WRAP Experience: Investigating Model Biases

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The Western Regional Air Partnership has, over the past two years, undertaken a detailed evaluation of Models-3/CMAQ performance in Federal Class I Areas in the Western U.S. This effort is in support of the modeling needed to develop State and Tribal Implementation Plans pursuant to Sections 309 and 308 of the EPA Regional Haze Rule. In the first phase of the model evaluation, biases were seen in the model predictions of wintertime fine particulate matter (PM) concentrations, and in the coarse PM concentrations throughout the year relative to observations from the IMPROVE network. The possible sources of these biases are being investigated for two representative months, January and July of 1996, through an examination of the sources and sinks in the model for coarse and fine PM concentrations. The relative roles of ammonia emissions and boundary layer meteorological predictions from MM5 in the high biases seen in wintertime nitrate, and the relative roles of emissions and dry deposition in the low biases in coarse PM are discussed.