

Current and Future Summertime Ozone Pollution over the U.S.: Emissions, Transport and Chemistry

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Despite considerable progress in controlling emissions, poor air quality remains a significant health and financial issue across the continental U.S. In 2010, approximately 124 million people lived in counties that exceeded one or more National Ambient Air Quality Standards. In this talk I will address the issue of high summertime ozone pollution. Characterizing the role of all relevant source types and processes to tropospheric ozone is important for understanding the atmospheric system and, in terms of air quality, constitutes highly relevant information for society and policy making.

I will present results from my research on the drivers impacting ozone chemistry using a combined analysis of field campaign data, measurements from operational networks, satellite retrieval products, and chemical transport modeling on the global (MOZART-4) and regional (WRF-Chem) scale. I applied a unique ozone tagging method in the model simulations for estimating the source attributions. The focus of this presentation will be put on two major drivers, which are specifically relevant for the Western U.S.: pollution inflow and wildfires. Large uncertainties remain as to what degree these drivers contribute to surface ozone levels over the U.S., yet this knowledge and the understanding on the underlying processes is essential for developing emission control strategies to reduce air pollution.

Accurate representation of the processes and feedback in the atmospheric system is also needed in projecting future changes in air quality as a result of changes in climate and emissions. I will present results from a set of high-resolution chemistry-climate projections for the 2050 time period that I conducted as part of an NSF EaSM and NCAR ASD grant. The simulations are based on WRF-Chem simulations, which for this project has been setup as Nested Regional Climate Model with Chemistry.

Monday, March 10

3:15 p.m. Refreshments

3:30 p.m. – Seminar

FL2- 1022, Large Auditorium