

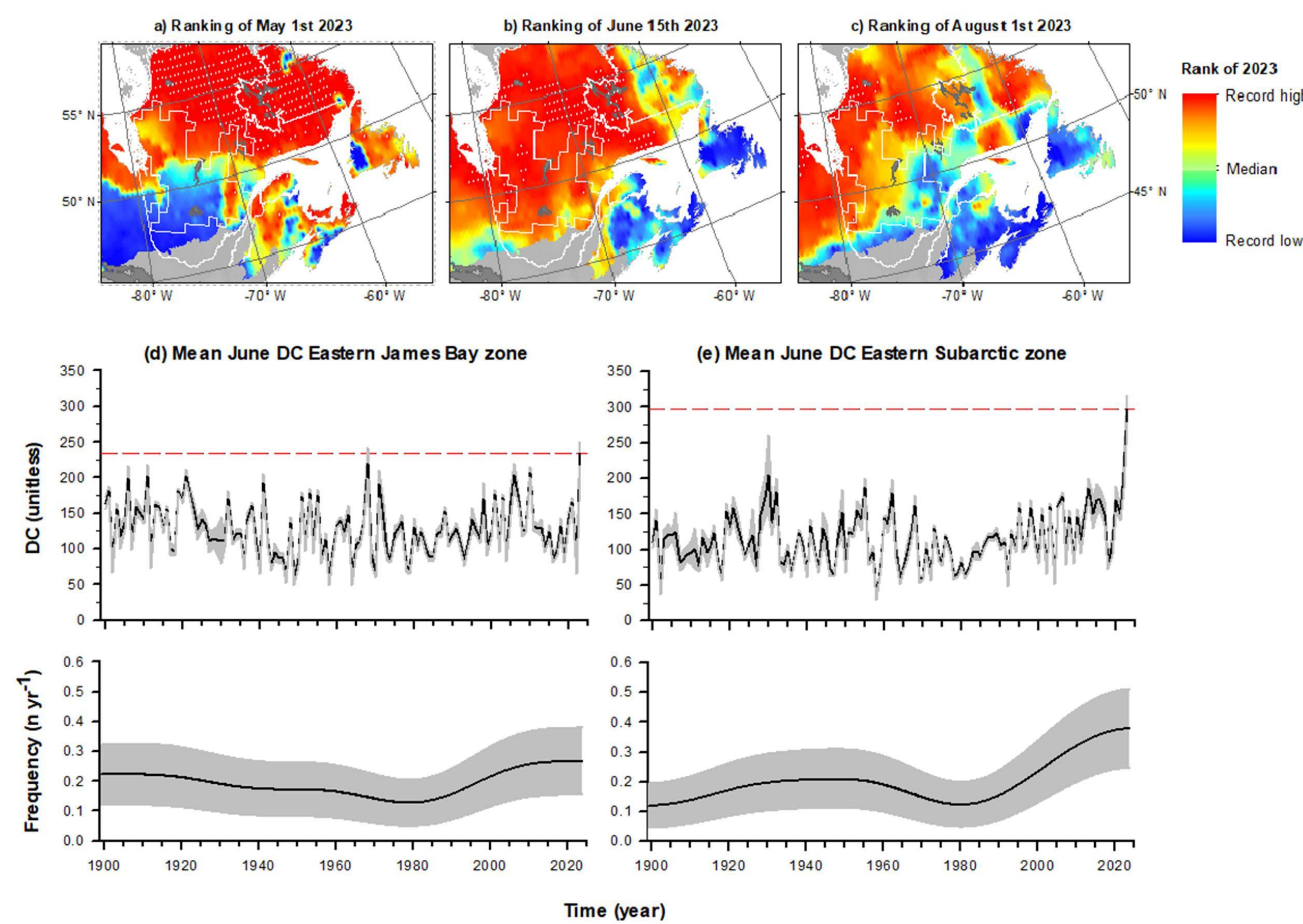
# 2023 Wildfires in Canada: The Causes and Impact

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## Introduction

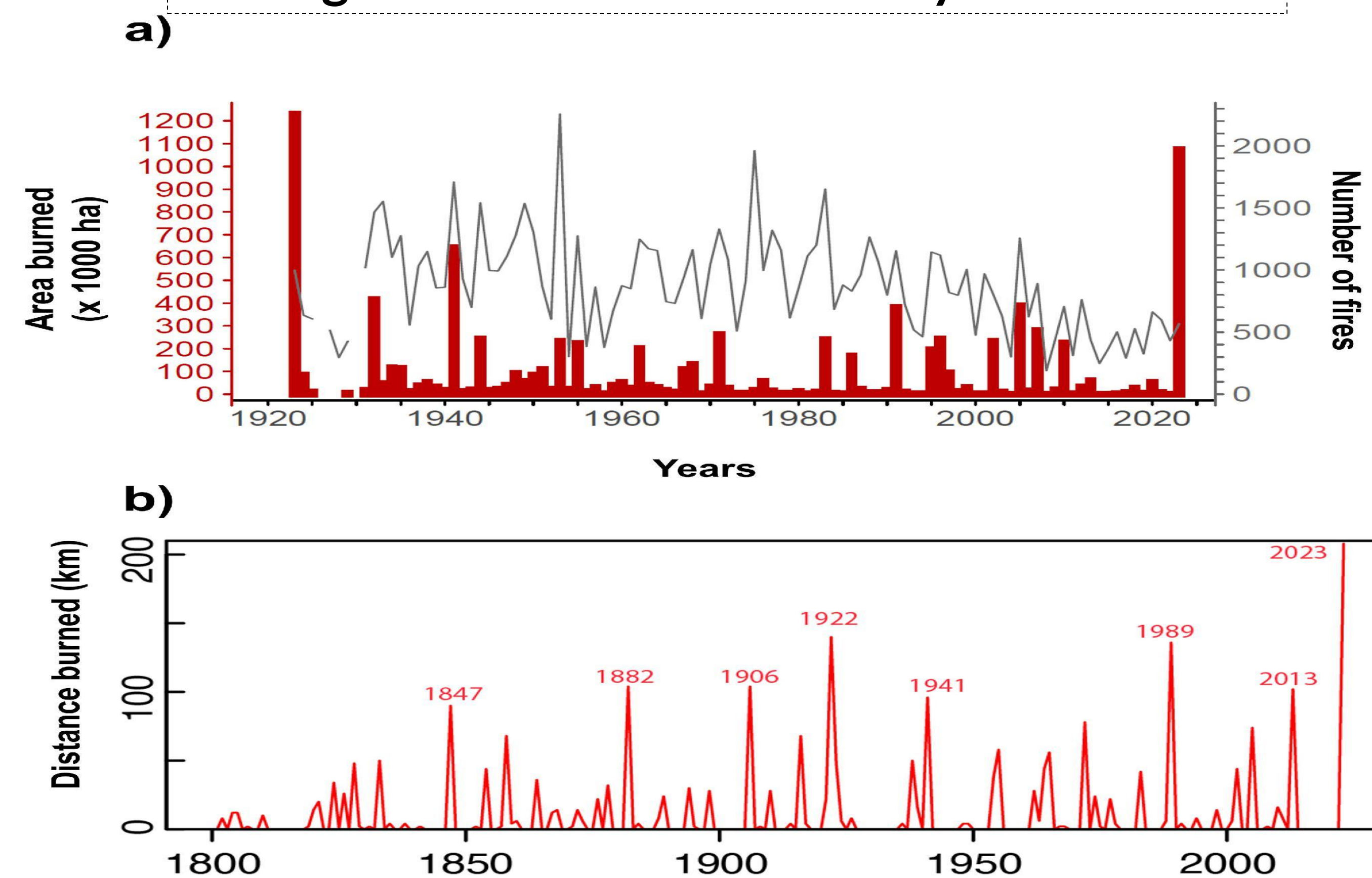
- Our topic is the 2023 wildfires in Eastern Canada, specifically in Quebec. The smoke from the wildfires expanded into the states, causing air quality alerts throughout states like New York, Michigan, and New Jersey.
- This topic is important because to understand how the fires were caused and why they spread so fast can help us prepare for future wildfires. Wildfires can also have huge impact on human health, which in turn is a huge concern for large populated areas like New York City and Montreal.

## Temperature and Drought



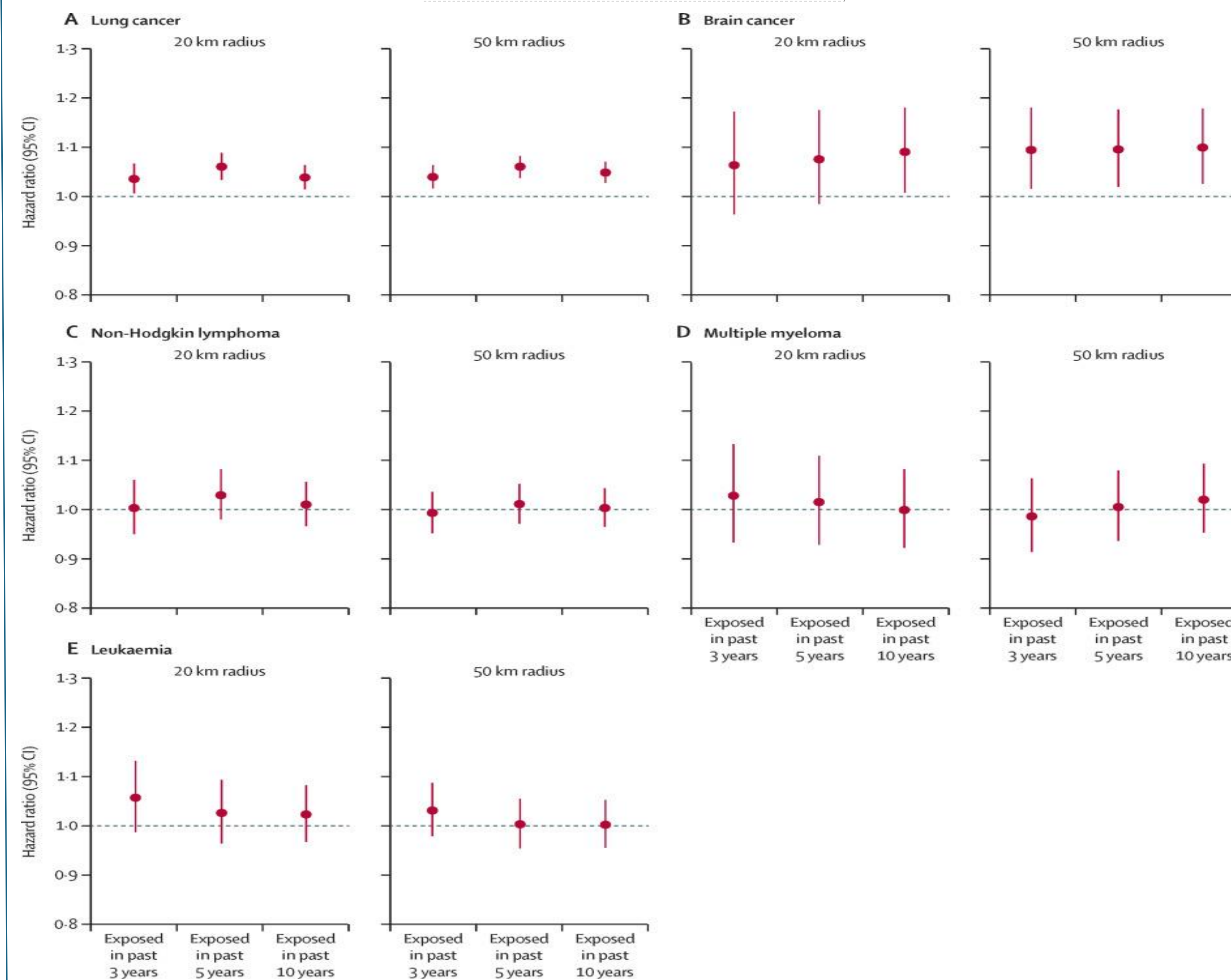
- Figure from Boulanger et al. (2024) shows maximum and minimum temperatures in boreal forests in Quebec from early May (a), mid June (b) and early August (c) in 2023
- Lower graphs represent the drought code average for June in two locations and its frequency in 2023
- Higher drought code in June along with higher maximum temperatures present were major influences on the 2023 wildfires

## Change in Number and Severity of Wildfires



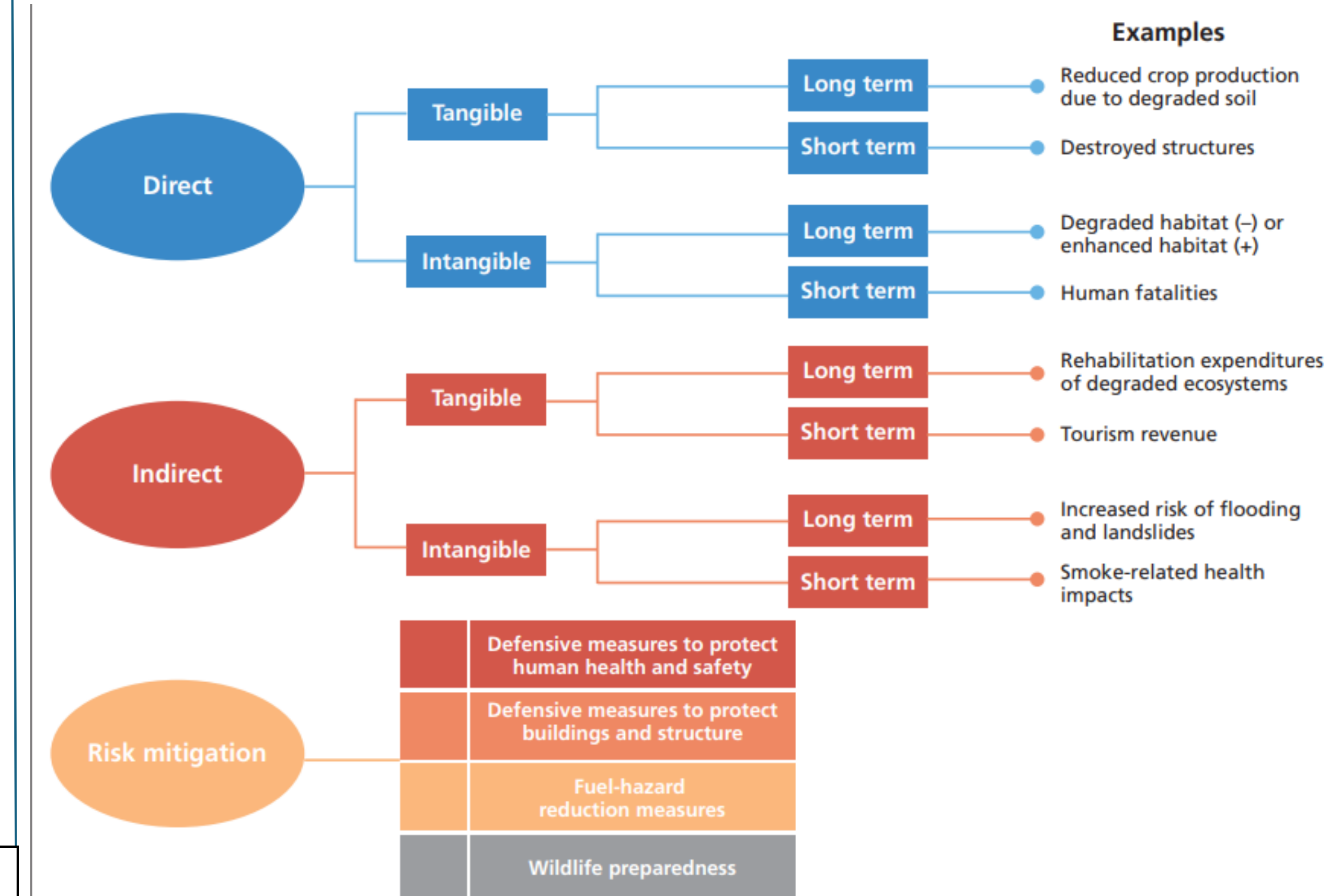
- Graphs from Boulanger et al. (2024) shows the annual area burned and number of fires between 1923 and 2023 in Quebec (a) and the distance burned in Northern Quebec from 1800 to 2023 (b)
- There were less frequent wildfires in 2023 compared to the other years but had a higher amount of distance burned.
- The distance and number was varied for the past ~100+ years, but due to the increasing temperatures and droughts, the distance will increase, along with a possibility of frequent wildfires.

## Disease Danger



- The graphs from the study by Korsiak et al (2022) show the hazard ratios of various diseases.
- There was found to be a low, but positive correlation between recency of wildfire exposure to lung & brain cancer, as well as Leukemia.
- It was estimated that wildfire exposure contributed 4-10% increased total incidences of cancer.

## Effects of Wildfires



- Subedi et al (2025) created a chart detailing how wildfires affect various economic zones.
- Wildfires have both direct and indirect effects, which can be broken down into tangible and intangible
- Direct effects include crop and structure damage, habitat change, and human death.
- Indirect effects include rehab of degraded ecosystems, tourism revenue, natural disaster risk, and smoke-related health problems.

## Conclusions

- The drought code average and frequency has been climbing higher within the last 20 years.
- Additionally, Canadian wildfires in the Quebec region have become more widespread and far-reaching.
- Wildfires have been attributed to increased risk of various cancers and other respiratory issues.
- The impacts of wildfires cover many areas of public health, finance, social life and ecosystems.

## References

