

FIRE ON PEATLANDS



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Abstract

Peatlands cover a large area of Canada (about 17%) and contain the largest store of carbon on Earth within deep organic soils. The slow accumulation of organic matter and carbon over hundreds to thousands of years within peatlands occurs due to high water table and cool boreal and montane climates, limiting evaporation. In the last few decades, increases in precipitation has not kept up with the increasing air temperature, resulting in drying of peatland organic soils and mosses. This drying has shifted organic peatlands and the soils contained within them from resilient wildland fire reduction landcovers to conduits of fire as peatland soils dry, turning these into fuels for fire. While fire is an important reset mechanism for ecosystems, high intensity fire may shift ecosystems to new ecological states.

This presentation will examine peatland depth of burn and carbon losses from more than 60 peatlands following the Horse River (Fort McMurray) wildfire using multi-temporal (pre- and post-fire) lidar remote sensing and field measurements. Peatland depth of burn is greatest along peatland margins and increases in areas that are becoming shrubbier and are hydrologically disconnected. Carbon losses also increase exponentially with deeper smouldering fire.

Biography

Laura Chasmer is an associate professor in the Department of Geography and Environment at the University of Lethbridge. Laura's research integrates field and instrument measurements with remote sensing to better understand ecological changes over broad areas through time. Over the last few years, Laura's research shifted to effects of wildland fire on ecosystems and quantifying fire fuels due to fires burning through her study sites.