

*MRPO 2002 Base Model
Performance*

Kirk Baker

June 2005

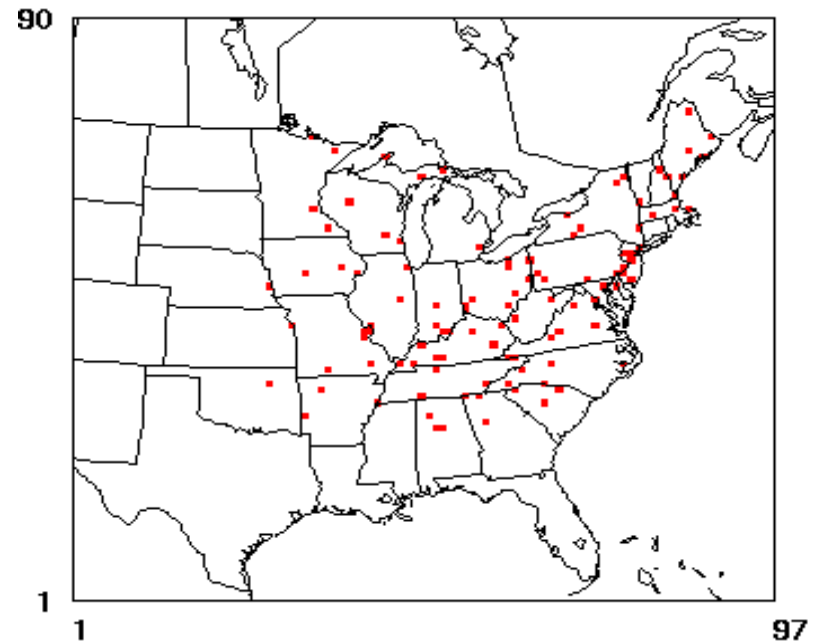
2002 Base Modeling

- CAMx4
- EMS
- MM5

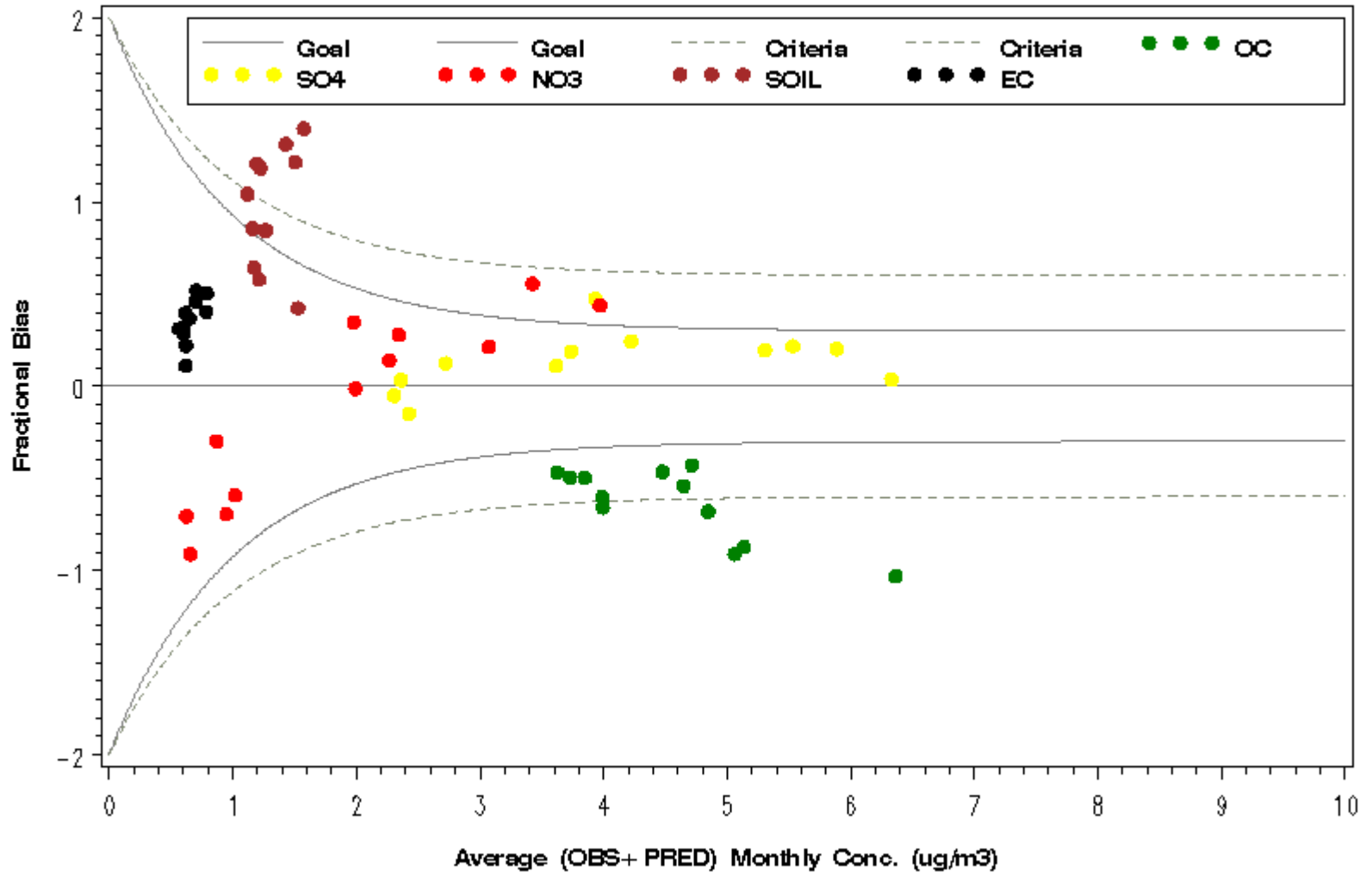
- 2002 CERR
- 2002 ammonia data

- Model performance using daily average speciated PM_{2.5} measurements
- IMPROVE, EPA Speciation Trends (from VIEWS)

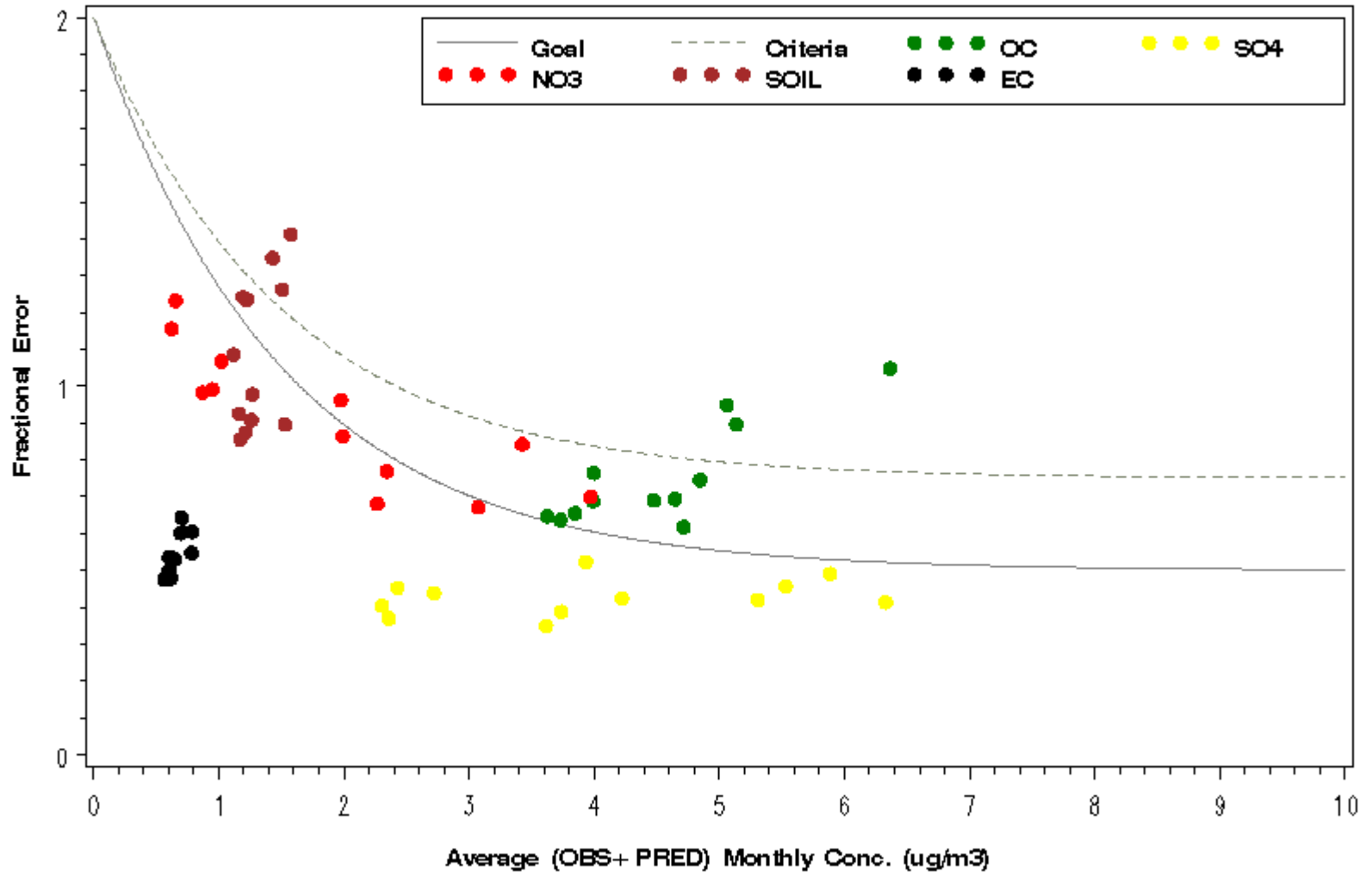
- OM/OC = 1.6 for urban and 2.1 for rural sites



Annual 2002 Fractional Bias

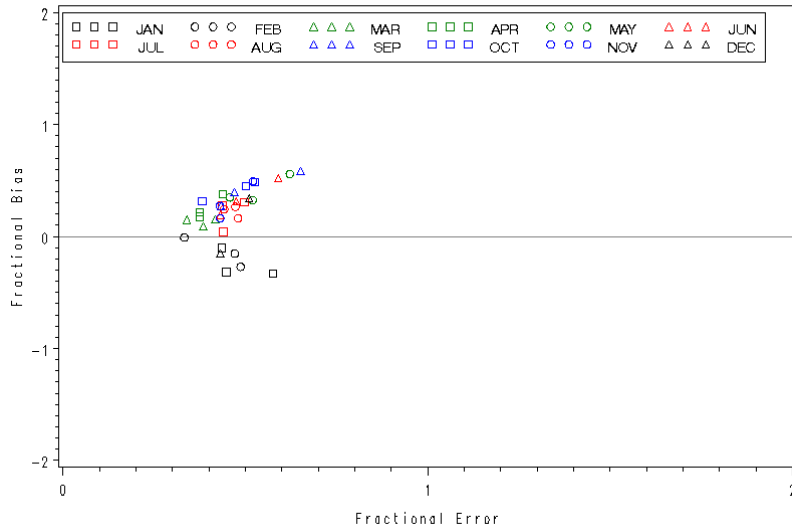


Annual 2002 Fractional Error



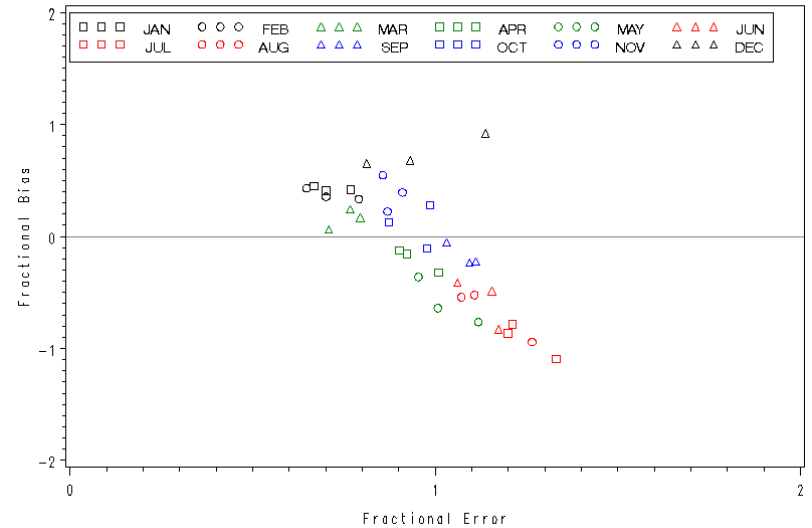
Fractional Bias v. Fractional Error metrics by month for PM2.5 chemical species (top left clockwise): sulfate, nitrate, ammonium, organics

SO4 Annual 2001–3 Metrics



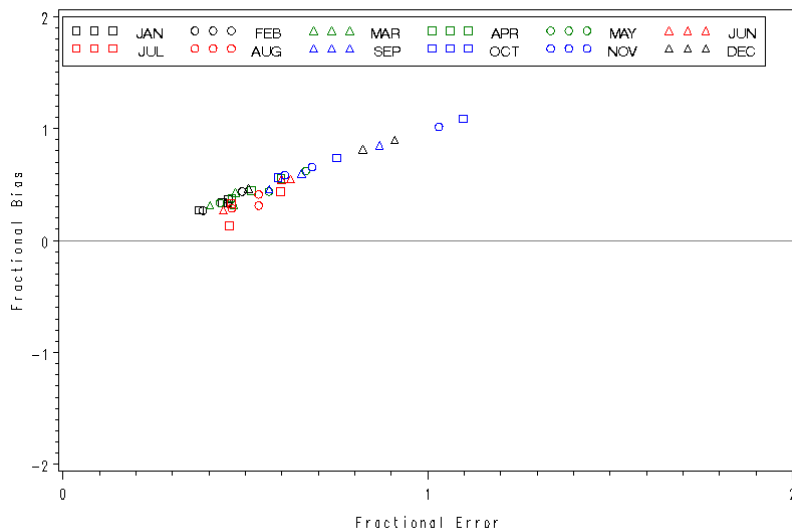
Kirk Baker - LADCO

NO3 Annual 2001–3 Metrics



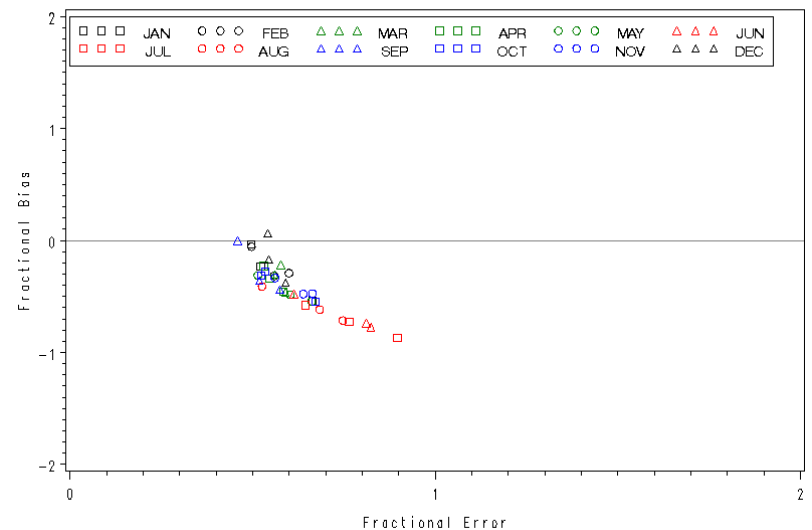
Kirk Baker - LADCO

NH4 Annual 2001–3 Metrics



Kirk Baker - LADCO

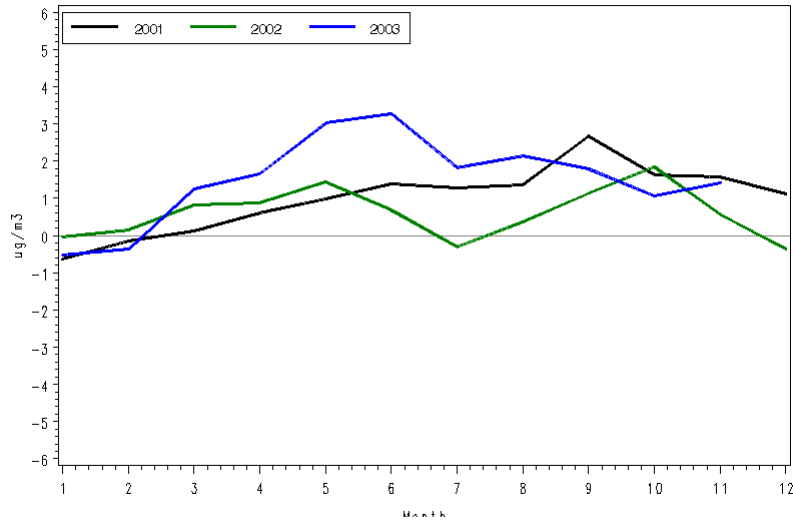
OC Annual 2001–3 Metrics



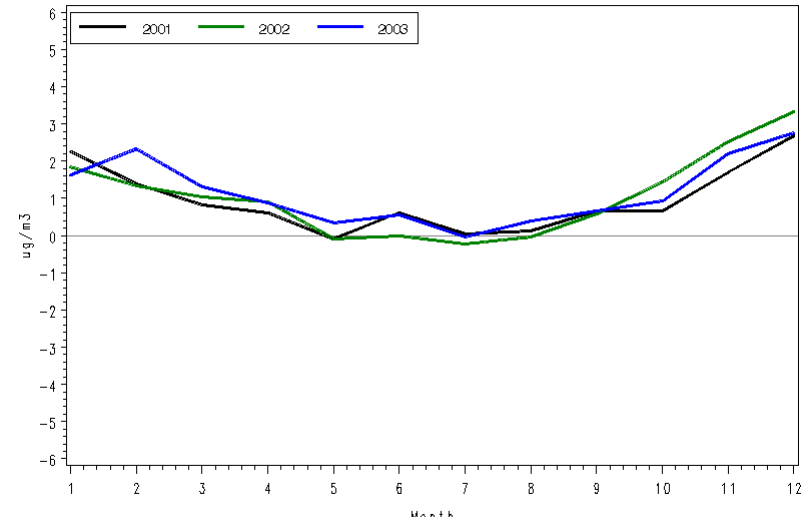
Kirk Baker - LADCO

Monthly Bias for Each Annual Simulation by PM2.5 chemical specie (top left clockwise) sulfate, nitrate, ammonium, organics

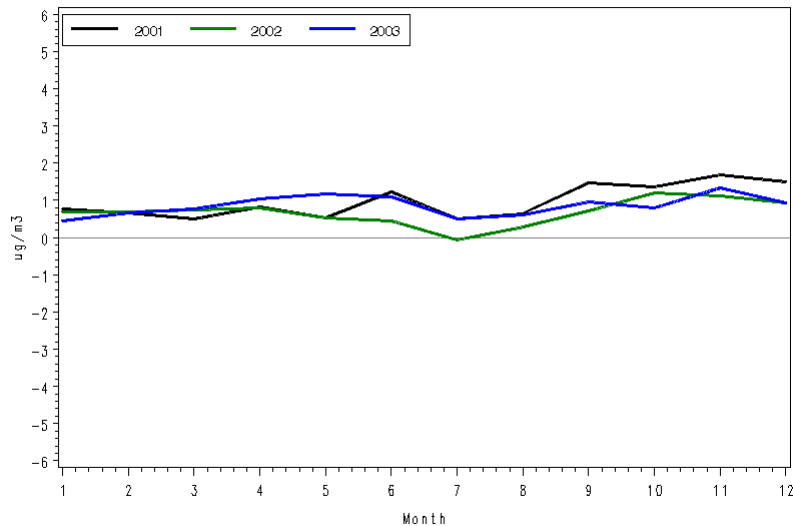
SO4 Monthly Average Mean Bias



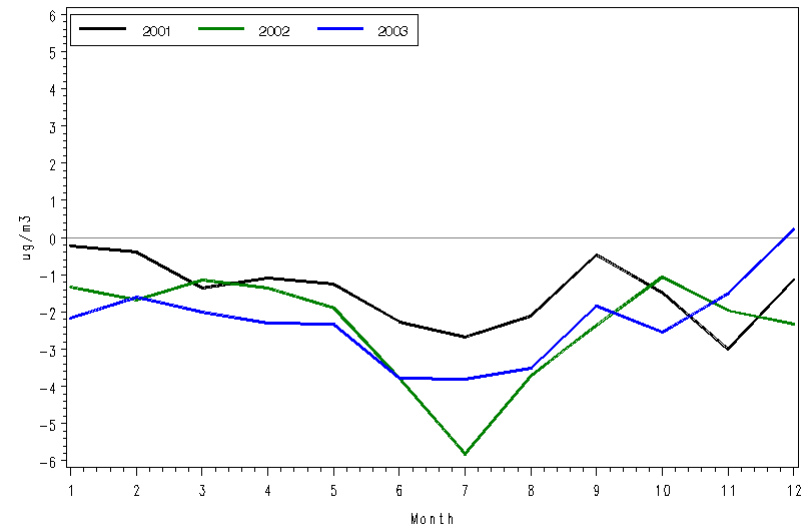
NO3 Monthly Average Mean Bias



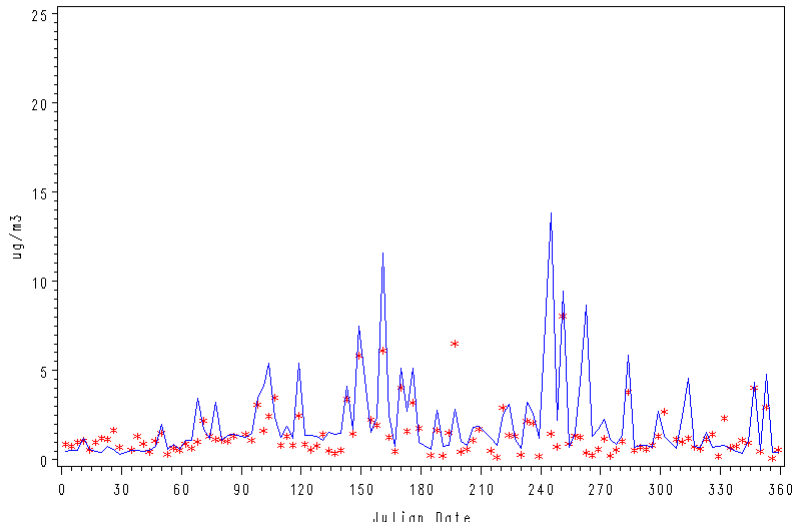
NH4 Monthly Average Mean Bias



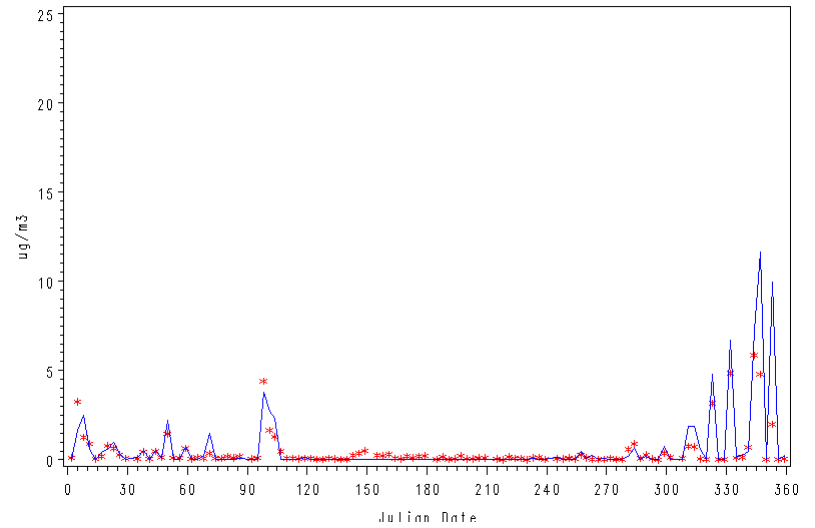
OC Monthly Average Mean Bias



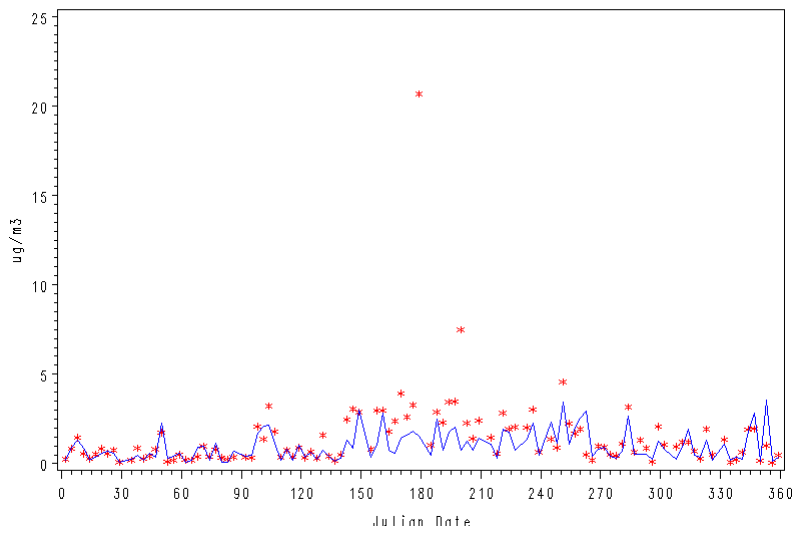
ISLE1 PM2.5 Sulfate



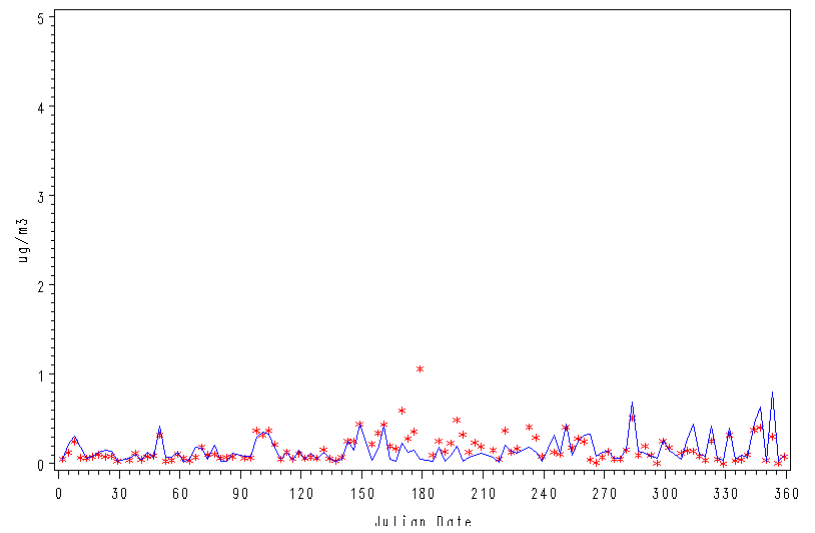
ISLE1 PM2.5 Nitrate



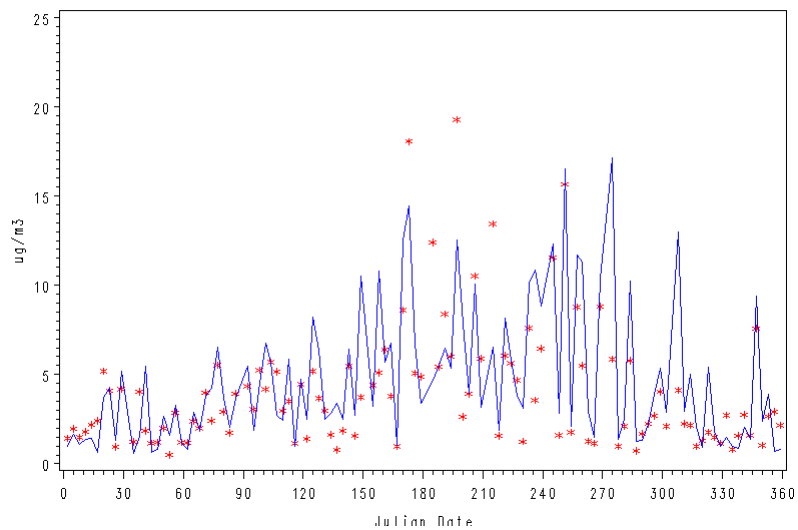
ISLE1 PM2.5 OC



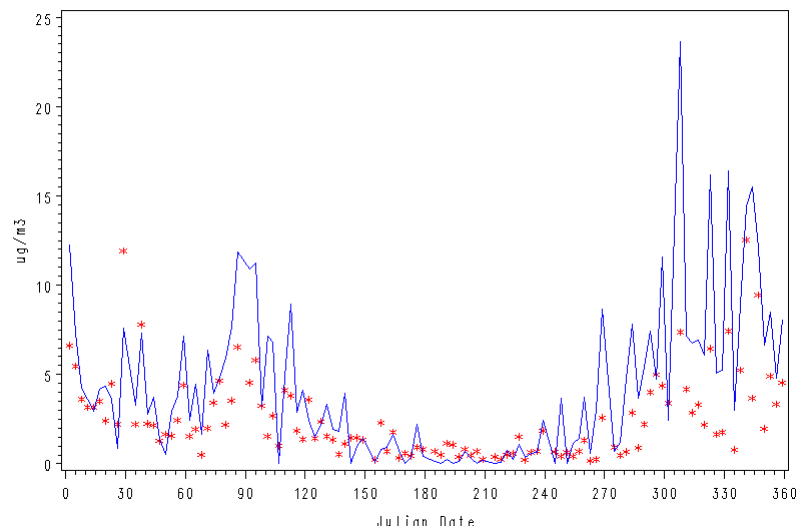
ISLE1 PM2.5 EC



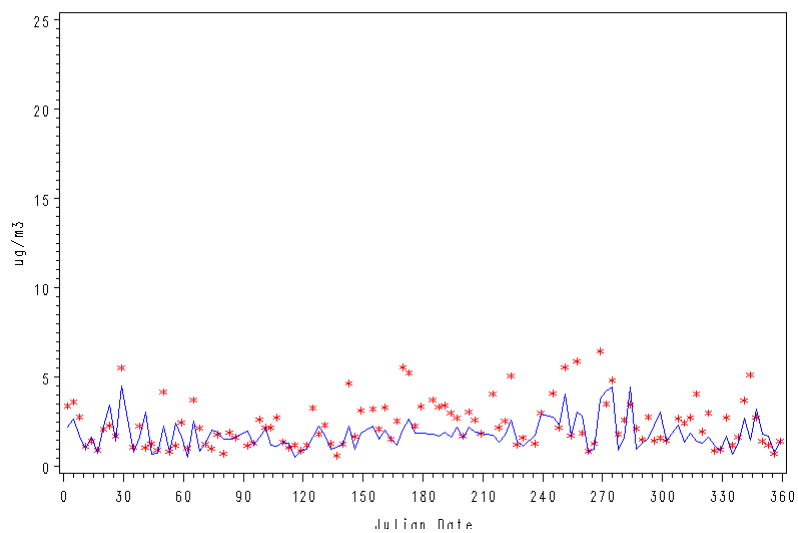
BOND1 PM2.5 Sulfate



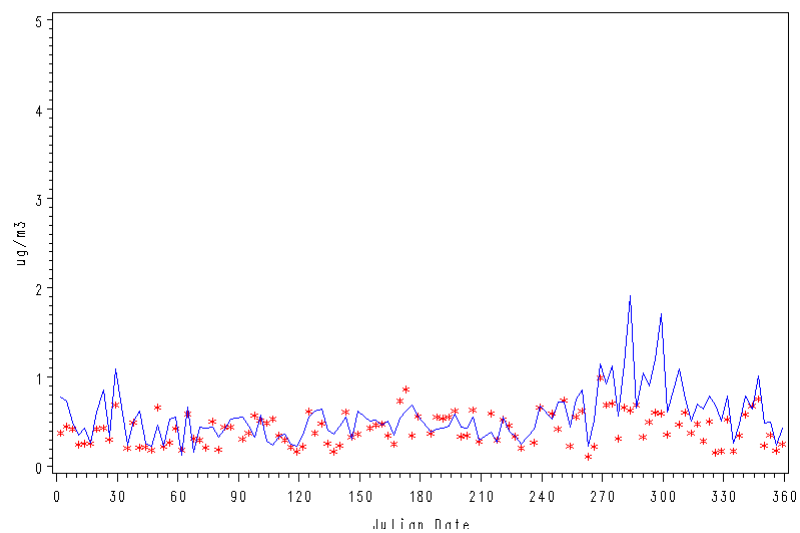
BOND1 PM2.5 Nitrate



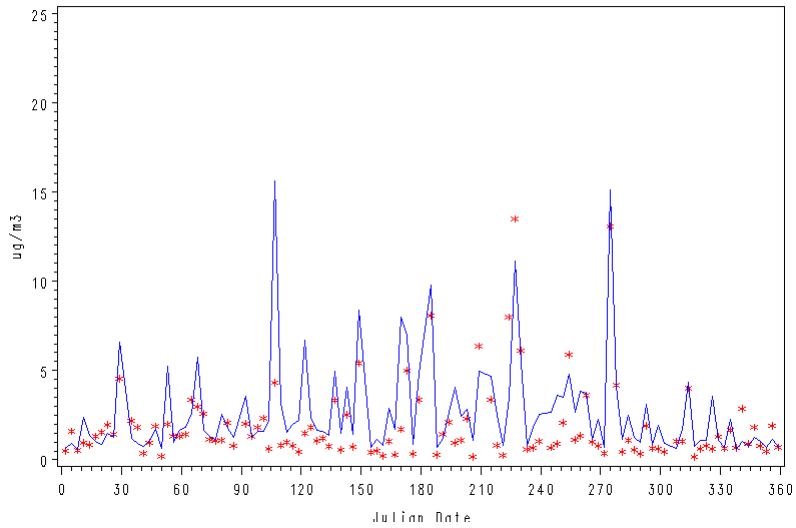
BOND1 PM2.5 OC



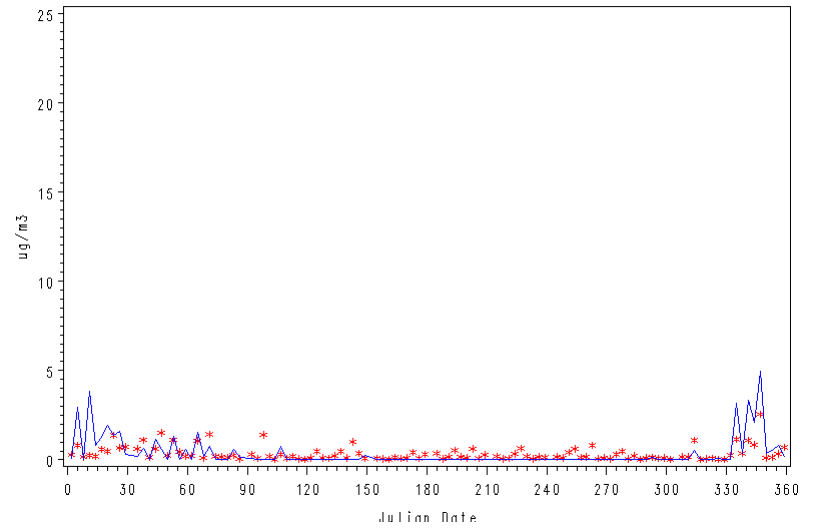
BOND1 PM2.5 EC



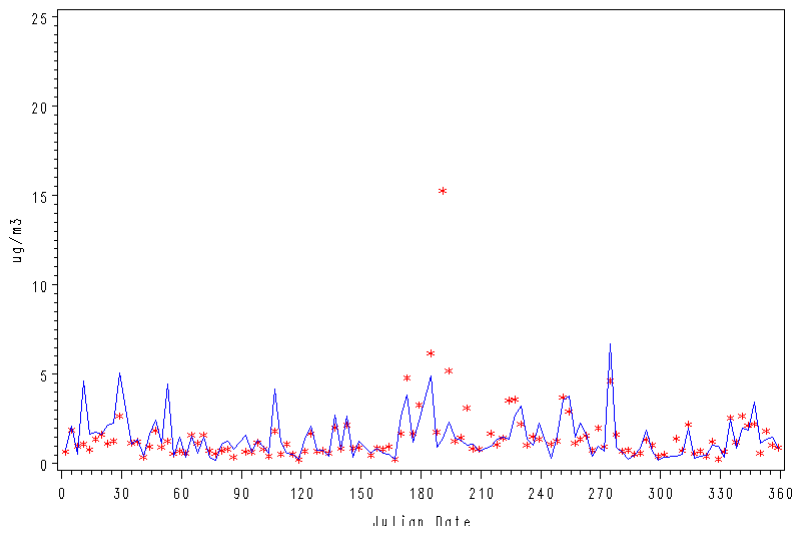
ACAD1 PM2.5 Sulfate



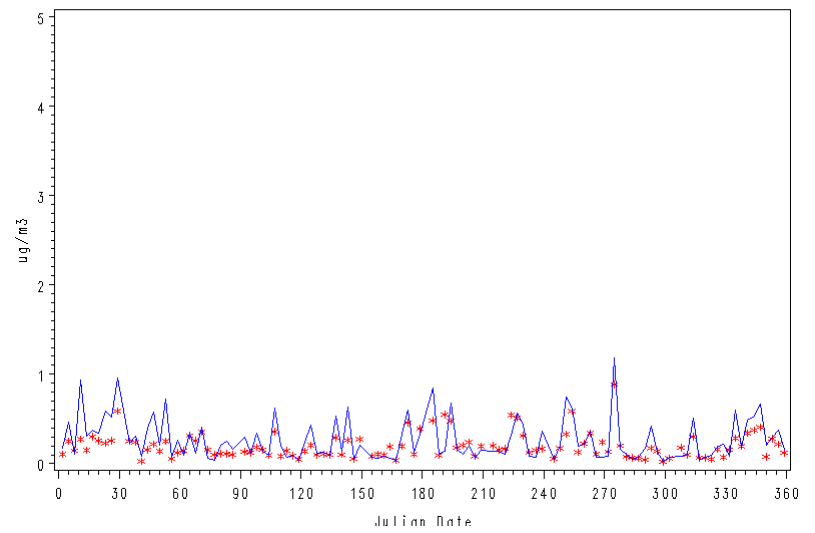
ACAD1 PM2.5 Nitrate



ACAD1 PM2.5 OC



ACAD1 PM2.5 EC



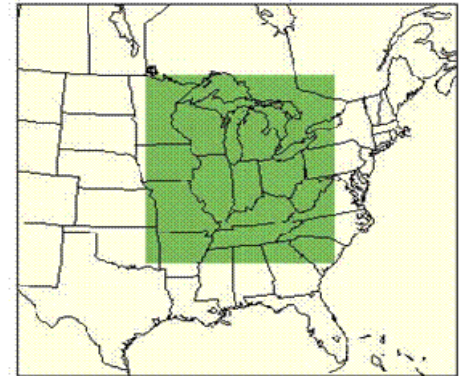
One-Atmosphere Approach: Haze + NAAQS

Base Year is 2002 (2002 CEER, CMU Ammonia)

- Have 2001 and 2003 as additional options

4 Different Future Years

- 2018 for Haze
- 2009 for Ozone and PM_{2.5}
- 2008, 2012 for Ozone



3 Variations of Future Year Scenarios

- “on the books” controls
- “on the way” controls
- “on the way” + additional controls in MRPO

MRPO NAAQS SIP Modeling

- PM2.5 and Ozone Non-Attainment Areas in all 5 States
- MRPO taking a multi-pollutant approach and developing ozone SIP level inventories in conjunction with Haze inventories
- States currently using MRPO modeling to support changes in county attainment status (ozone bump-down) and to assess air quality impacts of local emission reduction programs
- States using RPO modeling with CAMx/OSAT to assist in determining local/regional culpability
- RPO Modeling is an end point for PM2.5 and O3 NAAQS SIPs; States will submit MRPO modeling to support PM/Haze/Ozone SIPs

State/RPO Modeling Technology Transfer

- The States can take RPO modeling and do State-oriented projects because they are active participants in doing model runs and dedicate employees to the RPO process
- RPO provides States with technical support for modeling projects (technical support will continue past SIP submittal next year)
- MRPO assists States with system administration and computer hardware needs

MRPO Emission Improvements to Support O3 SIP

- Improved mobile source traffic count data
- Improved nonroad activity data
- Improved chemical speciation (especially local fuels based speciation)
- Improved nonroad temporalization
- Improved area temporalization
- Significant agricultural equipment NOX modifications (mass and temporal)
- Travel demand model link based data
- Analysis of traffic count data to reflect daily and hourly diesel truck traffic
- Inclusion of complex EGU temporal model evaluation and strategy development