Doppler Lidar Observations of Wildland Fire Smoke Plumes
PI: Neil P. Lareau, Students: Tyler Salas, Joseph Marino

UNR's Doppler lidar allows us to probe the inner dynamics of wildland fire smoke plumes. These data help address fundamental questions about:

(1) Plume rise
(2) Smoke transport
(3) Coupled fire-atmosphere circulations

The UNR lidar is presently being used by HDFRS researchers and students to examine real-world wildland fire processes. This poster summarizes student lead work based on field observations of (1) a prescribed fire plume at the Sycan Marsh, OR, and (2) a smoke-filled gravity current that inundated Reno, NV with hazardous smoke concentrations on 9/11/2022 from the nearby Mosquito Fire.

Next steps in the work include deploying the Doppler lidar on a newly acquired research truck, thus providing rapid response measurement capabilities that will be broadly useful across HDFRS activities. For example these lidar observations will help provide spatial and temporal context for future UAS observations of smoke properties.