

Key Information Gaps and Uncertainties

for PM Forecasting

Emissions

- Spatial and temporal variability
- Composition of primary particulates and precursors
- Size distribution of primary particulates
- Volatility of organics emitted
- Biomass burning

Meteorological

- Boundary layer evolution and turbulent mixing
- Transport errors - complex topography and land-sea contrasts
- Humidity
- Cloud amount and occurrence

Aerosol Formation and Transformation

- Nucleation
- Gas-phase photochemistry and VOC precursors
- Aqueous chemistry, i.e. organics
- Secondary organic aerosols

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Mixing State

- Internal vs external mixtures
- Particle morphology

Removal

- Dry deposition
- Wet scavenging

Aerosol-Radiation-Cloud-Chemistry Interactions

- Significant for air quality forecasting?

Evaluation

- Availability of sufficient measurements

Model Configuration

- Domain resolution versus computational cost

What should be the research priorities?