ECCE App Challenge 2022

How close is wildfire to us?

By MusCALar

Mission statement

In Canada, there has been an increase in losses caused by natural disasters from the past 25 years. The Insurance Bureau of Canada estimated the total insured losses in the event of natural disaster had reached 3 billion in 2016, while the loss was only around 50 million in 2000. Seven out of ten costliest disasters are recorded in Alberta. Wildfire is the one of the most common disasters in Canada. The costliest disaster, Fort McMurray wildfire in 2016, has an estimated loss of 3.82 billion.

MusCALar intends to provide general public with a general understanding of the locations of wildfire happened in Alberta. We also assess the proximity to wildfire from populated region. This helps local residents to be aware of the risk of experiencing wildfire in the future.

Statement of the characteristics of app

1. Understanding the area of wildfire happened in the past

In this app, our team has applied the data of wildfire which happened from 1972 to 2021. As the scale of wildfire in Alberta is diverging, only wildfire in burn class 5 and fire class E are uploaded in this map app. In Alberta, there are several rankings to define the seriousness of wildfire. The burn class indicates the timber loss due to the fire, the tree kill within the burnt area will only be evident with a detailed aerial photo interpretation according to Alberta Government (2017). With burn class 5, more than 94% of tress are burnt because of the wildfire, which indicates the harmfulness to both nature and the human. Other than burn class, fire class is also the indicator in this map app, fire class shows the total burned area in hectares, while class E is wildfire with area larger than 200 hectares.

Our team has divided all related wildfires into 6 classes according to their affected area, using gradual colors (yellow to red) allows users to determine the affected area at first glance. Users could zoom in to the places that they are living and understand the information of fire happened before, (1) area in hectares, (2) year of the fire and (3) source will be given for easier reference.

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2. Understanding the proximity to wildfire

Apart from allowing users to understand the information of past wildfires, our team also provides the proximity to wildfire for users, to see if their desired or existing living places are close to the historical wildfire. We have imported all populated regions in Alberta, the proximity from the populated region and the wildfire place is calculated by using "near" function on ArcGIS Pro. 3 classes are developed based on the calculated distance, gradual colors are used for determining the closeness to the wildfire region. Government can also prioritize resources to areas that are more prone to wildfire.

Data source

Data source	Dataset	URL	Features of data source
Agriculture and Forestry	Historical Wildfire Perimeter Data	https://wildfire.alberta.ca/resources/historical-data/files/HistoricalWildfirePerimeters2021.zip	This data provides shapefiles of wildfire happened before 2022.
Statistics Canada	Alberta Boundary files	https://www12.statcan.gc.ca/census-recensement/2021/geo/sip-pis/boundary-limites/index2021-eng.cfm?year=21	This data provides shapefiles and locations of populated areas of Alberta 2021.

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Video Demonstration

[Demonstration Video by MusCALar](#)

Image Source

Red Cross Canada (2018). Retrieved from https://www.redcross.ca/crc/img/What-We-Do/Emergencies-Canada/wildfires-1200x450.jpg

Government of Canada (2018). Retrieved from https://science.gc.ca/eic/site/063.nsf/vwimages/sbs15.jpg/$file/sbs15.jpg

Reference

Calgary Emergency Management Agency (2018). Disaster Risk Report. Retrieved from https://www.calgary.ca/content/dam/www/csps/cema/documents/disaster-risk-report-2018.pdf