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Biomass burning aerosols: optical properties and identification of chromophores

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The impacts of climate change include warming temperatures, changes in precipitation, increase in the frequency or intensity of extreme weather events, and rising sea levels. It is projected that in many areas of the northern hemisphere the frequency and intensity of wildfires, severe droughts and dust storms will increase as the climate becomes drier and warmer. Fires emit smoke and other unhealthy air pollutants, that can affect climate and people's health on regional and global scales.

In this talk we will present results from a biomass burning event. We will describe a new approach to retrieve the optical properties of ambient smoke particles from blue wavelengths across the visible range. We will show that the absorption in ambient biomass burning aerosol can be attributed to significant absorption by nitrated chromophores that form in these aerosols. Finally, we will present a mechanism for the formation of absorbing oligomers from the reaction of phenolic compounds that originate from lignin pyrolysis and Fe (III) a major constituent of mineral dust.