

Burning Planet - Human Dragon

This summer (2023), Canada has seen the worst forest-fires in its history. At the start of July, when this article is being written, there are 583 active fires and more than 3000 separate fire incidents have been registered in the year so far, amounting to 8.5 million hectares in area. The area affected is much, much larger – wildfire smoke has covered almost the entire eastern half of North America, and is now reaching Europe as well¹. The worst part is that it is still considered to be early in the wildfire season, so one can expect the situation to worsen through the rest of the summer, not to mention how it will evolve in the future years under climate change.

Canada is no stranger to wild fires and an average of 2.5 million hectares is typically affected by wildfires annually. While the western provinces of BC and Alberta are more susceptible (due to their drier climates and more forest coverage), Ontario, Quebec and Nova Scotia have also seen their fair share – but nothing like what we are currently witnessing. So, why is it so bad this year? While there is no definite answer yet, the weather has been fueling just the right conditions for the flames. It has been a particularly dry and warm spring across the country, with 50% less precipitation than usual for these months². Regions which would normally have been wet and humid were instead dry, and dead trees served as tinder. Dry storm conditions also lead to lightning, which can provide the final spark, although human error (campfire, cigarette spark, unsafe powerlines) could also be responsible in some cases. After this summer, people will hopefully be more careful in the future. However, the risk is still likely to increase in the coming years, as we predict more dry spells and unpredictable storm conditions due to climate change.

While it is hard to directly attribute the current situation to Climate change, one thing is clear – Climate change is causing extreme conditions to occur more frequently across the board. Droughts are getting worse, storms are getting more common and particularly for Canada, the effects of meandering jet stream (more on that some other day), have very direct impacts. This is not news anymore, we are all witnesses to extreme weather events such as heatwaves, flash flooding and amplified storms in the past couple years. And in this way, we humans, have assumed the role of dragons, emitting carbon dioxide akin to dragons breathing fire, inadvertently igniting the world around us.

It is also worth considering the impacts of the forest fires on the climate itself. By mid-June, the total fire carbon emission from Canada alone was already more than 150 Megatons, surpassing the annual total in previous years. A simple back of the envelope calculation estimates this to be similar to increasing the atmospheric concentration of CO₂ by roughly 29 ppm. And this is just

¹ <https://www.theguardian.com/world/2023/jun/09/canada-wildfire-smoke-norway-southern-europe-health-risk>

² <https://www.nature.com/articles/d41586-023-01902-4>

for Canada. Forests across Europe, Asia, both Americas, Africa and Oceania³ - essentially all continents except Antarctica – are on fire.

On top of the greenhouse effect of the released carbon, ashes from the fire also settle on top of snowpacks and glaciers, reducing their albedo, i.e. making the snow/glaciers less reflective and thus more absorbent to sunlight. This also leads to an increase in global mean temperature, thus causing drier conditions and making wild fires more likely, and accelerating the feedback cycle of inferno.

Climate action is still considered second priority by governments worldwide when compared against financial growth, so perhaps it makes sense to consider the economic impact of the wild fires as well. As mentioned above, the fire is currently burning across an area of 8.5 million hectares (and probably more, by the time I finish writing). On top of the flora and fauna that is lost (much of which has an important role in the climate, but again I digress) with their own monetary evaluation, a lot of infrastructure - properties, powerlines, road and rail networks – also gets destroyed. People leave, or need to be evacuated from, communities. Services shut down, livelihoods are lost, towns disappear. The annual cost of wildfire protection in Canada is 1.5 billion ⁴, while insured loss (likely due to burnt infrastructure) is above 2 billion. Of course, the true cost of such large scale calamities are even larger and I want to refer the interested reader to this study by the Canadian Climate Institute: <https://climateinstitute.ca/the-gdp-costs-of-climate-change-for-canada/>. Nevertheless, I think my point stands – for a society that cares so much about money, we are essentially watching it go up in flames.

So, what can we do? That is a tough question and involves many challenges across different levels⁵. On a small scale, human sources must be addressed, through education, legislation and community engagement, so that accidental fires can be prevented. In certain cases, upgrading power lines and ensuring safety mechanisms is required. On a larger scale, forest management bodies should more actively monitor and assess the flammability of woodland areas. During times of drought and lightning season, more resources may be necessary to ensure that small flames are quickly brought under control, and modeling efforts to identify such conditions can be particularly helpful. At the same time, there are traditional means of forest protection that can be brought back to help address this issue - indigenous peoples in North America and Australia practiced controlled or prescribed burning in order to keep the forest healthy and safe. Such prescribed burning, or planting fire resistant trees, can help create barriers that stops the fire from spreading too fast. And last but not least, we need to address the dragon in the room – the biggest issue of our era which is intensifying this and other natural calamities – anthropogenic climate change.

³ https://earthobservatory.nasa.gov/global-maps/MOD14A1_M_FIRE

⁴ <https://natural-resources.canada.ca/climate-change/impacts-adaptations/climate-change-impacts-forests/forest-change-indicators/cost-fire-protection/17783>

⁵ <https://www.weforum.org/agenda/2020/09/wildfires-climate-united-states-causes-prevention-forests/>