2021_89: Zombie fires: Investigation of smouldering wildfires in the Arctic

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Peat fires lead to the loss of an irreplaceable carbon sink, as, unlike forests, they cannot grow back quickly. Nearly half the world’s peat stored carbon is in the Arctic Circle. Climate change is leading to longer and dryer Arctic summers, lowering the water table in peatlands and increasing the frequency of peat fires.

Holdover fires, or ‘zombie fires’ are residual fires which can smoulder underground in carbon-rich soils for months or years. When conditions are favourable, these smouldering fires can re-ignite, and become flaming wildfires later on. This can cause flaming forest fires before the main lightning-induced fire season. The 2020 fire season started months earlier than expected – it is suspected that zombie fires are responsible. Smouldering peat fires have both direct and direct environmental impacts. They contribute directly to damage to roots and microorganisms in the soil. Indirectly, the smoke produced leads to haze and reduced light levels, which has further environmental impacts.

Clearly, understanding the conditions necessary for the formation of zombie fires and how they spread is significant.