

# Development of MOVES-Mexico Stage I: Ciudad Juárez, Chihuahua and Quantification of Uncertainties

Huiyan Yang<sup>1</sup>, Salvador González-Ayala<sup>2</sup>, Gerardo Tarin<sup>3</sup>,  
Wen-Whai Li<sup>1</sup>, George Pinal<sup>4</sup>, Victor Valenzuela<sup>5</sup>

<sup>1</sup>The University of Texas at El Paso; <sup>2</sup>International Communities Research Center;  
<sup>3</sup>Secretaría de Medio Ambiente y Recursos Naturals (SEMARNAT) regional office in Ciudad Juárez, Chihuahua, Mexico; <sup>4</sup>El Paso Metropolitan Planning Organization, Texas; <sup>5</sup>Texas Commission on Environmental Quality (TCEQ) regional office in El Paso

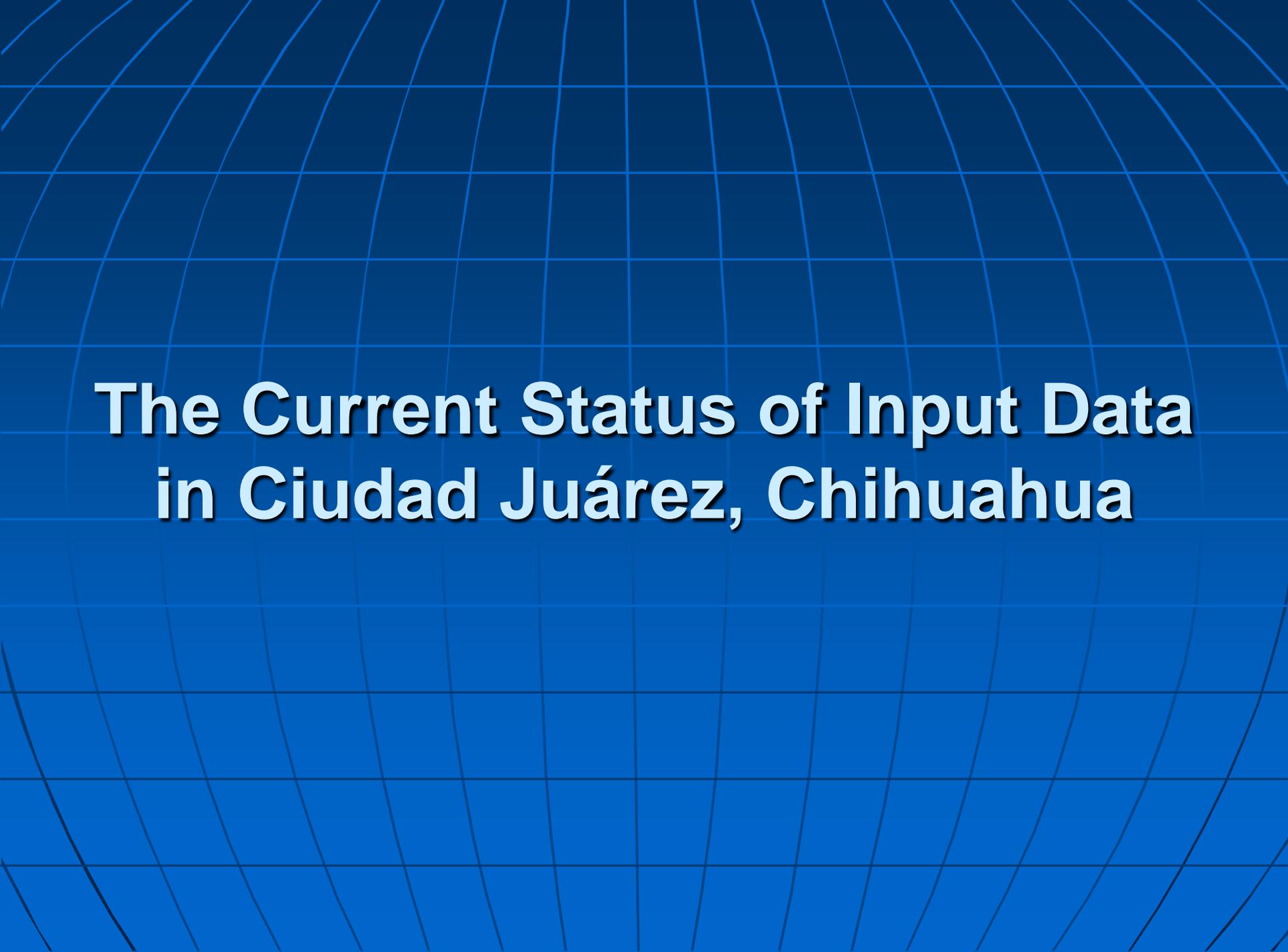
**2012 International Emission Inventory Conference**  
**Tampa, Florida**  
**August 15, 2012**

# Outline

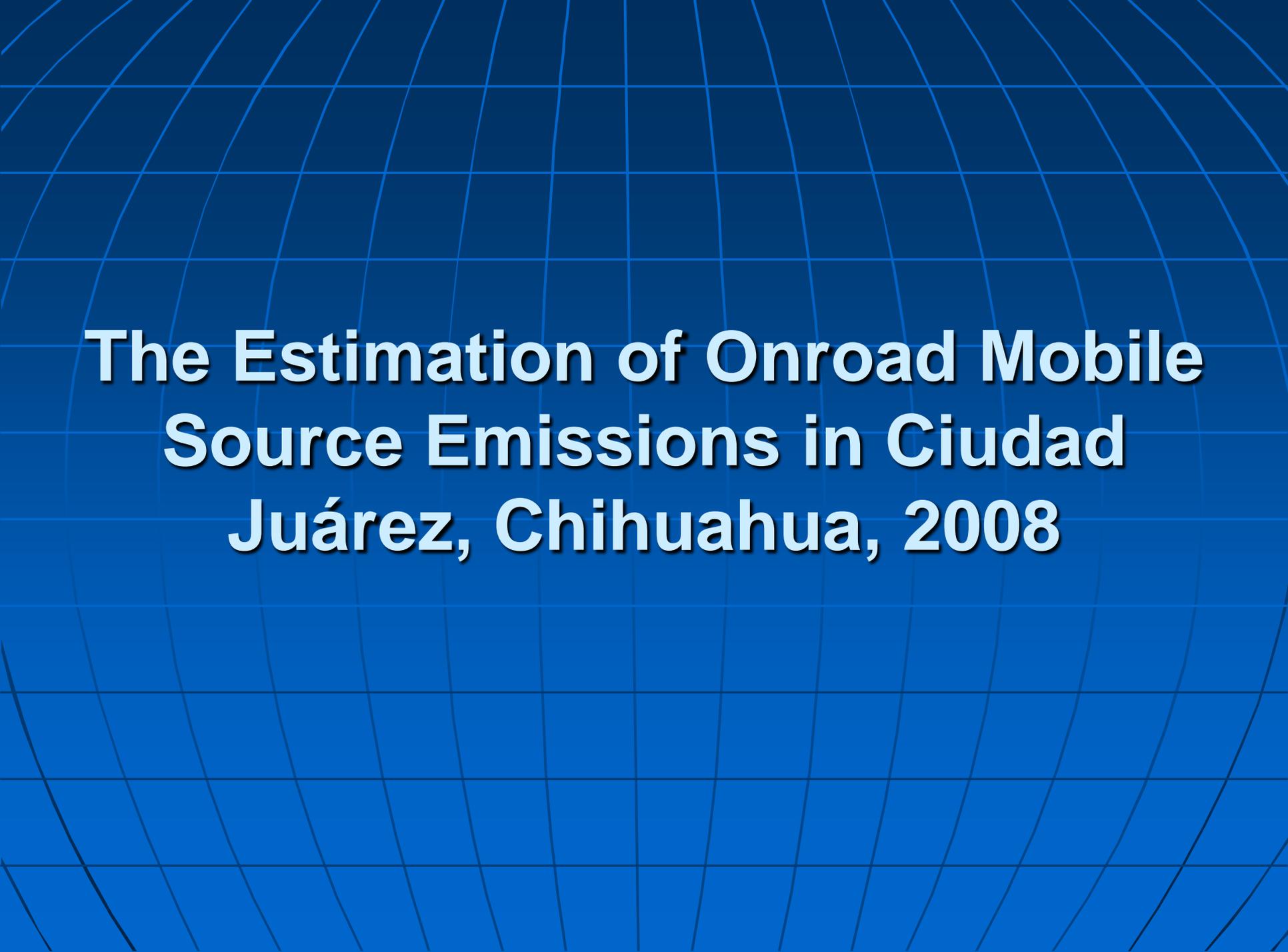
- **Acknowledgements**
- **The Current Status of Input Data in Ciudad Juárez, Chihuahua**
- **The Estimation of Onroad Mobile Source Emissions in Ciudad Juárez, Chihuahua, 2008**
- **The Bulk Emission Factors and Quantification of Uncertainty**

# Acknowledgements

The communications with Dr. Koupal and Dr. Michaels from OTAQ of the U.S. EPA were very helpful to conceive the project. Dr. Rincón and Mr. Luthans from the U.S. EPA Region 6; Ms. Contreras Vigil and Dr. Barrios from SEMARNAT are instrumental to obtain MOVES inputs from Mexico. The report analyzes the results of MOVES simulation by the Northeast States for Coordinated Air Use Management (NESCAUM). We acknowledge the preparation of MOVES inputs for NESCAUM MOVES simulation by member agencies and staff of the Mid-Atlantic/Northeast Visibility Union (MANE-VU) and the Mid-Atlantic Regional Air Management Association (MARAMA). The EPA OTAQ and OAQPS provide the modeling tools.

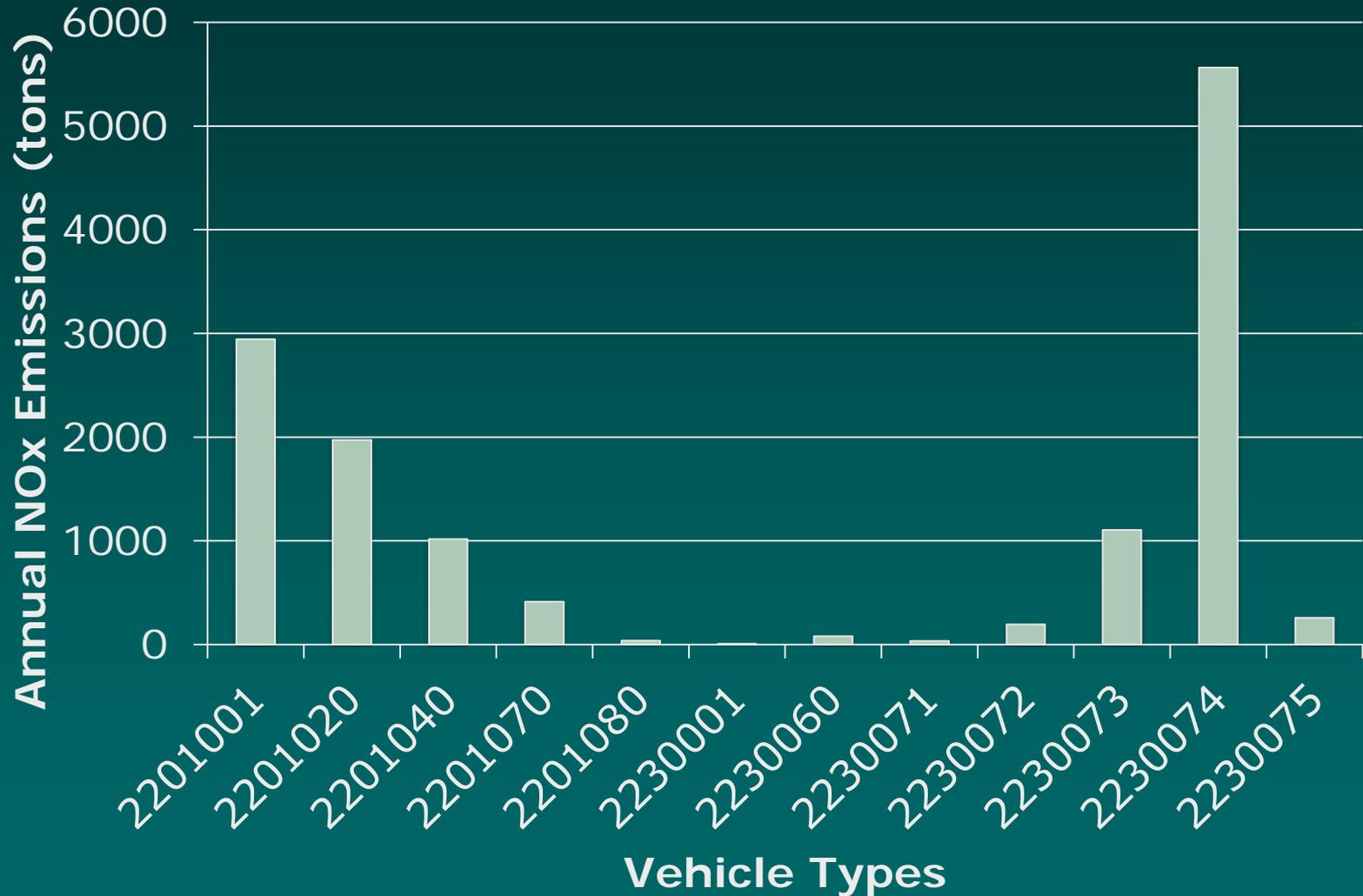


# **The Current Status of Input Data in Ciudad Juárez, Chihuahua**

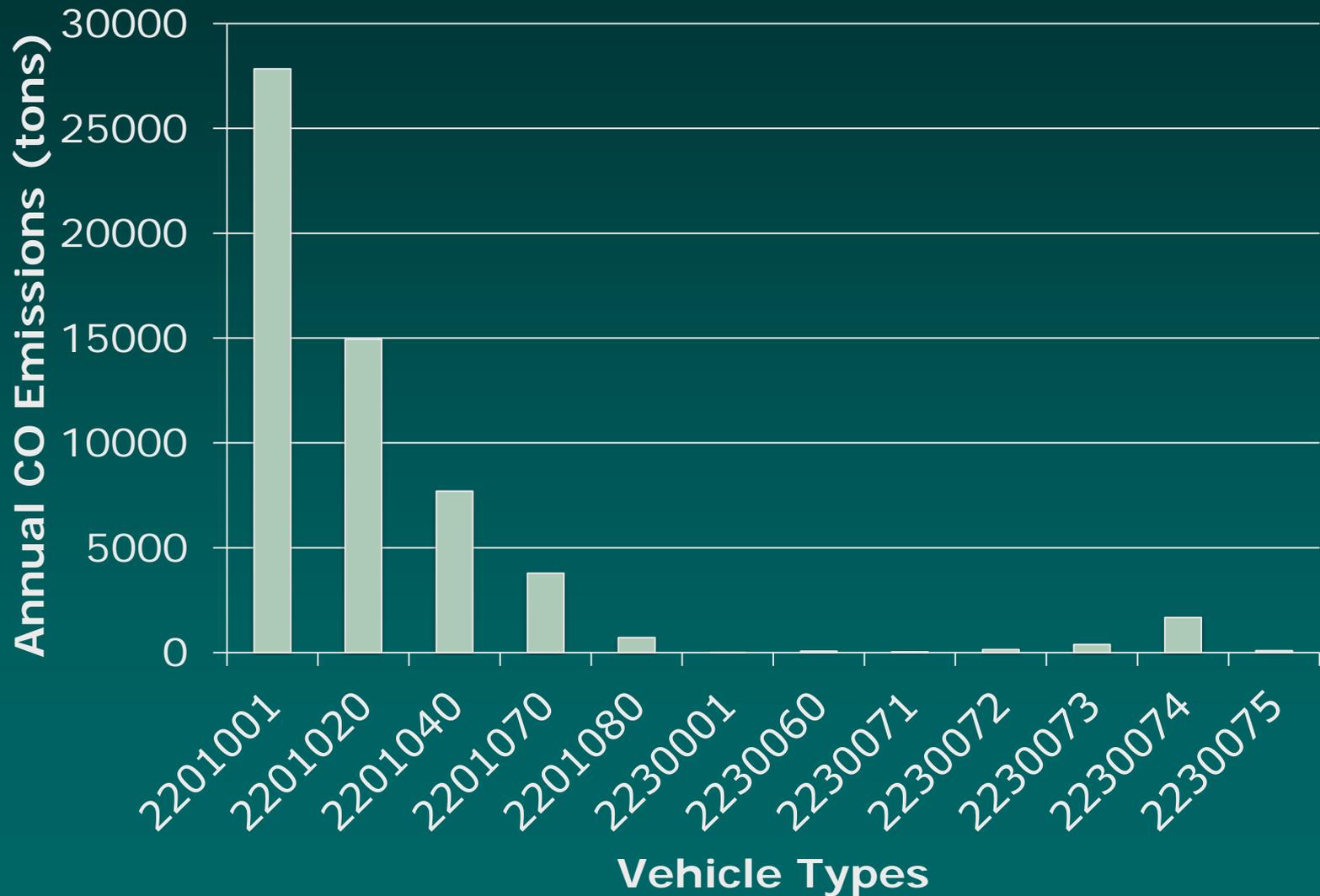


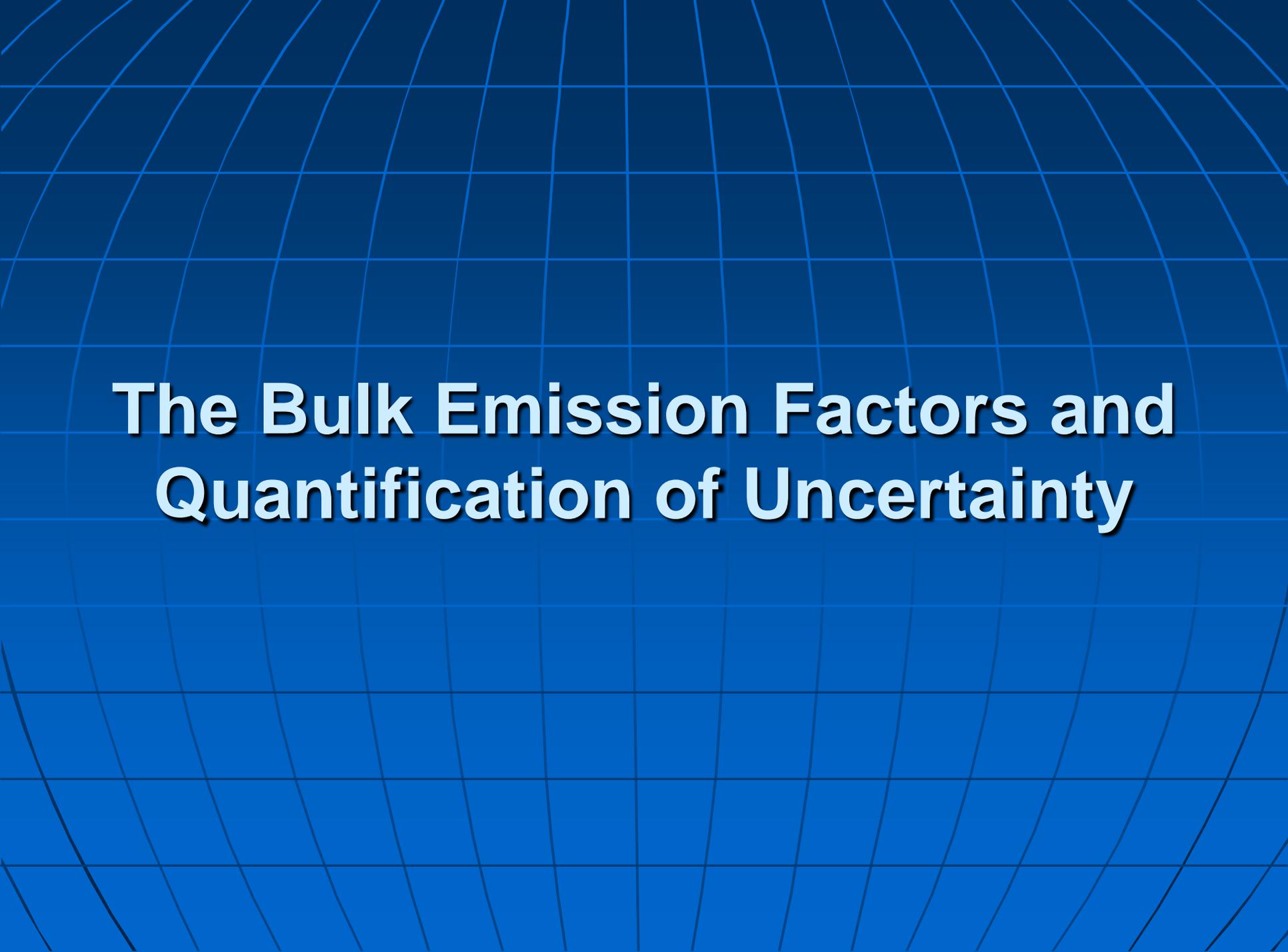
**The Estimation of Onroad Mobile  
Source Emissions in Ciudad  
Juárez, Chihuahua, 2008**

# 2008 onroad mobile source NOx emissions in Ciudad Juárez, Chihuahua, Mexico



# 2008 onroad mobile source CO emissions in Ciudad Juárez, Chihuahua, Mexico

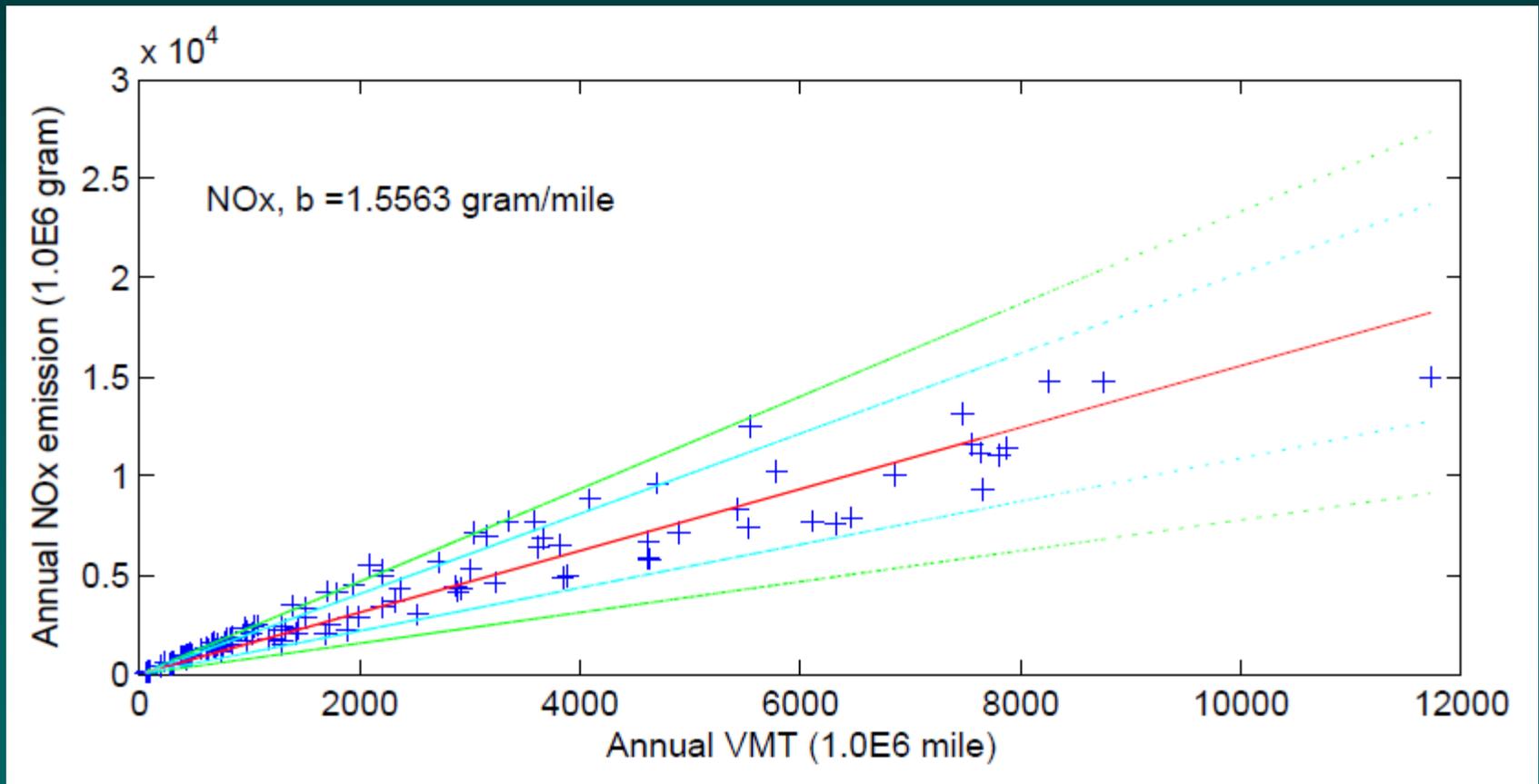




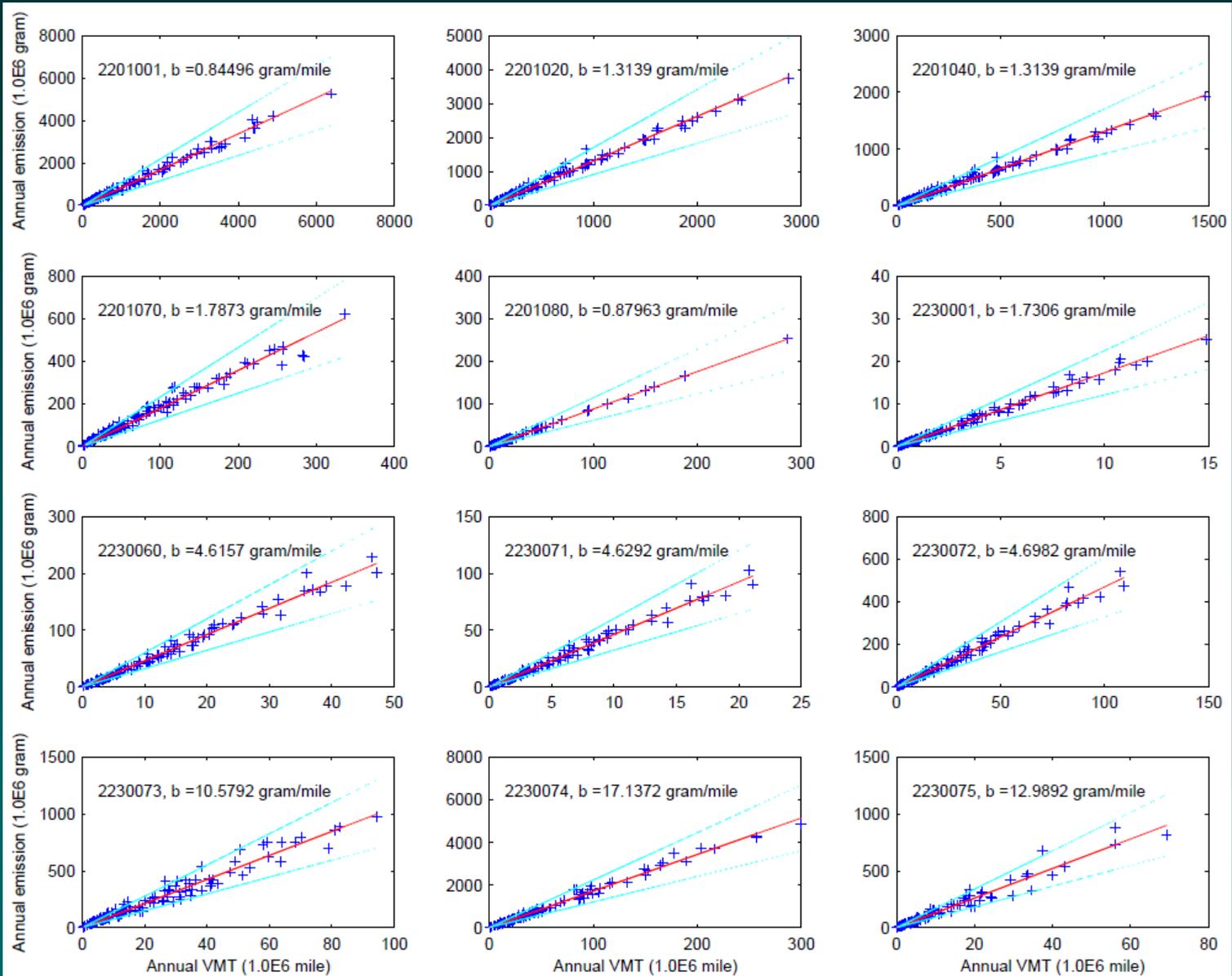
# **The Bulk Emission Factors and Quantification of Uncertainty**

The linear regression of 2007 onroad mobile source emissions and VMT for 116 counties in the Mid-Atlantic and Northeast region

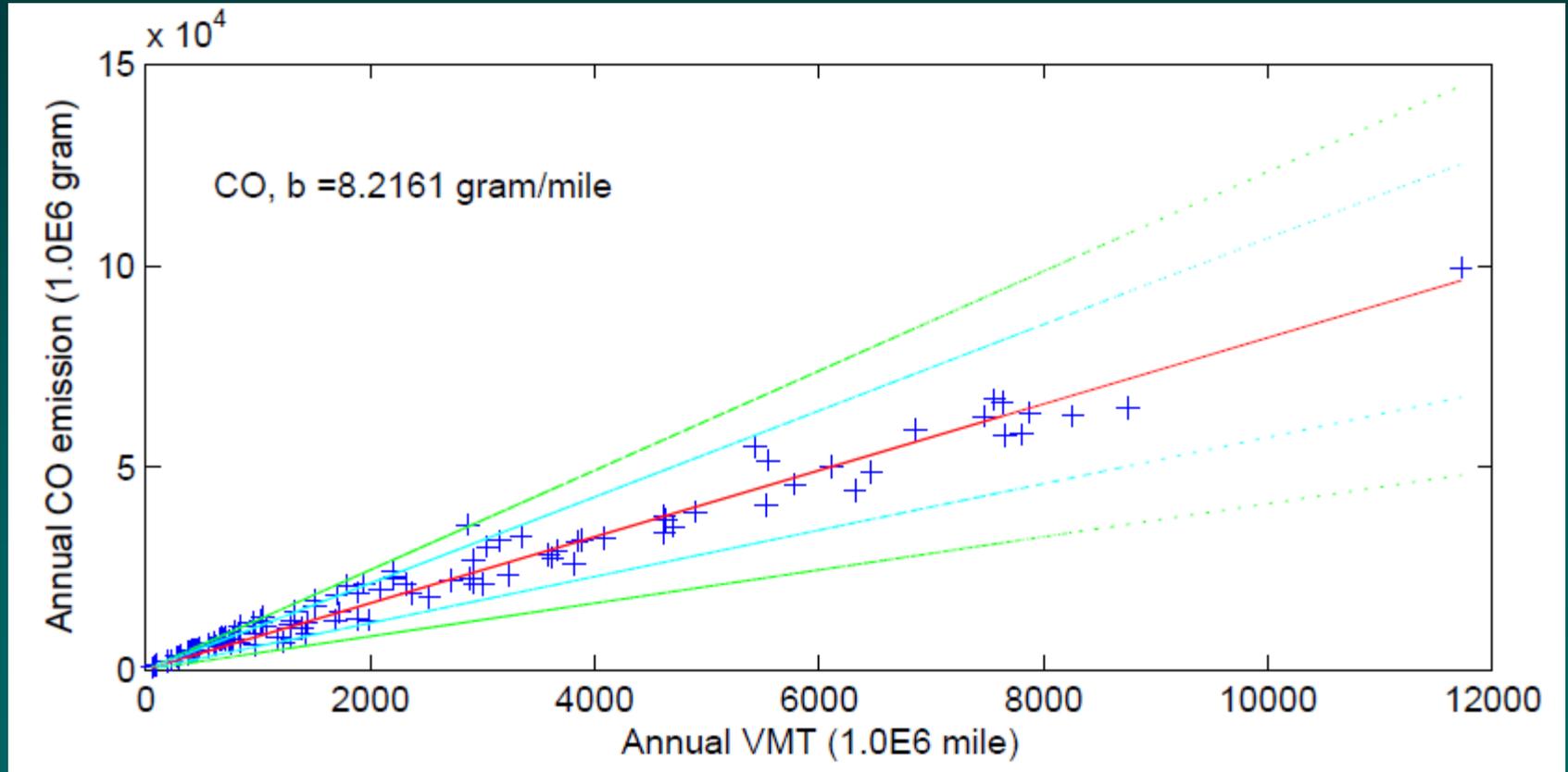
# Total NOx Emissions and VMT



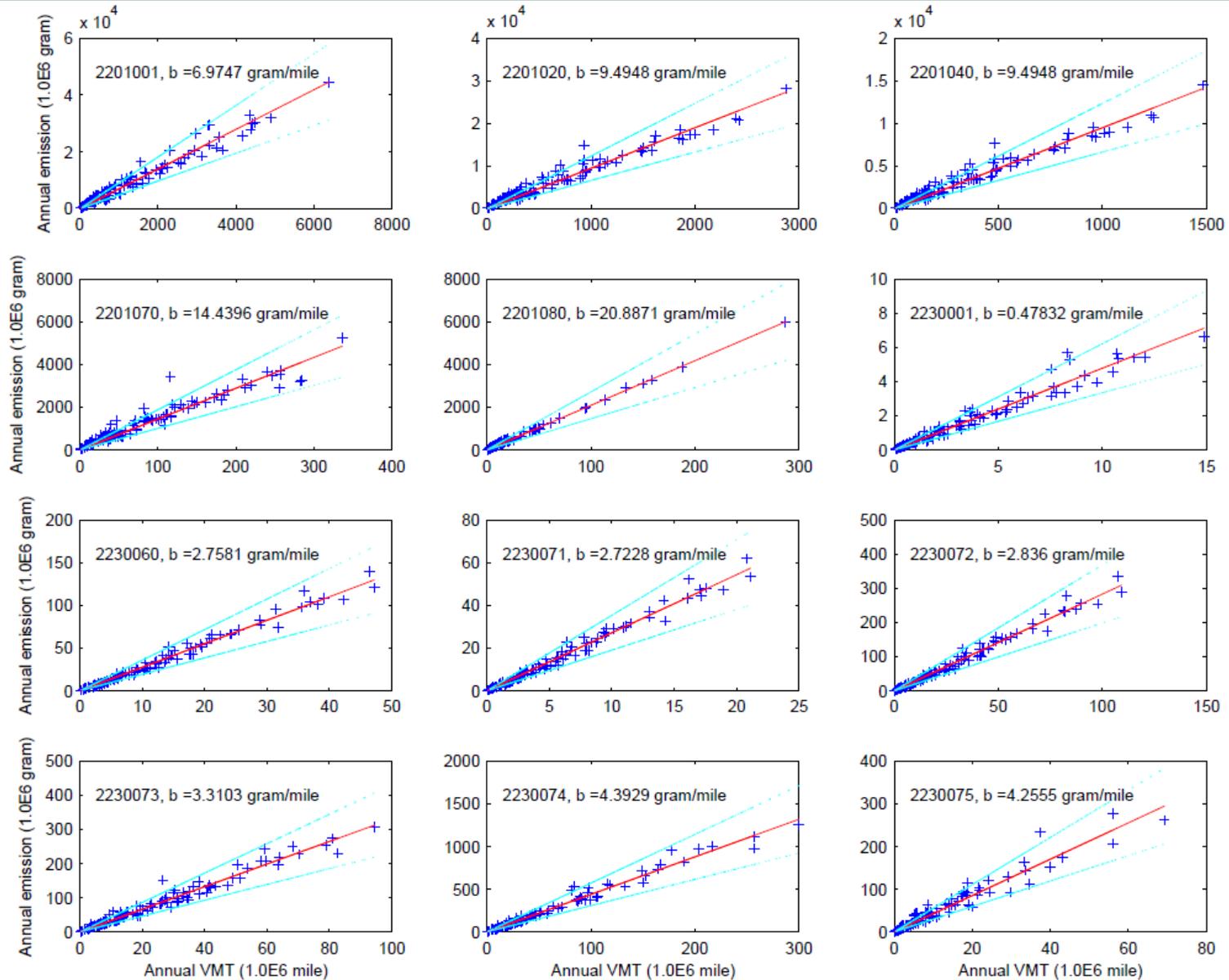
# NOx Emissions and VMT by Vehicle Types



# Total CO Emissions and VMT



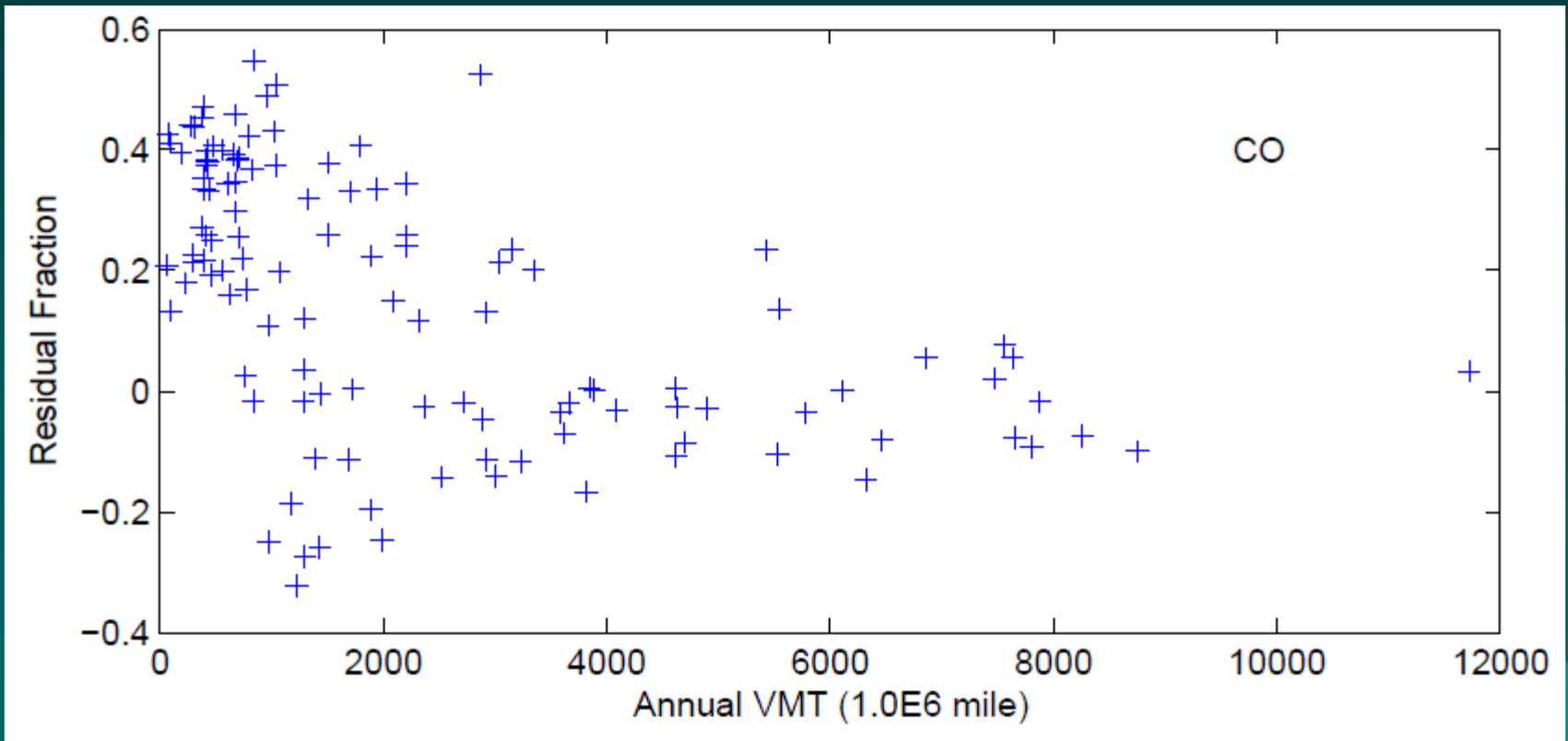
# CO Emissions and VMT by Vehicle Types



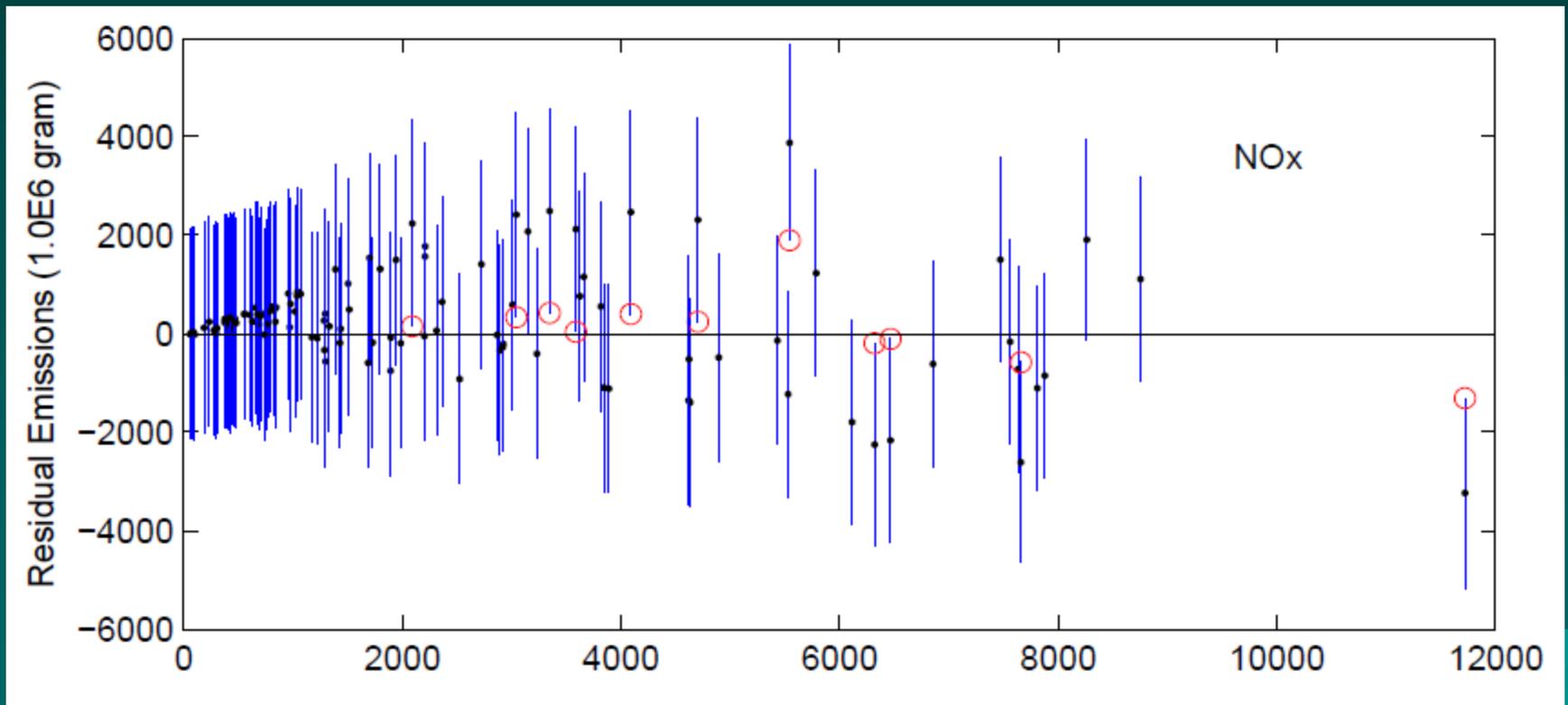
# **Estimation of Uncertainties Using Bulk Emission Factors**



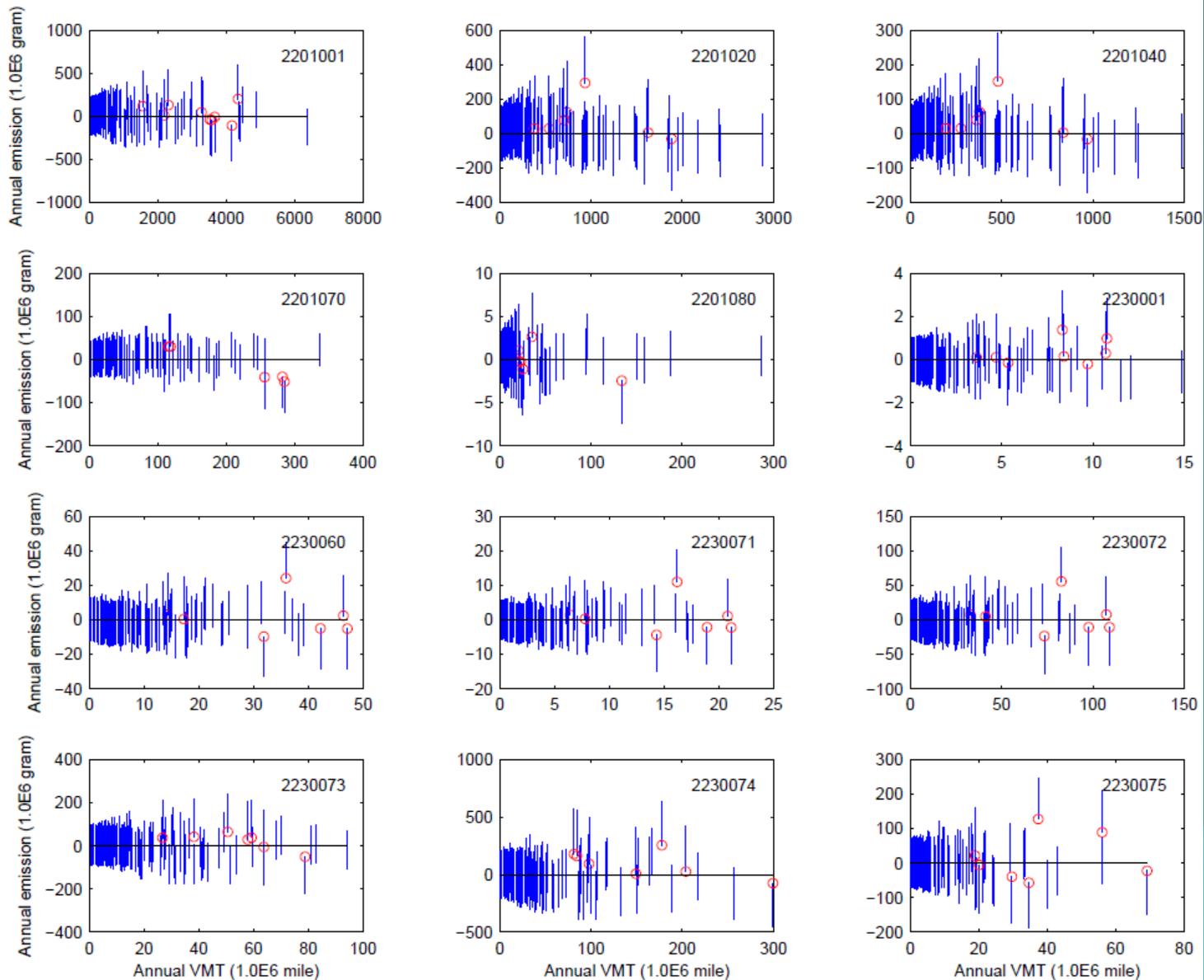
# Residual Fraction of Total CO Emissions



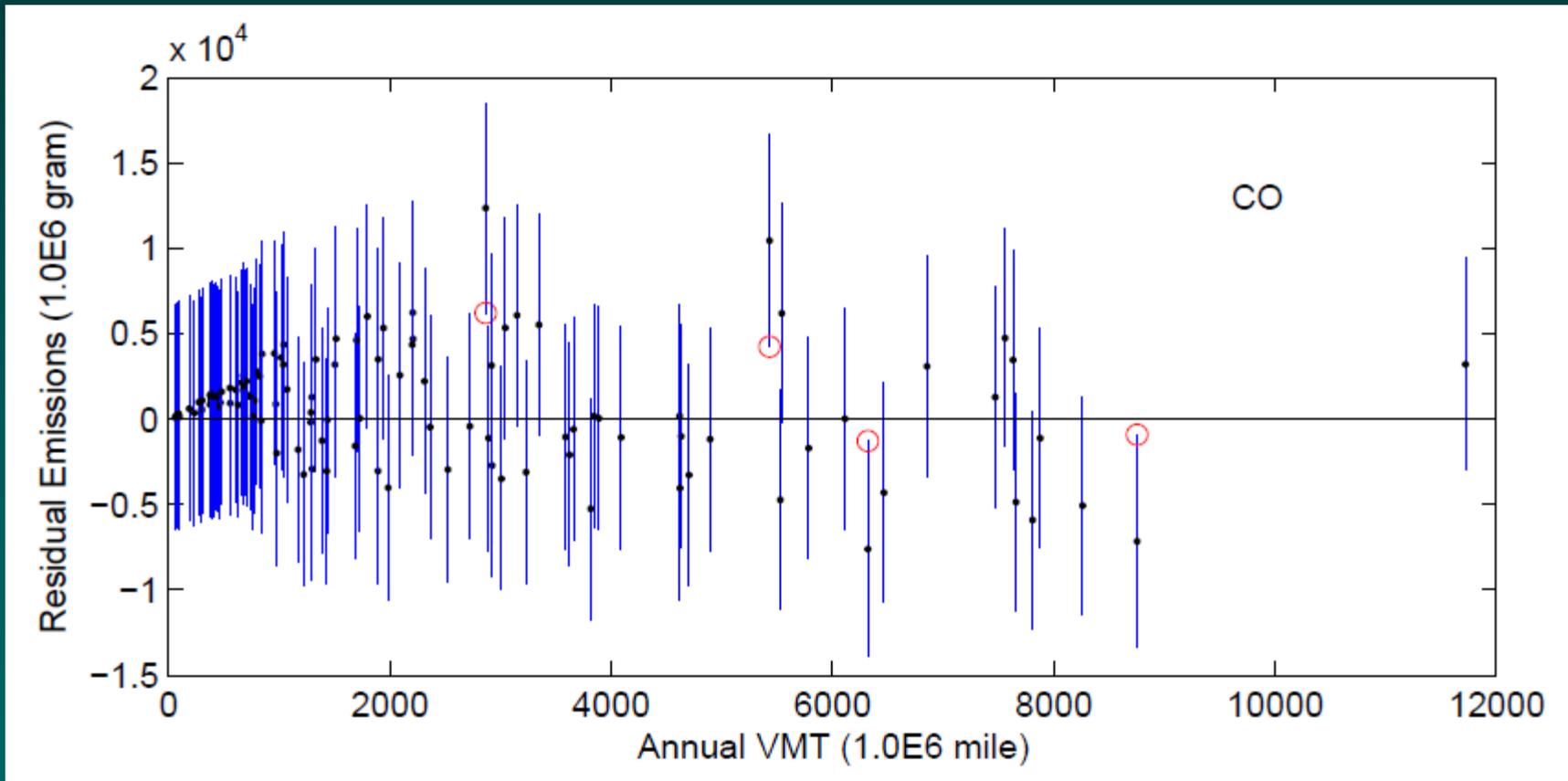
# Residuals and 95% Confidence Level of Total NOx Emissions



# Residuals and 95% Confidence Level of NOx Emissions by Vehicle Types



# Residuals and 95% Confidence Level of Total CO Emissions



# Residuals and 95% Confidence Level of CO Emissions by Vehicle Types

