

**ATS/CIRA Colloquium**

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**Hosted by Patrick Keys**

**3 p.m. Thursday, Dec. 1**

**ATS 101 and Microsoft Teams**

**Losses exceed gains: wildfire impacts  
on snowpack across the western U.S. and  
within the Cameron Peak burn area**

Wildfires are increasingly impacting high-elevation forests in the western United States that accumulate seasonal snowpacks. The snowpack's mass and energy balance is altered post-fire due to the loss of the forest canopy and deposition of sooty material on the snow surface. This can result in declines in peak snow water equivalent, faster melt rates, and earlier snow-free dates, thus presenting an additional stressor to this critical water reservoir for the region. We find that for late snow zones, where the mean annual snow-free date is in May or later, 70% of ecoregions experienced significant increases in wildfire area since 1984. In the Southern Rockies, large fires in 2020 burned more area in the late snow zone than in the previous 36 years combined. Based on field observations in the Cameron Peak burn area, we find that ~25% less snow accumulated, melt rates were up to 125% greater, and snow melt out occurred 11–13 days earlier than unburned reference sites. The loss of snow can reduce both ecosystem water availability and streamflow generation in a region that relies heavily on mountain snowpack for water supply.

Colloquia page: [atmos.colostate.edu/colloquia](https://atmos.colostate.edu/colloquia)