

2023-06-07, Sentinel-2 (true colour) – smoke dominates.

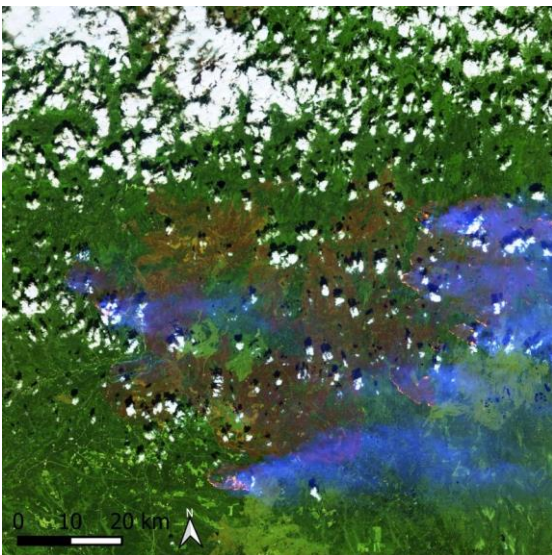
Forest fires are a recurring concern in the Canadian province of British Columbia (BC). Forest fires occur when vegetation, dry conditions, and other factors combine, resulting in uncontrolled flames that spread across large areas.

In 2023, forest fires in Canada already during the first half of the year have affected an area of 48,000 km², compared to the area of 21,000 km² burned during an average year. Climate change is assumed to have played a significant role, creating hotter and drier conditions that increase the risk of fire ignition and spread. Lightning strikes and human activities, such as campfires and negligence, have also been contributing factors.

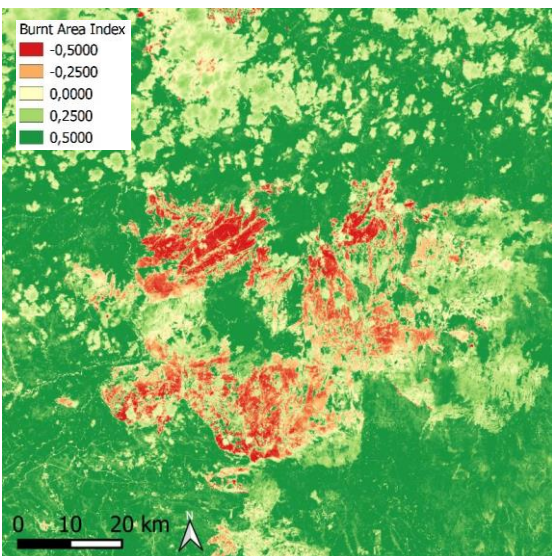
The impacts of forest fires are far-reaching. They pose a threat to wildlife habitats, degrade air quality, and damage watersheds. Forest fires affect local communities, disrupt transportation, and impact the economy, particularly the timber industry.

To combat forest fires, the government and firefighting agencies have implemented specific strategies. These include the use of satellite data for fire detection, monitoring fire behavior, and assessing the extent of fire-affected areas (see the burnt area index map).

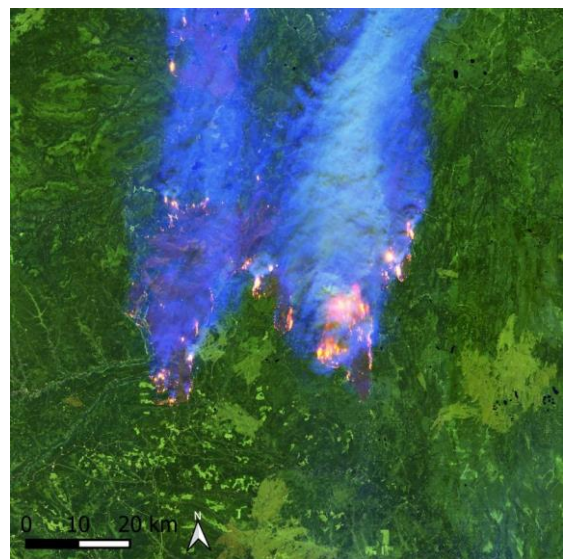
Using infrared data, satellites can look through smoke to obtain more accurate information about what’s going on in the affected region.



2023-06-07, Sentinel-2 (false colour)



2023-06-07, Sentinel-2 (burnt area index)



2023-05-18, Sentinel-2 (false colour)

Exercises

- Look at the satellite images from 2023-06-07 and try to identify what you see.
- Compare the true colour and the false colour visualisations. What differences can you detect? Are the differences the same for clouds and for smoke? Which visualization would you use for determining the fire location? Which for identifying the area affected by smoke?
- What factors have contributed to the increase in forest fires in British Columbia in the recent years? How can human activities, such as campfires and negligence, contribute to the occurrence of forest fires?
- What are the potential impacts of forest fires on the population and on wildlife habitats in BC?
- In what ways can sustainable forest management practices help mitigate the risks of forest fires in British Columbia?

Additional Material



Large forest fires can be very difficult to combat (photograph: Cameron Strandberg)

Links and Sources

- https://www.esa.int/ESA_Multimedia/Images/2023/06/Donnie_Creek_fire - Sentinel-2 image of the forest fire
- https://www.esa.int/Applications/Connectivity_and_Secure_Communications/Using_satellites_in_the_fight_against_forest_fires - description of a project for the use of satellite data in combating fires