Abstract

Assessing Wintertime Ozone Prediction Sensitivity to Photochemical Mechanism

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This study is investigating wintertime ozone prediction sensitivity in the Uinta Basin (UB) among two current photochemical mechanisms using a consistent modeling platform. Most photochemical models have strongly underestimated UB winter ozone. Recent modeling conducted by Utah State University using different modeling systems indicates that the Regional Atmospheric Chemistry Mechanism (RACM) installed in the Weather Research and Forecasting model with chemistry (WRF-Chem) simulates much higher ozone concentrations than the Carbon Bond (CB6) mechanism installed in the Comprehensive Air quality Model with extensions (CAMx). The version of RACM in WRF-Chem was developed over two decades ago, whereas the State of Utah is using CAMx/CB6 to support the UB State Implementation Plan. In this project we are: (1) implementing an updated version of RACM2 in CAMx; (2) developing photolysis rates and emission speciation profiles to support CAMx/RACM2 testing; and (3) comprehensively evaluating CAMx using RACM2 and CB6 to understand mechanism performance and differences in simulating wintertime ozone in the UB. This presentation will review historical context, summarize mechanism differences, and describe modeling results to date.