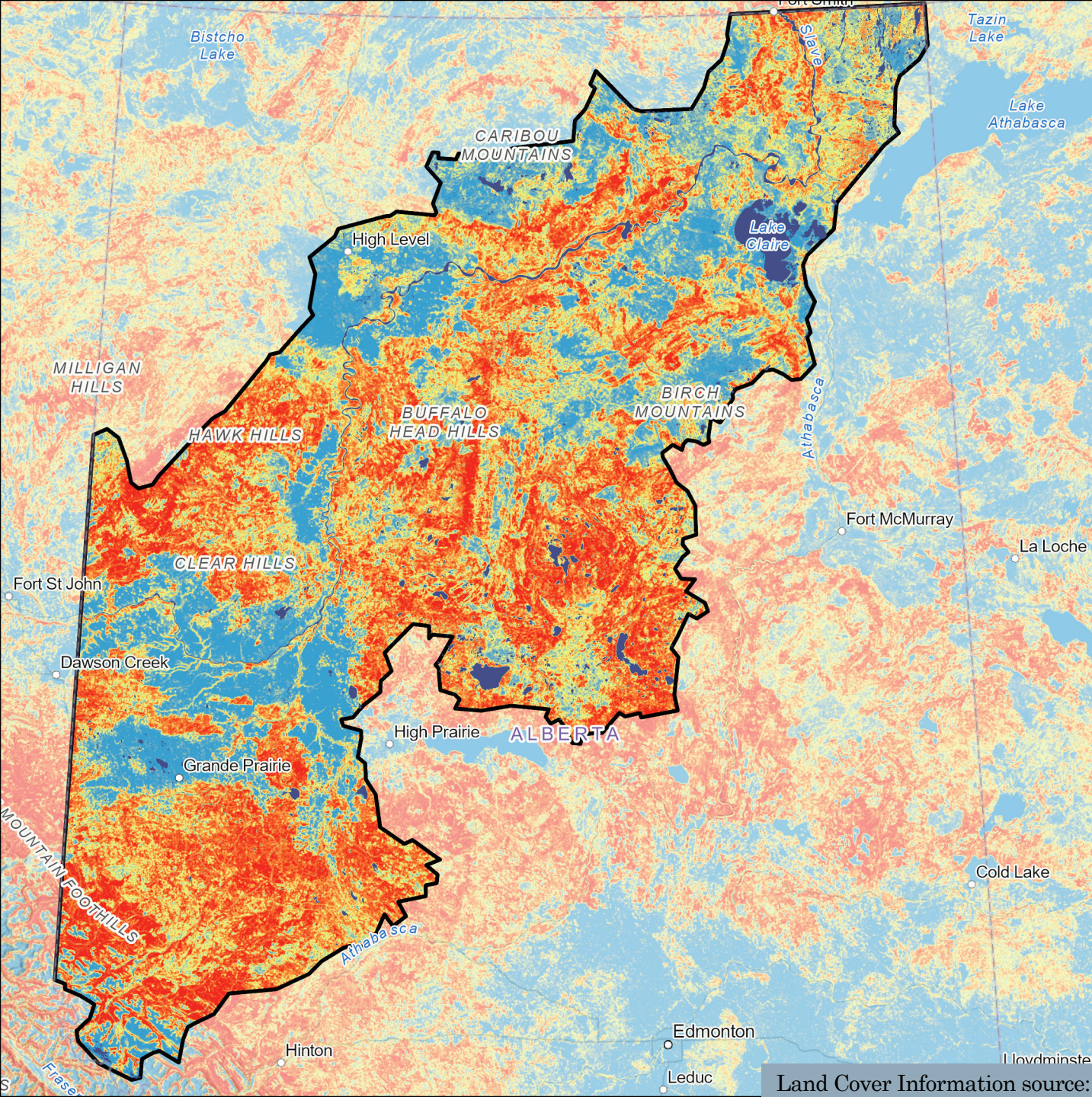
# Landscape fire exposure



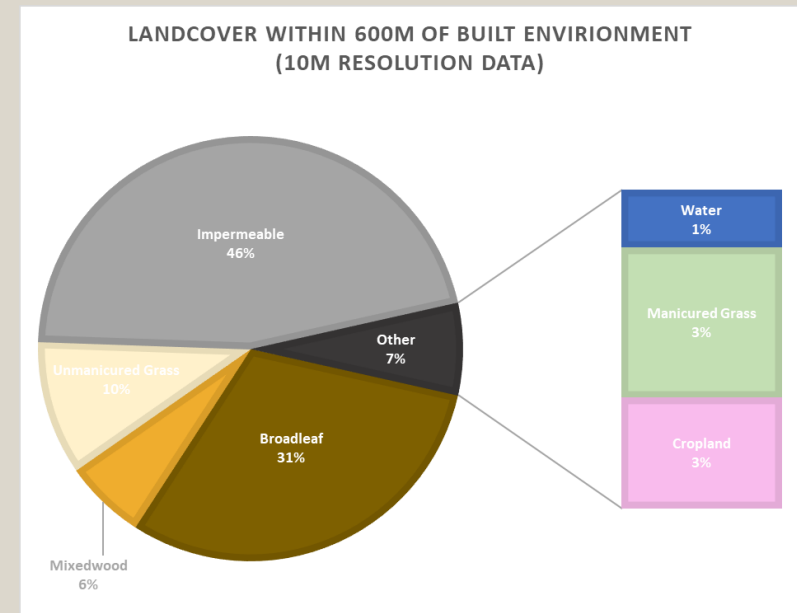
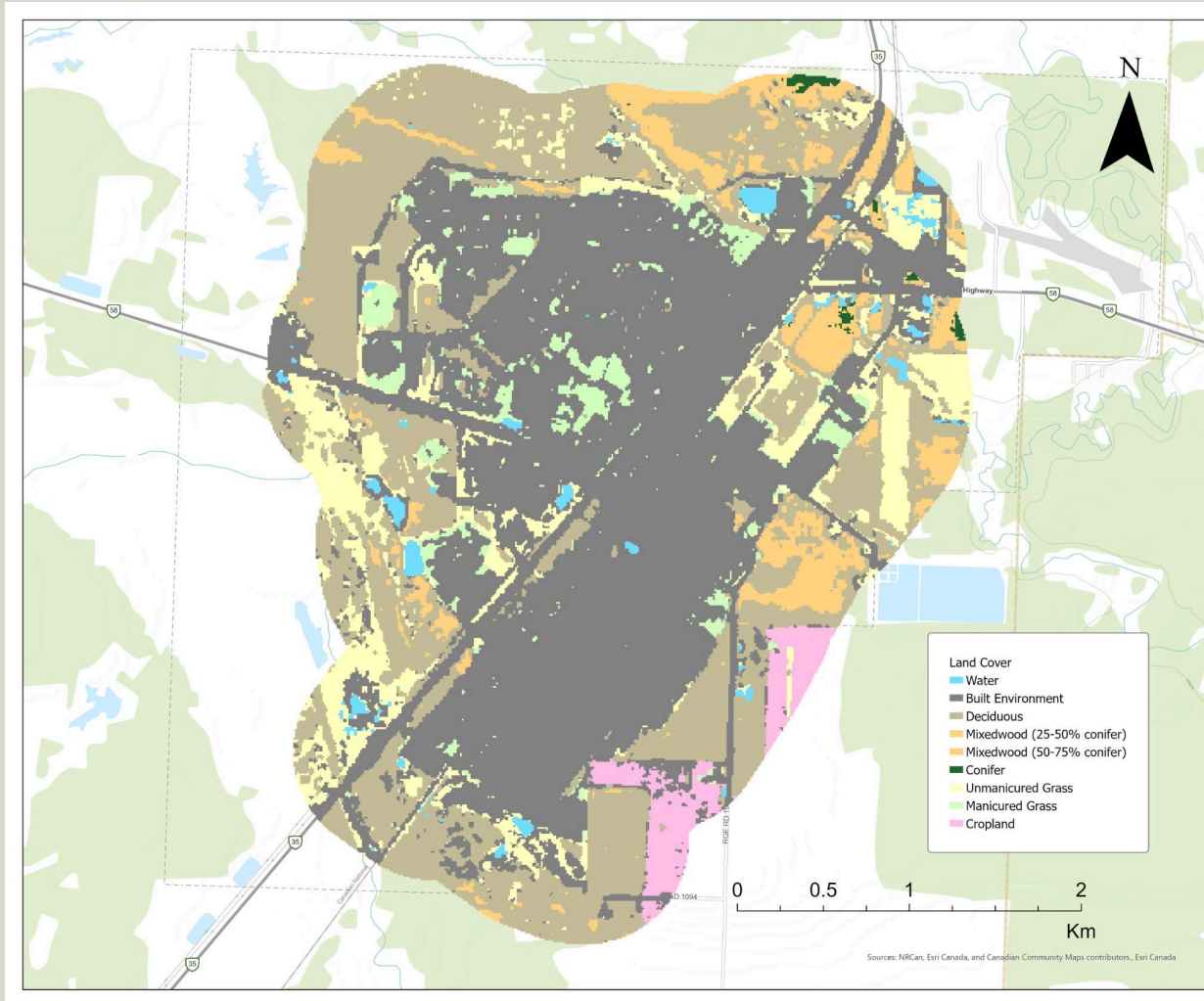
Methods from: Beverly, J. L., McLoughlin, N., & Chapman, E. (2021). A simple metric of landscape fire exposure. *Landscape Ecology*, 36(3), 785–801. <https://doi.org/10.1007/s10980-020-01173-8>  
(national scale paper in review)



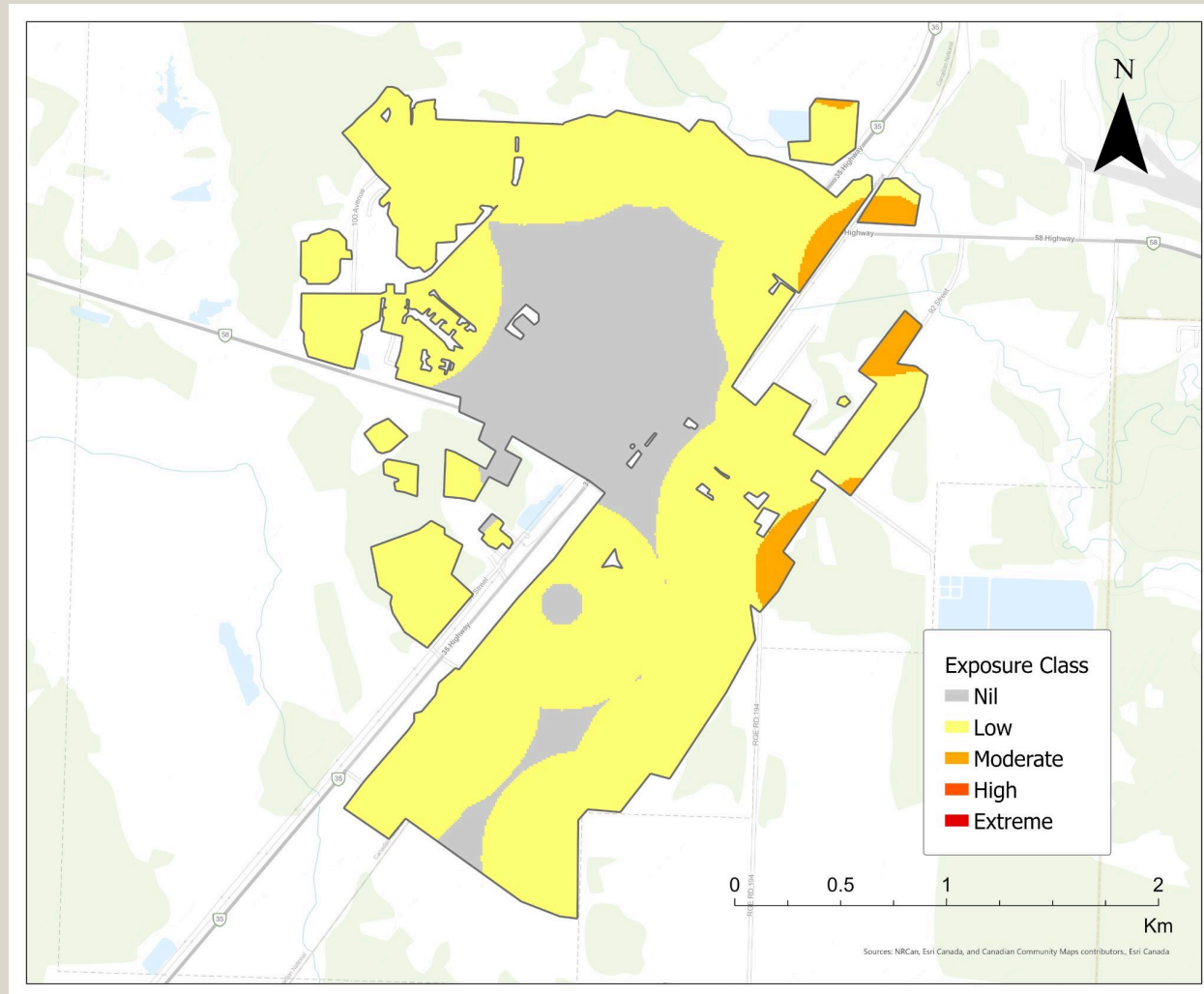
# Landscape fire exposure in the Mighty Peace Watershed (2020)



# Exposure to values



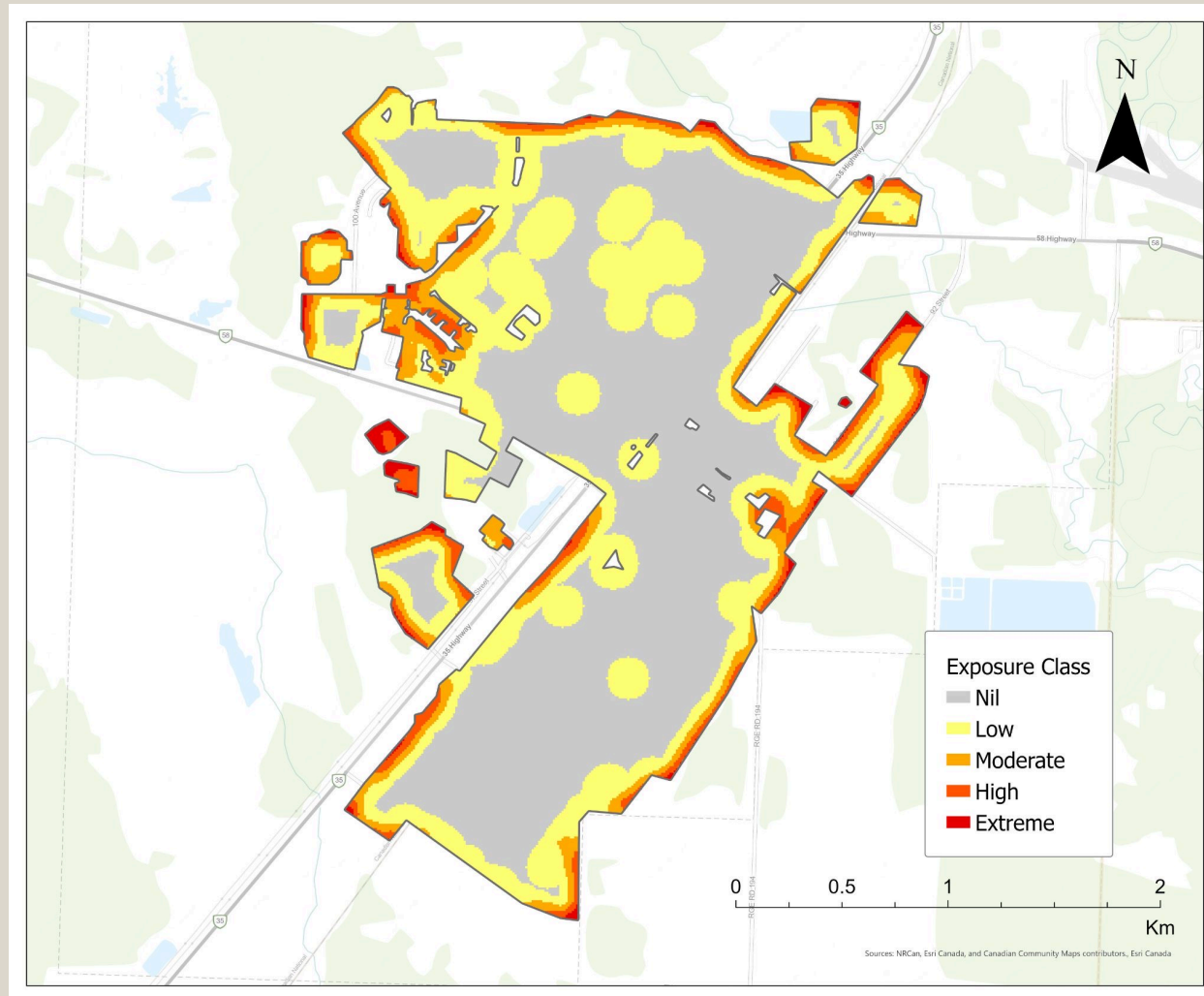
# Exposure to values



Where can fire enter the built environment from the landscape?

Areas exposed to entry by long-range ember spotting (500 m transmission distance)

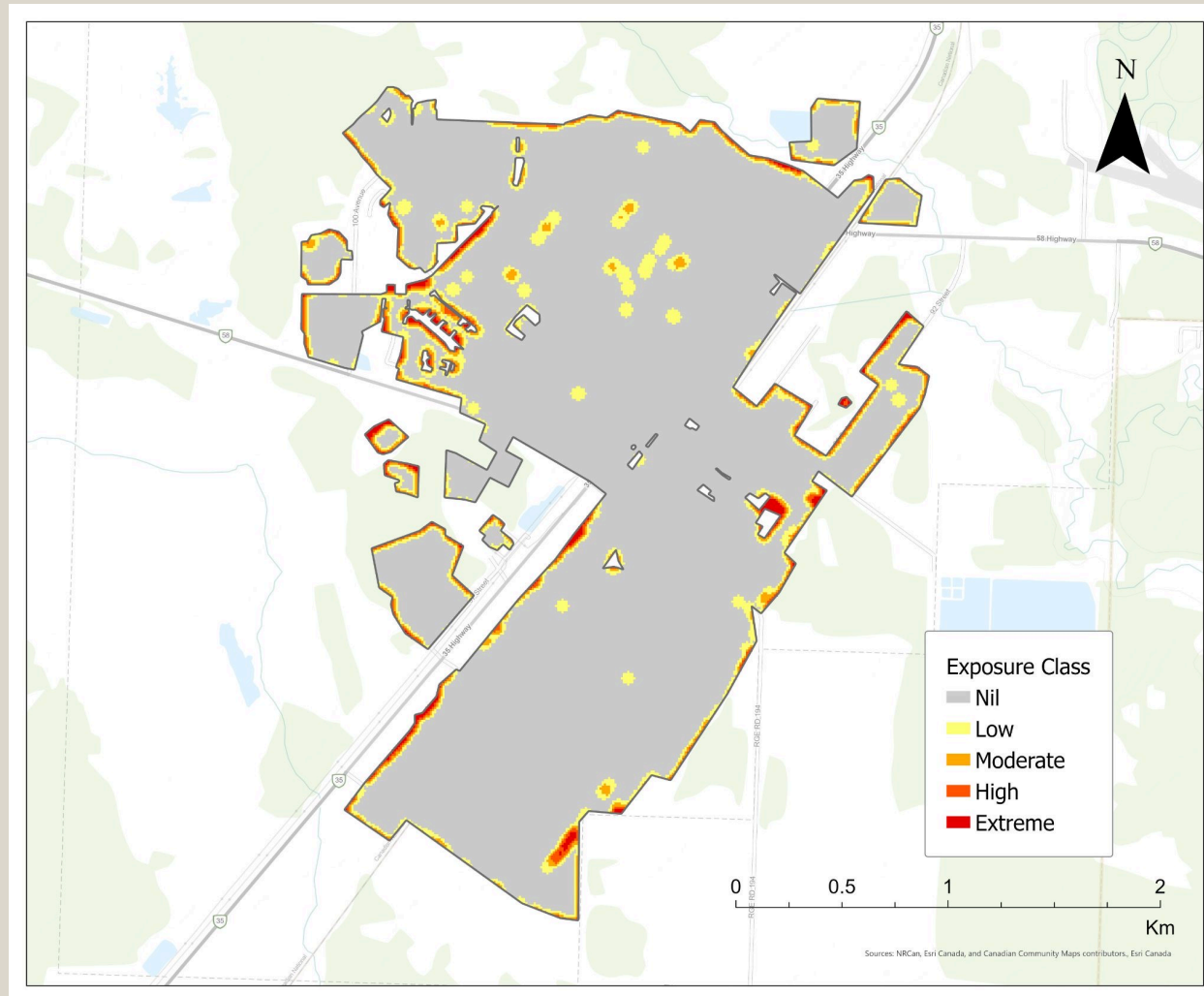
# Exposure to values



Where can fire enter the built environment from the landscape?

Areas exposed to entry by short-range ember spotting (100 m transmission distance)

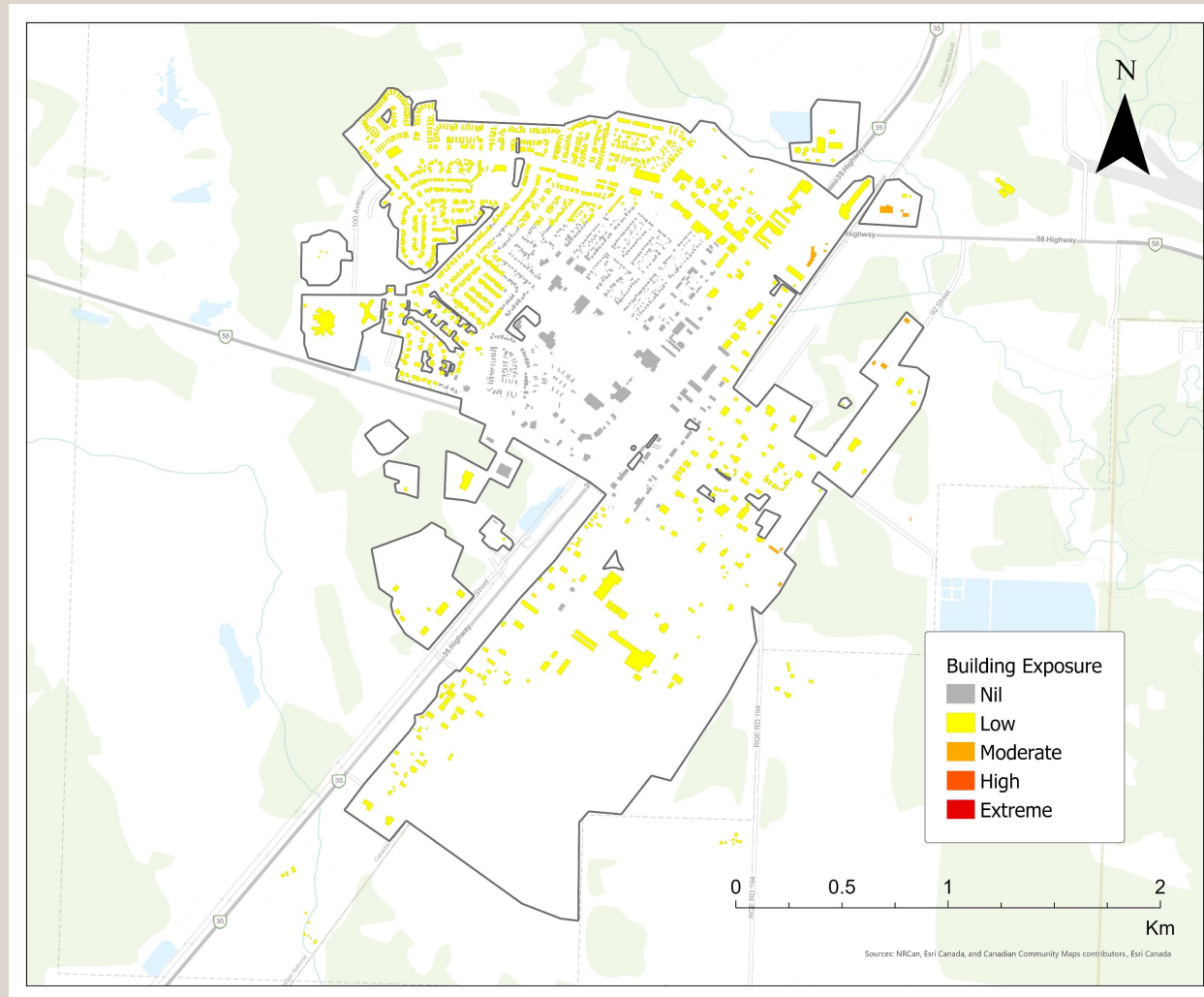
# Exposure to values



Where can fire enter the built environment from the landscape?

Areas exposed to entry by radiant heat transmission (30 m transmission distance)

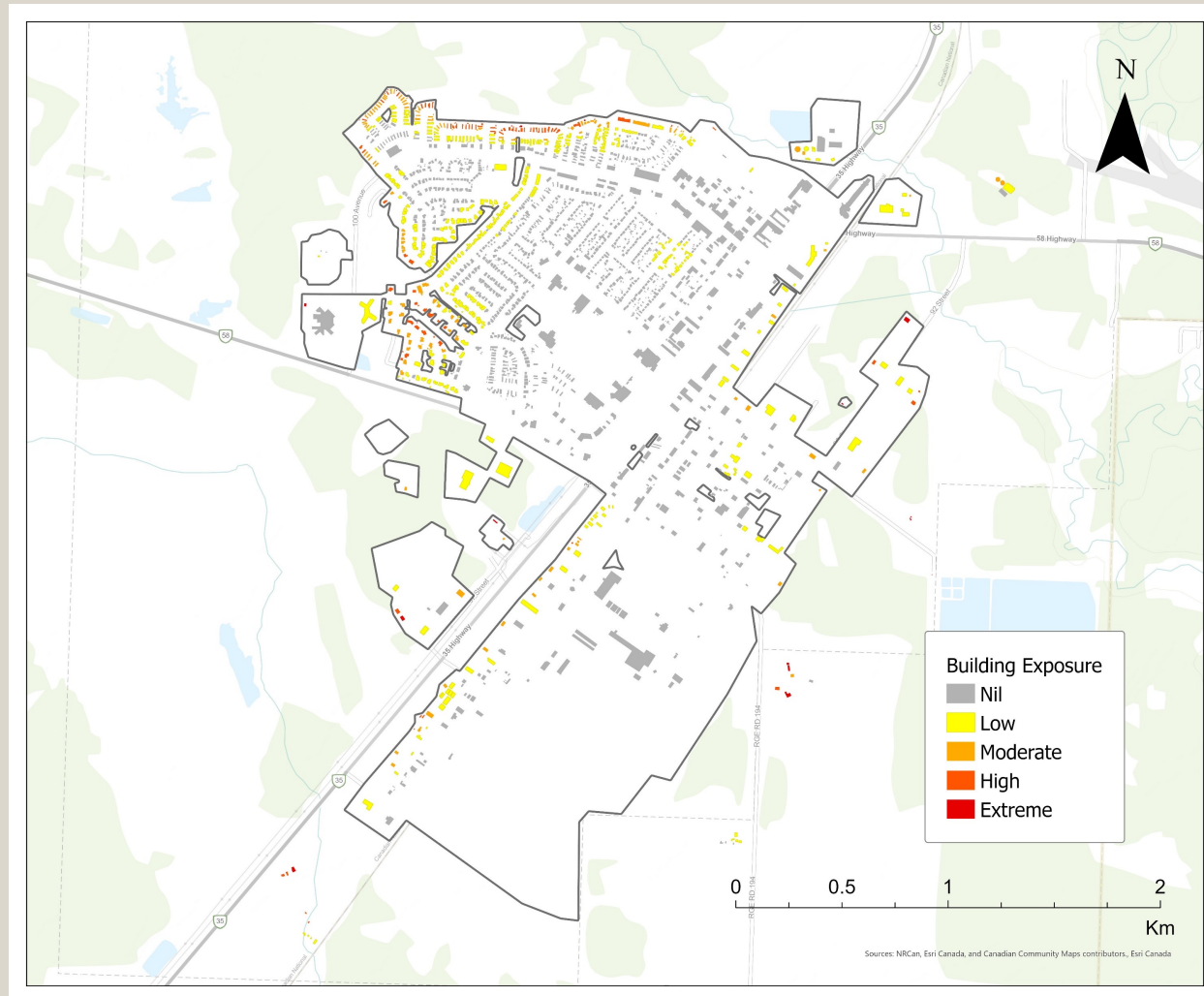
# Exposure to values



Where can fire enter the built environment from the landscape?

**Structures** exposed to entry by long-range ember spotting (500 m transmission distance)

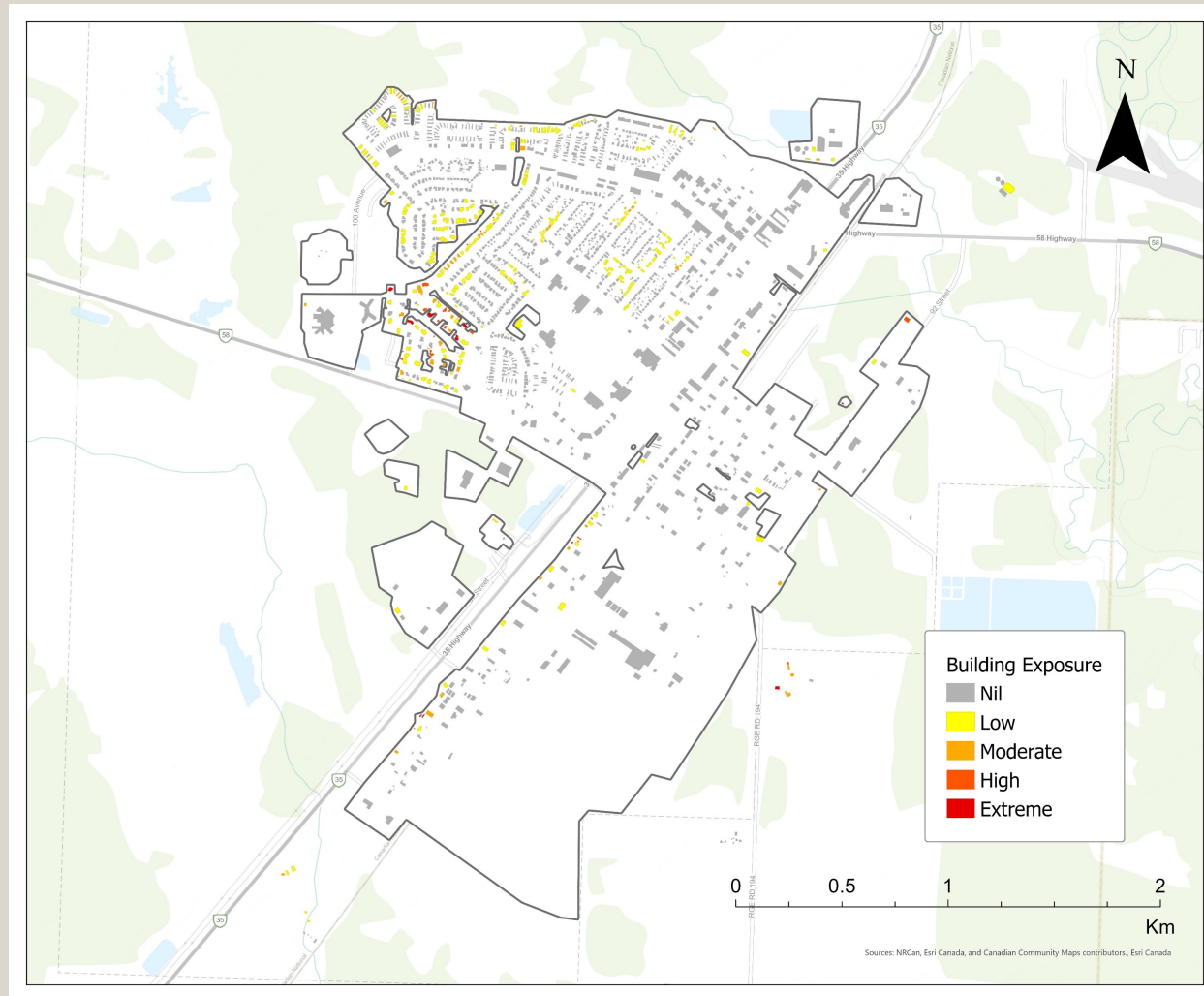
# Exposure to values



Where can fire enter the built environment from the landscape?

**Structures** exposed to entry by short-range ember spotting (100 m transmission distance)

# Exposure to values



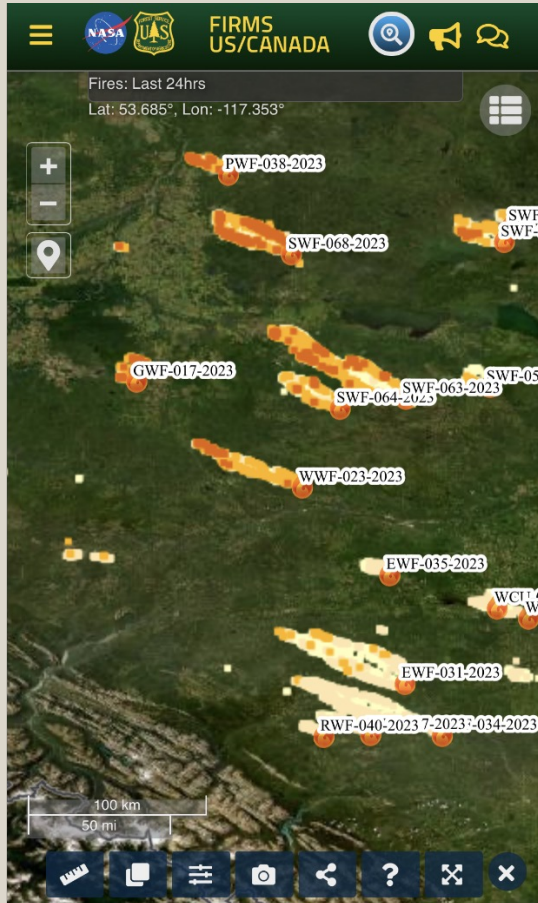
Where can fire enter the built environment from the landscape?

**Structures** exposed to entry by radiant heat transmission (30 m transmission distance)



# Directional exposure to values

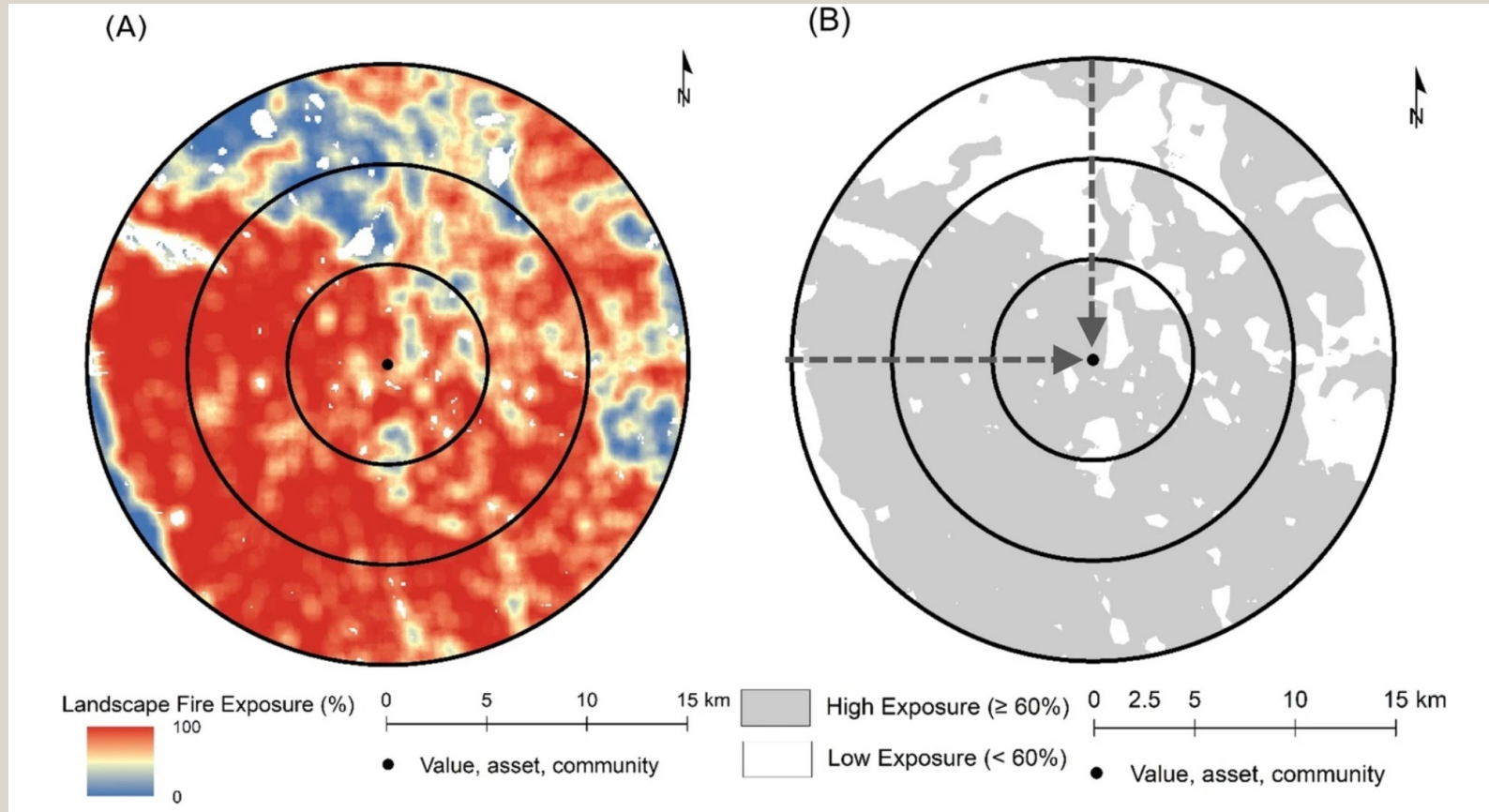
Screenshot taken May 7, 2023



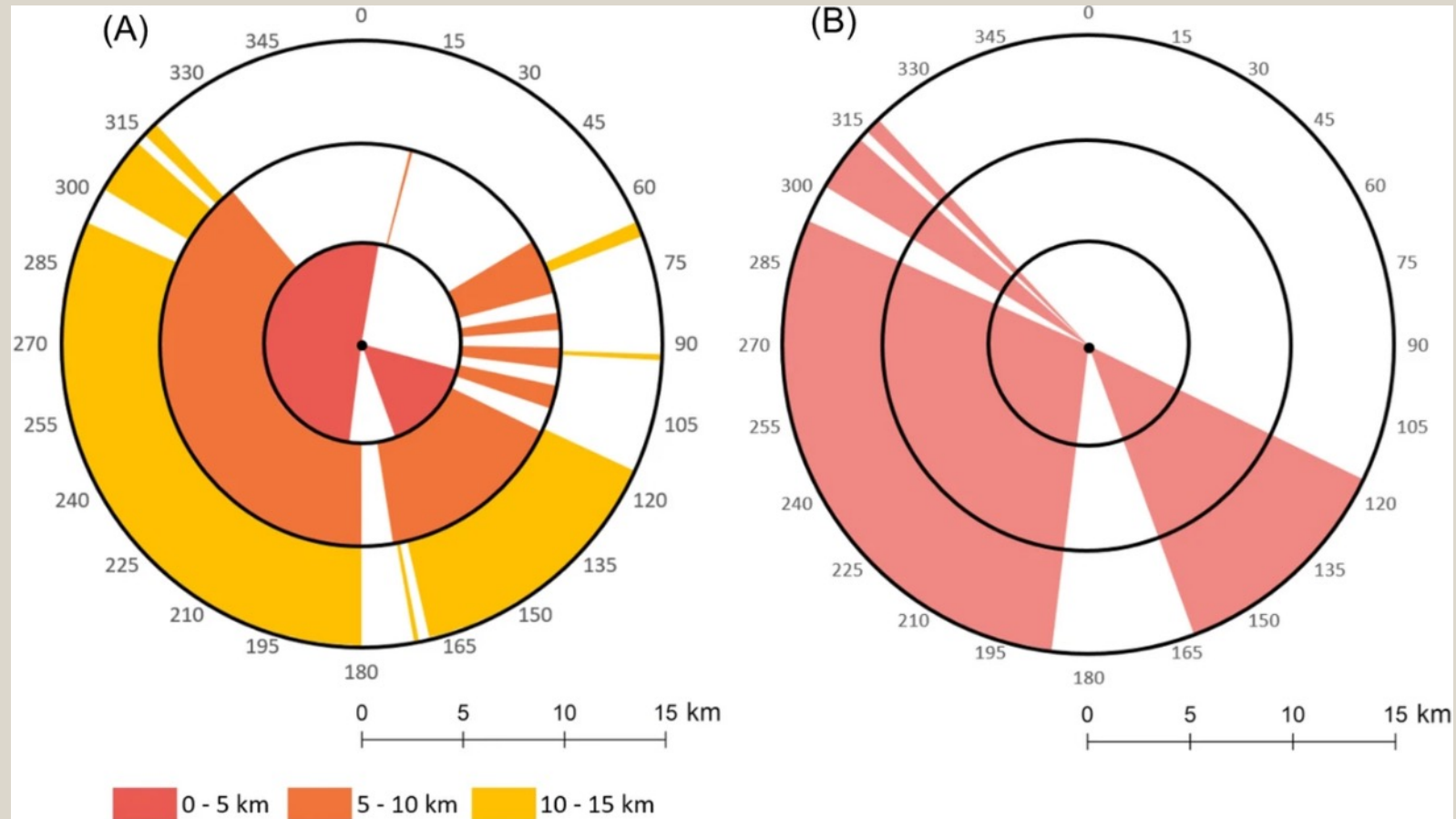
Is this pathway exposed?

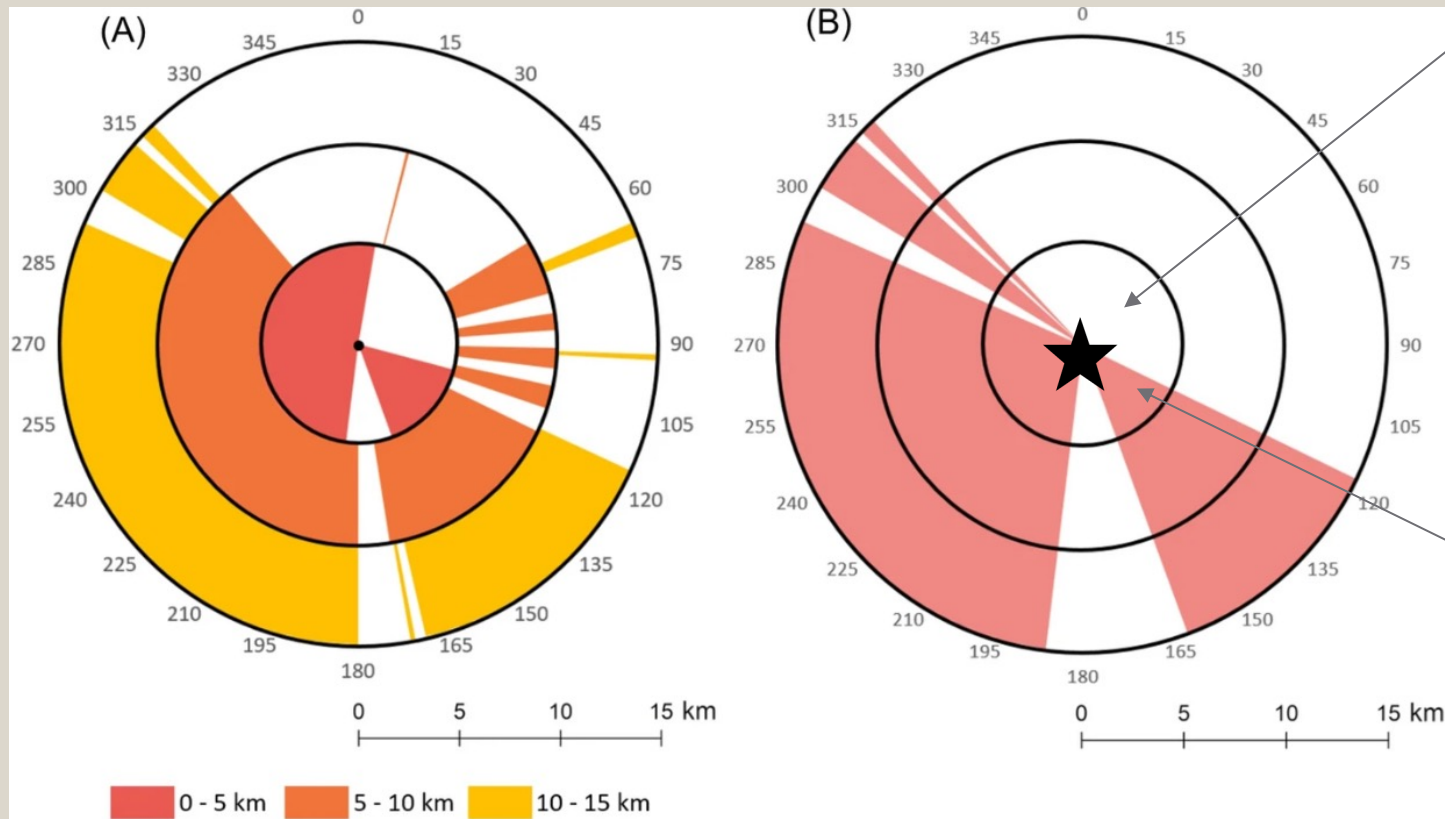


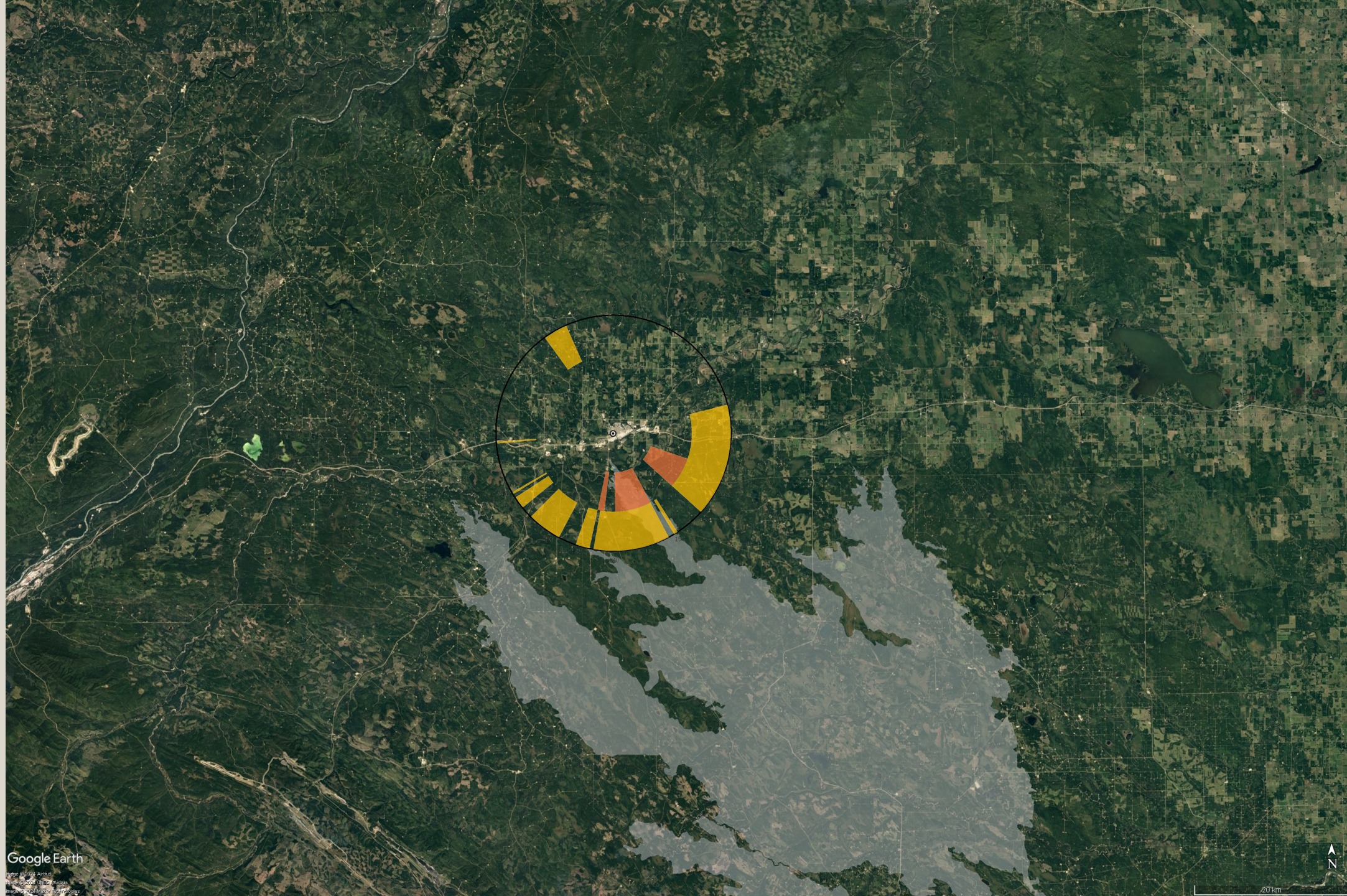
# Directional exposure to values



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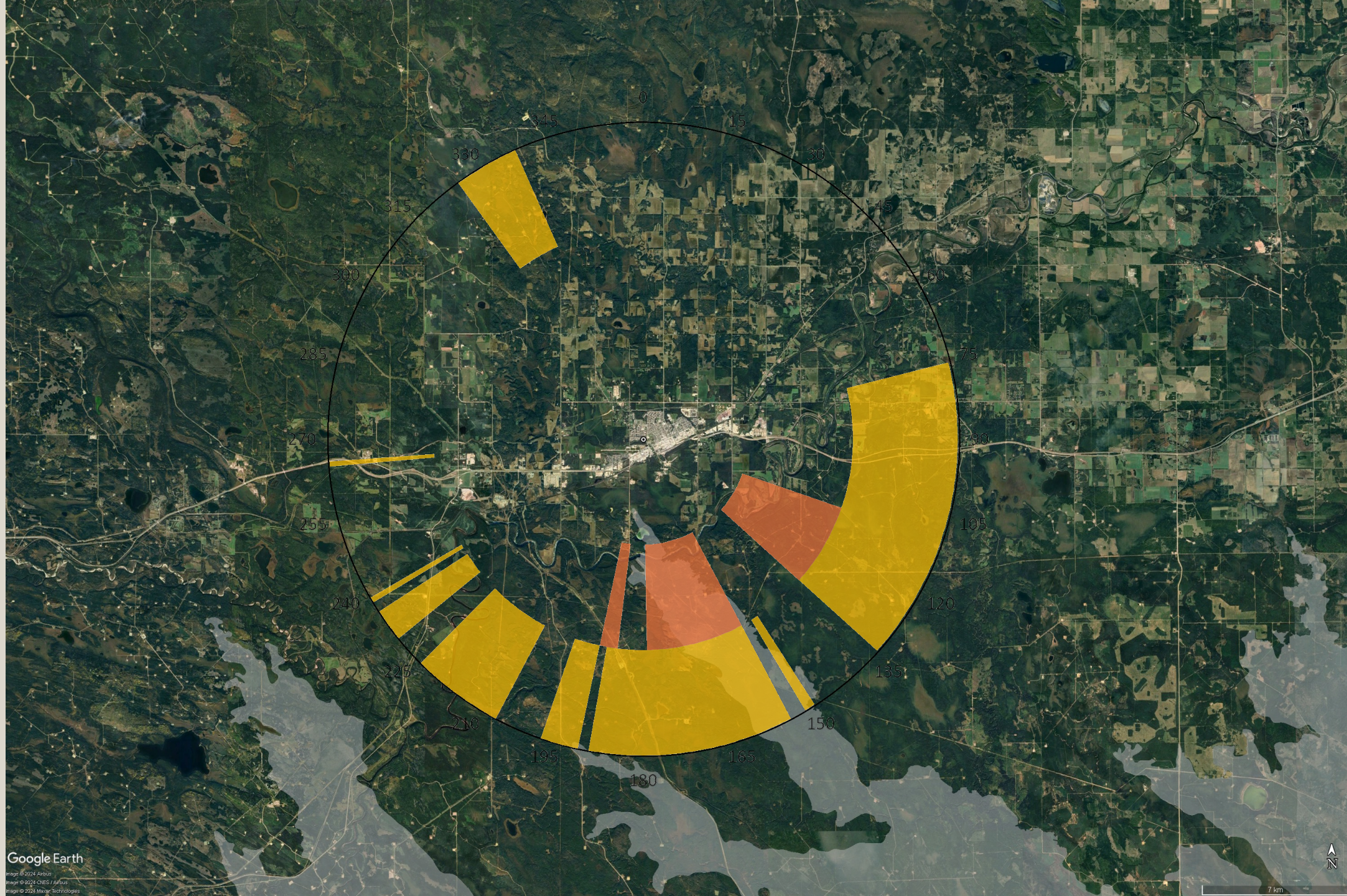






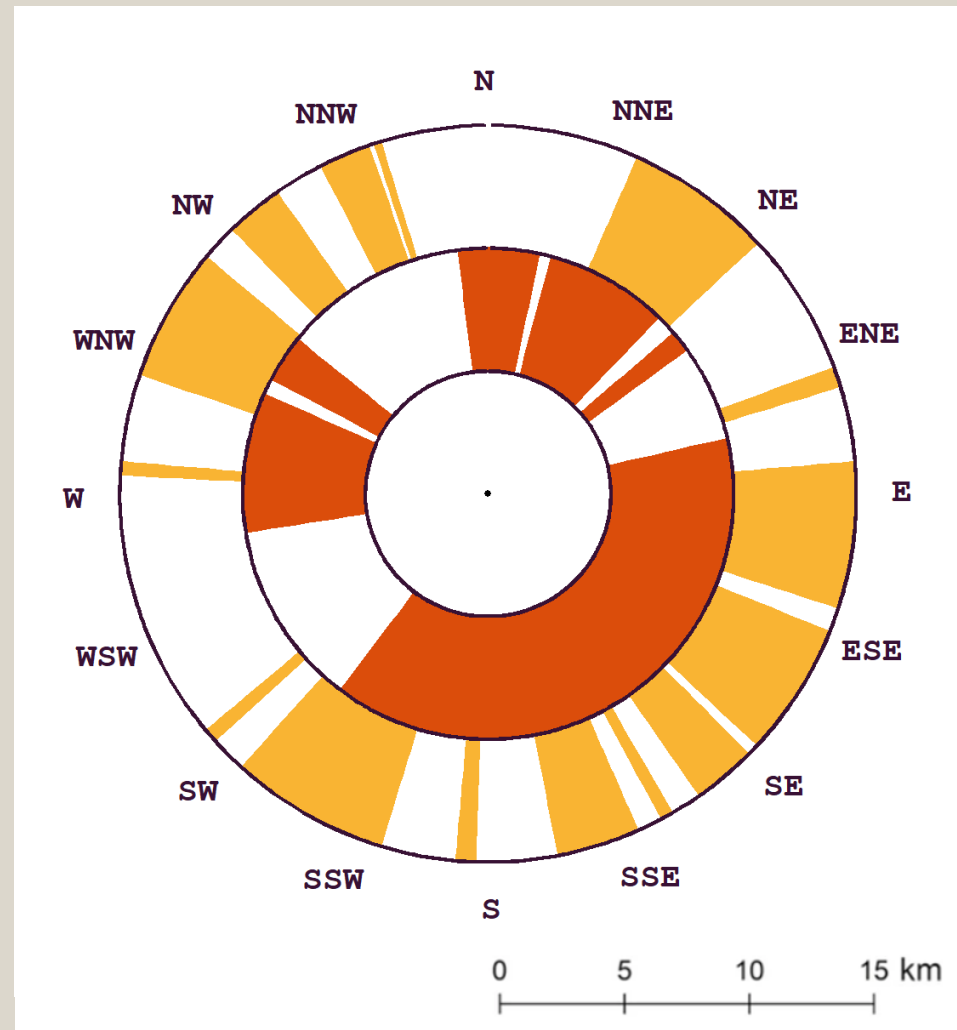
Google Earth

Image © 2023 Airbus  
Map data © 2023 Google  
Imagery © 2023 Maxar, GeoEye, etc.

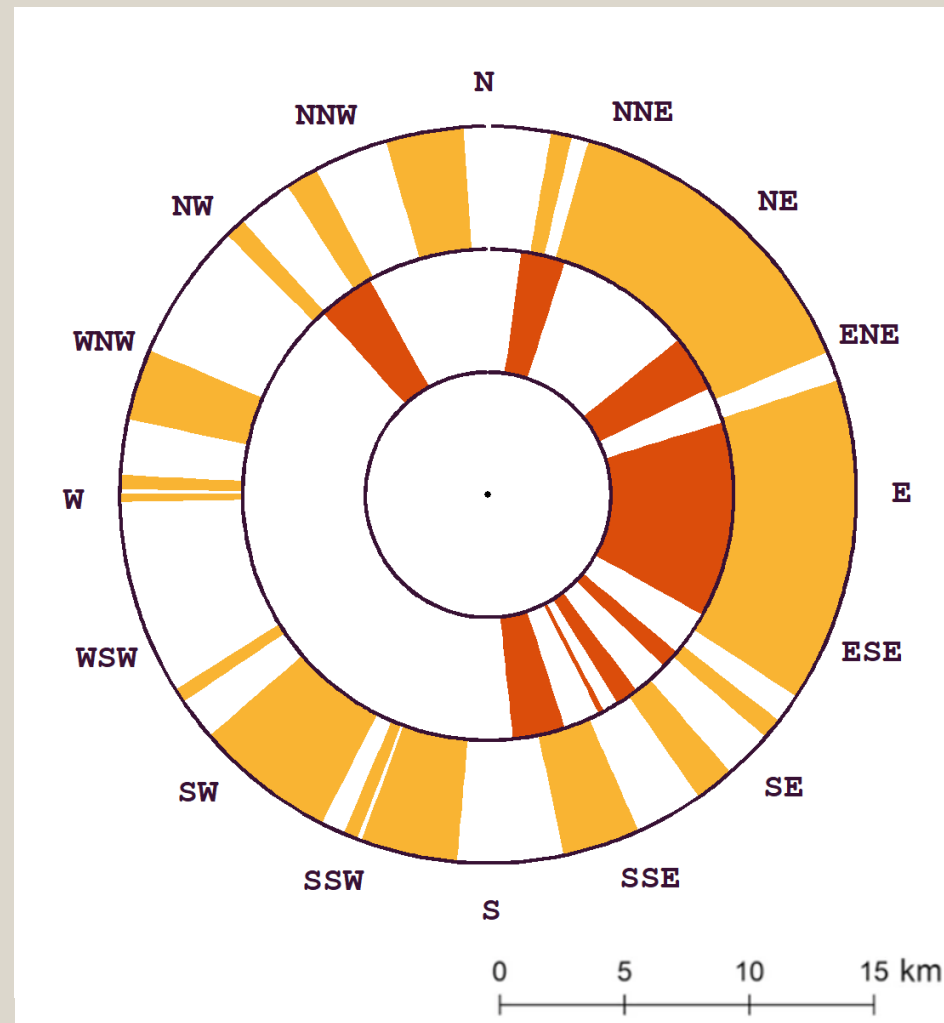


Methods: Beverly, J. L., & Forbes, A. M. (2023). Assessing directional vulnerability to wildfire. *Natural Hazards*, 117(1), 831–849. <https://doi.org/10.1007/s11069-023-05885-3>

# Grande Cache



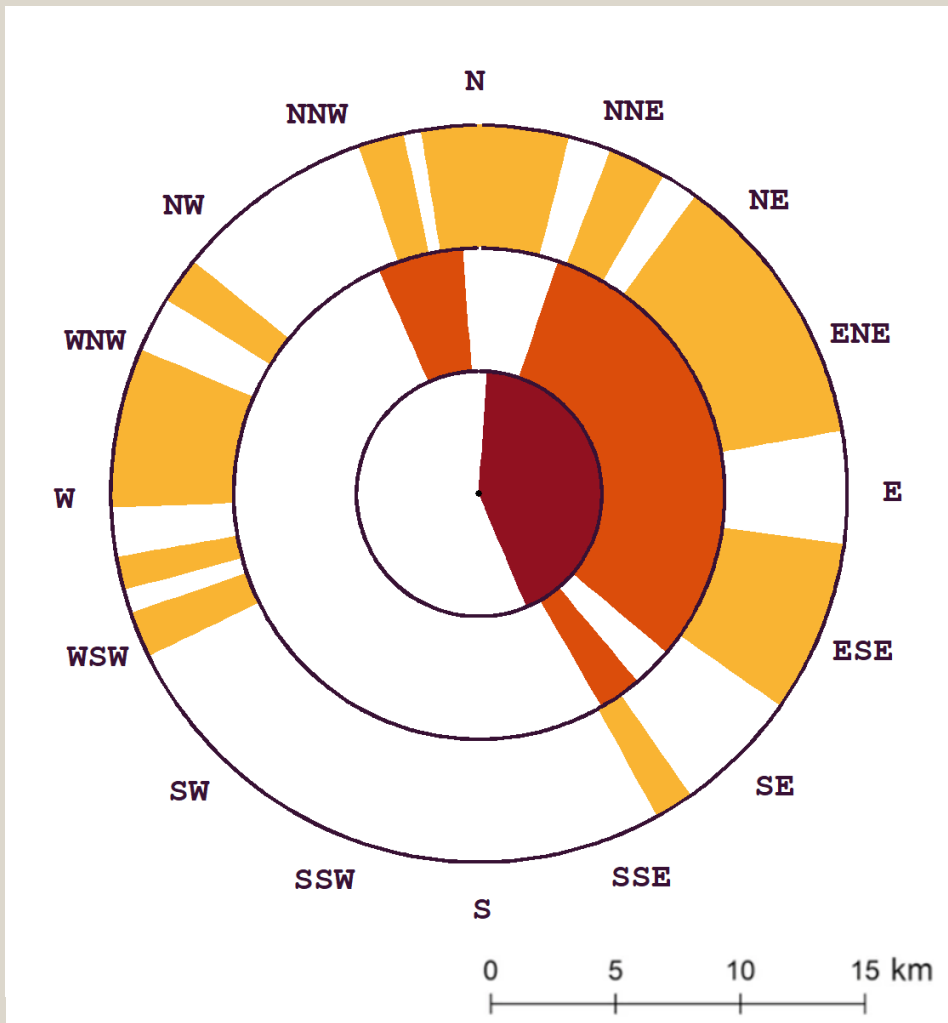
# Fox Creek





Methods: Beverly, J. L., & Forbes, A. M. (2023). Assessing directional vulnerability to wildfire. *Natural Hazards*, 117(1), 831–849. <https://doi.org/10.1007/s11069-023-05885-3>

# Peerless Lake



# Thank you!

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