

The Gateway Cities
Air Quality Action Plan

I-710 Near Roadway Modeling

Preliminary Findings

Technical Roundtable
August 10, 2011

Objectives

- Assess ability of near roadway modeling to predict actual concentrations
- Compare modeled concentrations to measured concentrations

Objective

- **Modeling** was performed using AERMOD based on the methodology used in I-710 EIR/EIS
 - And with reduction in truck activity to account for “Recession” effects from 2008 to 2009 levels
 - Average daily traffic volume with diurnal profile
 - 6am-9am, 9am-3pm, 3pm-7pm, 7pm-6am
- **Monitoring** data was collected by AQMD in 2009 at two sites, one located 15 meters west (labeled “West”) and 80 meters east (labeled “East”) of the I-710

Methodology

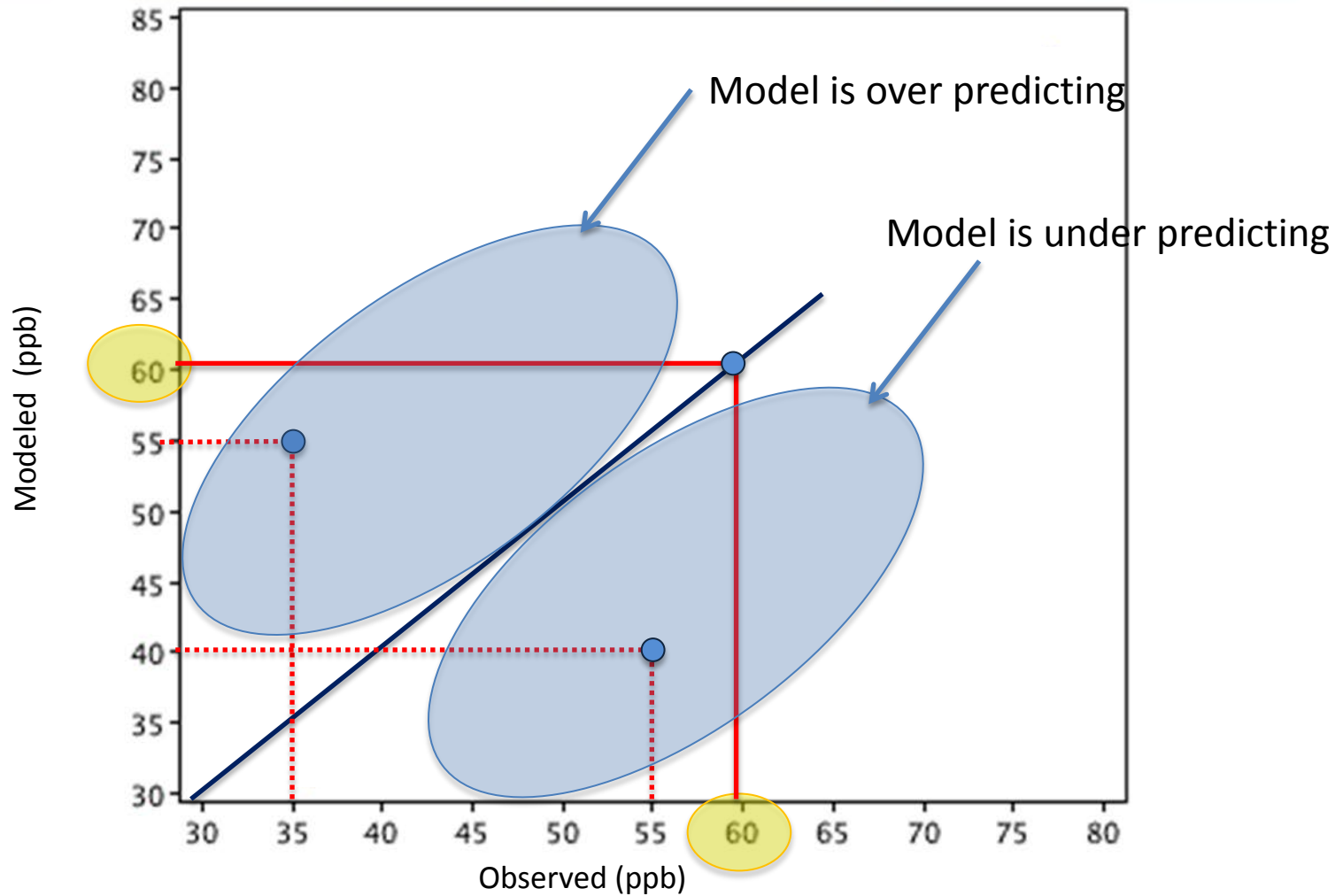
Two metrics were used for this comparison:

- **Hourly average concentration** – The hourly measured and model-predicted concentration are being statistically compared.
- **Hourly concentration gradient** – The ratio of concentrations at 15 m and 80 m provides a measure of concentration gradient. The observed and model-predicted concentration gradients are being statistically compared.

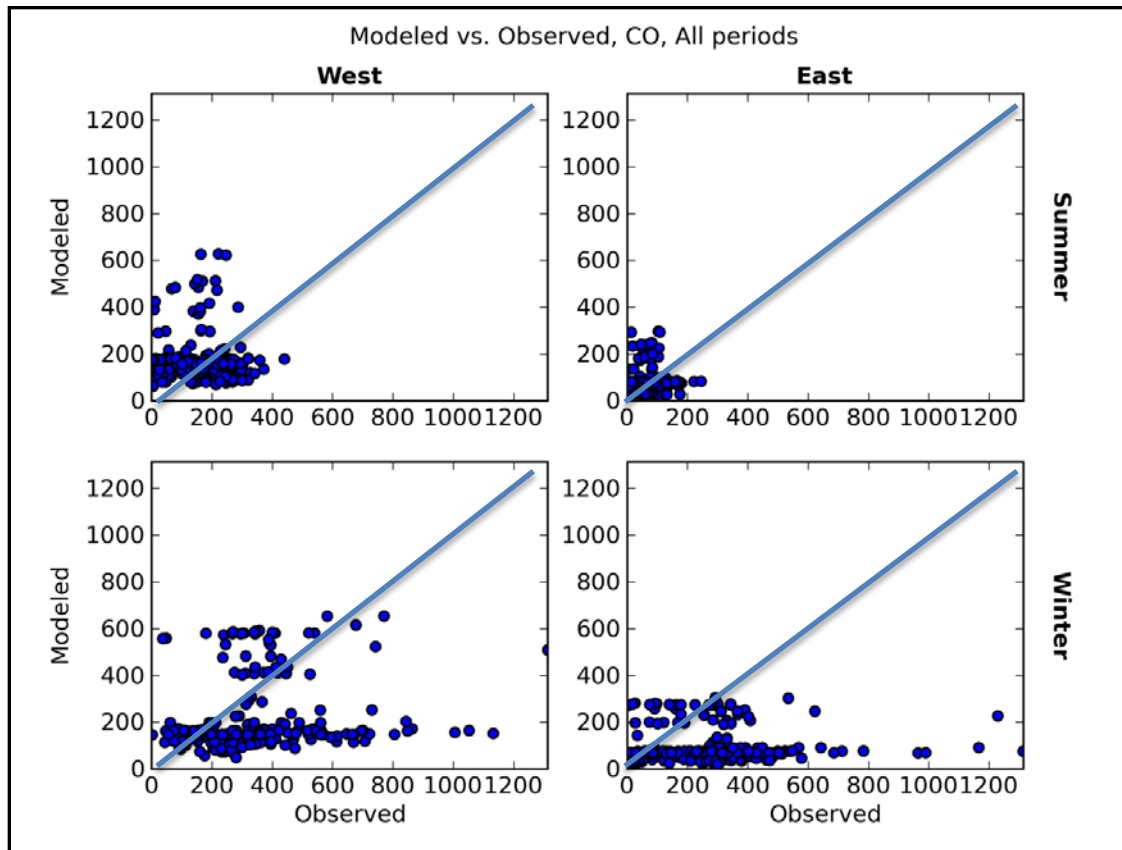
Methodology

- Comparison made for three-intra day periods: Morning Peak (6 – 9 AM), Evening Peak (3 – 7 PM), and Non Peak hours.
- Separate comparison winter (Feb – March) and summer seasons (July – August)
- Statistical analysis and the distribution of modeled-to-monitored concentration ratios will be used to evaluate results
 - Average hourly bias, average absolute bias, average fractional bias, correlation coefficient

Data Interpretation

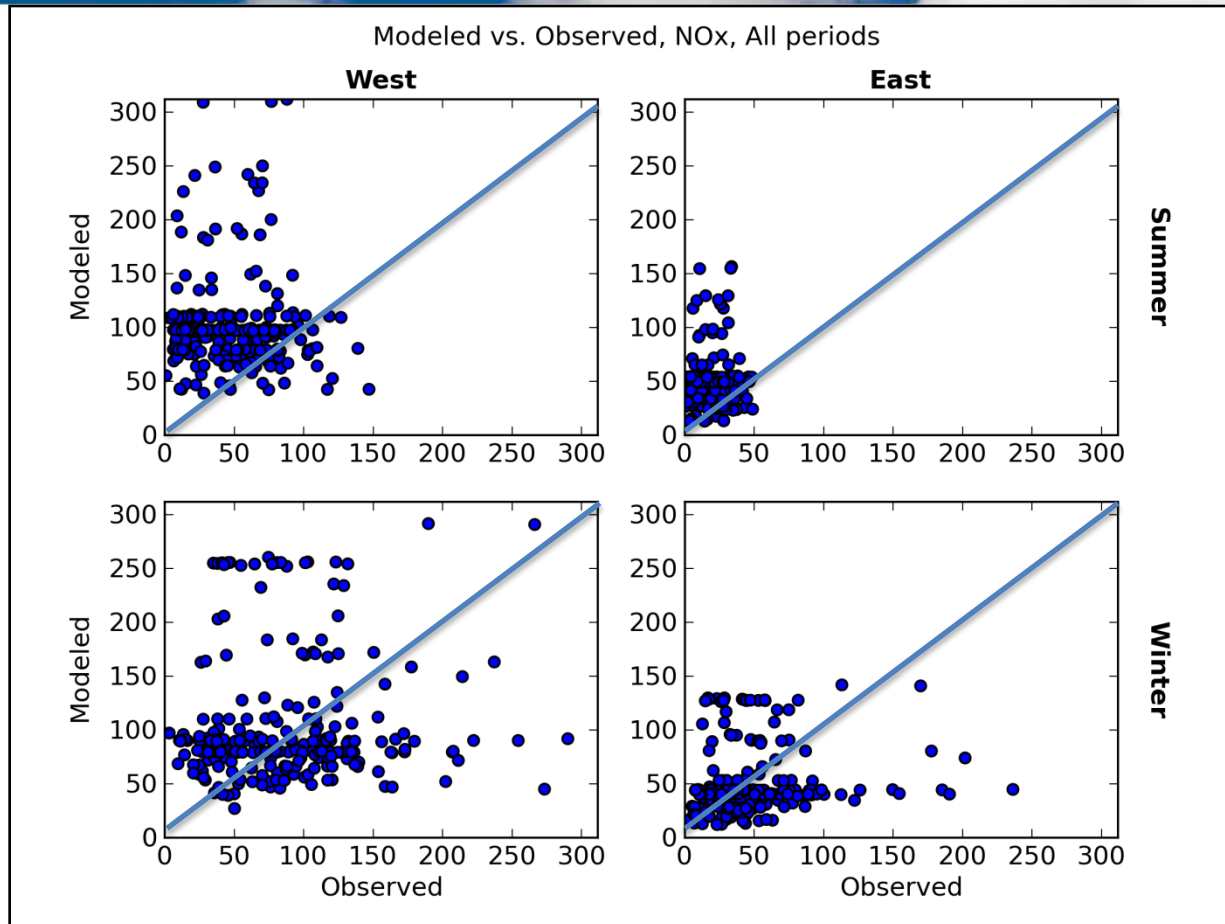


Scatter plots of Modeled vs Monitored CO Concentration (ppb)



Modeling is showing limited ability to predict monitored observations

Scattered Plots of Modeled vs Monitored NO_x Concentration (ppb)



Model is generally over-predicting NO_x concentrations

Key Findings

- Significant differences are observed between monitoring data and model predictions
- In general, AERMOD under-predicts CO and over-predicts NO_x concentrations.
- Discrepancies are likely due to uncertainties in model inputs (variations in traffic activity and fleet mix) less so weather
- Testing using area sources versus volume sources needs to be further evaluated.

Next Steps

- Conduct additional modeling to assess source of discrepancies
- Prepare technical memo to be presented in September