**Air Quality Model Performance Metric Definitions**

Common Variables:

M = predicted concentration

O = observed concentration

X = predicted or observed concentration

σ = standard deviation

*I. Mean Bias, Mean Error, and Root Mean Square Error (ppb)*

Mean Bias = 

Mean Error = 

Root Mean Square Error = 

*II. Normalized Mean Bias and Error (unitless)*

Normalized Mean Bias = 

Normalized Mean Error = 

*III. Fractional Bias and Error (unitless)*

Fractional Bias = 

Fractional Error = 

*IV. Correlation Coefficient (unitless)*

Correlation = 

*V. Standard Deviation (ppb)*



Standard Deviation (σ) =

*VI. Coefficient of Variation (unitless)*

Coefficient of Variation = 

*VII. Index of Agreement (unitless)*

Index of Agreement = 

*VIII. Systematic and Unsystematic Root Mean Square Error (ppb)*

Systematic RMSE (RMSEs) = 

Unsystematic RMSE (RMSEu) = 

Where C\* = , where a and b are the least squares regression coefficients of Cp and Co (the predicted and observed ozone concentrations, respectively).

*IX. Skewness (unitless)*

For this analysis, skewness is calculated as simply median/mean.