

Future pathways for Arctic forest fires

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Wildfires are expected to become more common and more severe in the Arctic states due to climate change. Main cause for the fires is human activity, even in the boreal and Arctic forests. Therefore, activities such forest management and tourism, together with firefighting capacity and readiness, can have a significant impact on future wildfire risks and impacts. To assess the impacts of these factors we have created pathways for future wildfires up to 2050 for the Arctic states. We explore high and low fire activity and risk pathways for all the Arctic states and suggest most our best guess pathways for each state separately. The low activity and fire risk pathway assumes active fire suppression via population participation and official land management, efficient fuel treatments to reduce fire risk, and active firefighting. The high activity and fire risk pathway assumes the opposite due to lack of government and community response, with addition of lacking response to climate-driven changes to wildfire risks. In the Nordic countries, human ignition sources, such as timber extraction, tourism, summer cottages, and expanding wildland-urban intermix due to exurban growth may increase. In addition to these in Canada and Alaska, expansion of agriculture increases the likelihood of open burning of agricultural waste, increasing risk of the fire spreading to wildlands. Drier fuels due to climate change increase the risk of fires, and there is a growing risk of extreme heat conditions, creating favorable conditions for extreme wildfires from any ignition source. Throughout the Arctic lightning is expected to increase, increasing the risk of tundra (specifically grassland) fires, with potential to occur in hard-to-reach locations for firefighting. In short, policy actions and education play a crucial role in future wildfire management and adaptation.