

Source Attribution of Ozone Exceedance during Wildfire Seasons in Arizona: Insights from a Tagging WRF-Chem Modeling System

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Abstract

In recent years, the need for precise attribution of O₃ sources has been increasing, particularly in the context of developing effective air quality management strategies. While over the past decades, regulatory efforts have successfully reduced emissions of O₃ precursors, the persistence of elevated O₃ in many regions underscores the necessity of deeper understanding and targeted mitigation measures. This study delves into the specific case of Arizona, United States, a region marked by elevated O₃ concentrations and designated non-attainment areas by the U.S. Environmental Protection Agency. We focus on the fire season during June 2021 when Phoenix, Arizona was observed to be highly impacted by wildfire smoke. We employ a tagging technique within the WRF-Chem model and the MOZART gas chemistry mechanism to attribute the sources of nitrogen oxides (NO_x), including anthropogenic and fire emissions. Furthermore, our investigation employs the model to trace the transport of O₃ and its precursors from surrounding states and Mexico, contributing valuable insights into the complex dynamics of O₃ pollution in the region.

Early Career Scientist

NO, I am not an early career scientist.

IGAC Regional Working Groups

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