Zombie fires: A growing threat linked to rapid climate change

Description

White smoke rising from the tundra in front of the Baird Mountains. (Western Arctic National Parklands)

Zombie fires are a perplexing phenomenon occurring in the Arctic regions of Alaska, Canada, and Siberia. These fires persist underground during winter and re-emerge in spring, often preceding the usual fire season. Three researchers at the University of Cork, Ireland claim that recent research points to climate change as a significant factor in their occurrence and re-emergence, suggesting a link between rapid atmospheric warming and spontaneous underground combustion.

- **Re-emergence in Spring:** Zombie fires smolder underground through winter and reignite in early spring, often years ahead of typical fire seasons.
- **New Cause Hypothesized:** Research suggests rapid warming above ground can heat peat soils to smoldering temperatures without external ignition, causing spontaneous combustion.
- **Increasing Frequency:** Once rare, zombie fires have surged in the past two decades, paralleling accelerated warming in the Arctic, the fastest-warming region on Earth.
- **Recent Activity:** Over 100 zombie fires were reported in British Columbia at the start of 2024, with persistent fires also recorded in Siberia's Oymyakon, the coldest inhabited place on Earth.
- **Environmental Impact:** Arctic peatlands, which store more carbon than the atmosphere, release gigatonnes of carbon during these fires, worsening climate change.
- **Scientific Insights:** A mathematical model indicates microbes can heat underground peat to

smoldering temperatures, causing fires without prior surface fires. Rapid atmospheric warming, not just temperature, triggers this state.
- **Implications and Solutions:** The rise in zombie fires highlights the need to manage climate variability and the rate of warming. Focusing on these factors is crucial to preventing further fires and mitigating their impact.

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Author
elias