

## **Constraints on ozone removal by land and implications for 21st Century ozone pollution**

**Olivia Clifton**

ASP Postdoctoral Fellow

National Center for Atmospheric Research

Ozone dry deposition is an important sink of tropospheric ozone, but coarse representation in most large-scale atmospheric chemistry models hinders understanding of the influence of this sink on ozone pollution. Variations in ozone dry deposition are largely expected to be controlled by ozone uptake through plant stomata. With observations from one of the longest ozone eddy covariance datasets available, I find substantial variations in nonstomatal ozone dry deposition and identify the individual deposition processes driving observed variations. I will present on this work, as well as work with a new version of the NOAA GFDL chemistry-climate model that more explicitly resolves stomatal and nonstomatal deposition processes by leveraging the interactive biophysics of the land component of the model. Here I pinpoint the responses of ozone pollution to changes in precursor emissions, climate, and ozone dry deposition at the beginning and end of the 21st century. My work highlights that under strong precursor emission controls there is a shift in the high ozone pollution season over northern mid-latitudes to a wintertime peak, and that wintertime ozone is sensitive to ozone dry deposition due to the long ozone lifetime. For both summer and winter, I find that neglecting variations in nonstomatal deposition and dependencies on environmental conditions may hinder accurate identification of the processes driving observed trends and variability in ozone pollution.

**Monday, January 14, 2019, 3:30 p.m**

Refreshments 3:15 p.m

NCAR Foothills Laboratory

3450 Mitchell Lane, Boulder, CO 80301

FL-1022, Large Auditorium

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

For more information please contact Bonnie Slagel, [bonnie@ucar.edu](mailto:bonnie@ucar.edu), phone 303-497-8318.