Evaluation of aerosol optical depth forecasts using the FIM-Chem (Flow-following finite volume Icosahedral Model).

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Development of the FIM, ESRL's new global model for medium range weather forecasting, is now being extended to include aerosols, dust, and the impact of wild fires on air quality and weather. The FIM uniquely combines 3 key modeling design components (icosahedral horizontal grids, isentropic-hybrid vertical coordinate, finite volume numerics), all critical to provide improved transport over existing models (e.g. Global Forecast System – GFS). The isentropic-hybrid vertical coordinate is "flow-following" in that the vertical coordinate surfaces follow isentropic (constant potential temperature) surfaces through most of the atmosphere, from mid-troposphere upward to the model top (current testing at ∼60 km). Aerosol interaction with atmospheric radiation is included using the GFS physics. We will show results of evaluating a three month retro-period with observed aerosol optical properties from AERONET network as well as MODIS Satellite observations.