

Description, application, and verification of a state-of-the-art fully coupled multi-scale air quality and weather prediction model (WRF/Chem)

Georg Grell, NOAA

We will describe the Weather Research and Forecasting (WRF) model as it is coupled with chemistry. This model is a community effort which now includes many atmospheric chemistry routines covering biogenic emissions, deposition, photolysis, chemical mechanisms. In addition, various atmospheric aerosol routines (modal and sectional approaches) have been added to WRF. The chemistry and aerosol routines are usually solved in an "online," or "fully-coupled" fashion with the meteorological forecast model. In other words, the interaction and transport of meteorological, chemical, and aerosol species are calculated using the same physical parameterizations with no need to interpolate in time and/or space. The most recent version of this modeling system includes the direct and indirect effects of aerosols. An overview of the current status of this modeling system and ongoing as well as future development will be discussed. In addition some evaluation results and scientific applications will be presented.