

SEMINAR NOTICE

Department of Physics and Engineering Physics
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TOPIC: *Impact of wildfires and volcanic eruptions on stratospheric composition and dynamics.*

DATE: Tuesday October 21st, 2025

TIME: 3:30-4:30 p.m.

PLACE: *Physics 103*

Abstract:

Explosive volcanic eruptions and intense wildfires can inject substantial amounts of material into the stratosphere, altering its composition, dynamics and radiative balance. Volcanic eruptions release sulfur dioxide, which is converted into sulfate aerosols that reflect sunlight and contribute to surface cooling. Similarly, extreme wildfires can generate pyrocumulonimbus (PyroCb) clouds that transport smoke and combustion products into the stratosphere. With the increasing frequency of such wildfires under a warming climate, they have become an important source of stratospheric aerosols. Smoke containing black carbon absorbs sunlight, leading to plume self-lofting and extended atmospheric residence time and radiative effects. Case studies such as the 2019/20 Australian “Black Summer” bushfires, the 2022 Hunga eruption as well as the recent Canadian wildfire outbreaks highlight the global reach of these events. The seminar will present recent research on these phenomena and their implications for stratospheric processes and climate.