

SEMINAR

The ABC, 1,2,3 of Wildfire Smoke (Aerosol Black Carbon: 1. Absorption 2. Nucleation 3. Fate)

Joshua Schwarz
NOAA Chemical Sciences Division

Black Carbon (BC) – a light-absorbing aerosol material that in prehistorical days was sourced from wildfires -- is now the object of intense interest due to its significant human-driven impacts on climate, its association with air quality related health problems, and its position as a target for emission control policies. Unfortunately, BC is a particularly complicated particulate to measure and understand. In general, BC forms only a small (~1 %) fraction of total accumulation mode aerosol mass, it is morphologically complex, its optical properties change in time, and most chemically-speciating measurements are insensitive to it. Further, BC's life as a climate forcer does not end with removal from the atmosphere: after deposition it blackens snow and ice with further consequences for water availability and climate. The NOAA Black carbon group has been using and developing a technique that originated in the early 2000s to make unambiguous measurements of BC size, mass concentration, association with other materials within individual particles, and sensitivity to water vapor. I will present an overview of current state of knowledge about BC as anchored in our measurements from research aircraft and ground locations, as well as our laboratory measurements of BC in snow and ice. Further, we have been exploring BC's unique characteristics as a tracer of aerosol processes in the atmosphere, and I will make a case that BC has broad utility to inform a wide set of atmospheric questions.

Monday, May 6, 2019, 3:30 p.m

Refreshments 3:15 p.m

NCAR Foothills Laboratory

3450 Mitchell Lane, Boulder, CO 80301

FL2-1022, large seminar room

Live webcast: <http://ucarconnect.ucar.edu/live>

For more information please contact Bonnie Slagel, bonnie@ucar.edu, phone 303-497-8318.

The National Center for Atmospheric Research is operated by the University Corporation for Atmospheric Research under the sponsorship of the National Science Foundation