COORDINATING RESEARCH COUNCIL

CRC Emission Inventory Projects

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Presentation Overview

- CRC Introduction
- Atmospheric Impacts Committee Overview
- A sampling of three committee projects on emissions inventory reviewed:
  - A-34 Receptor Model Evaluation
  - A-47 Atlanta Weekend Effect
  - A-49 Fate & Transport of Air Toxics
- Summary

CRC Introduction

- Coordinating Research Council, Inc. organized 63 years ago
- Mechanism for auto and petroleum industries to work with government
- Research on mobility and environmental issues
- Operated through committee action
- Website address: www.crcao.com

Atmospheric Impacts Committee Introduction

- Committee chairmen – Dan Baker, Shell Oil & David Chock, Ford
- 12 auto/oil committee members
- 12 industry/gov't working group members
- Use atmospheric chemistry & models to evaluate inventory & air quality impacts
- 14 Active Projects in 2005

CRC Atmospheric Impacts Committee Projects

- A-34 Evaluation of Receptor Models
- A-40 Application of PMCAMx
- A-44 Annual PM Modeling
- A-45 Air Toxics Workshop
- A-46 Fine Grid Meteorology
- A-47 Atlanta Weekend Ozone Effect
- A-49 Fate and Transport of Air Toxics

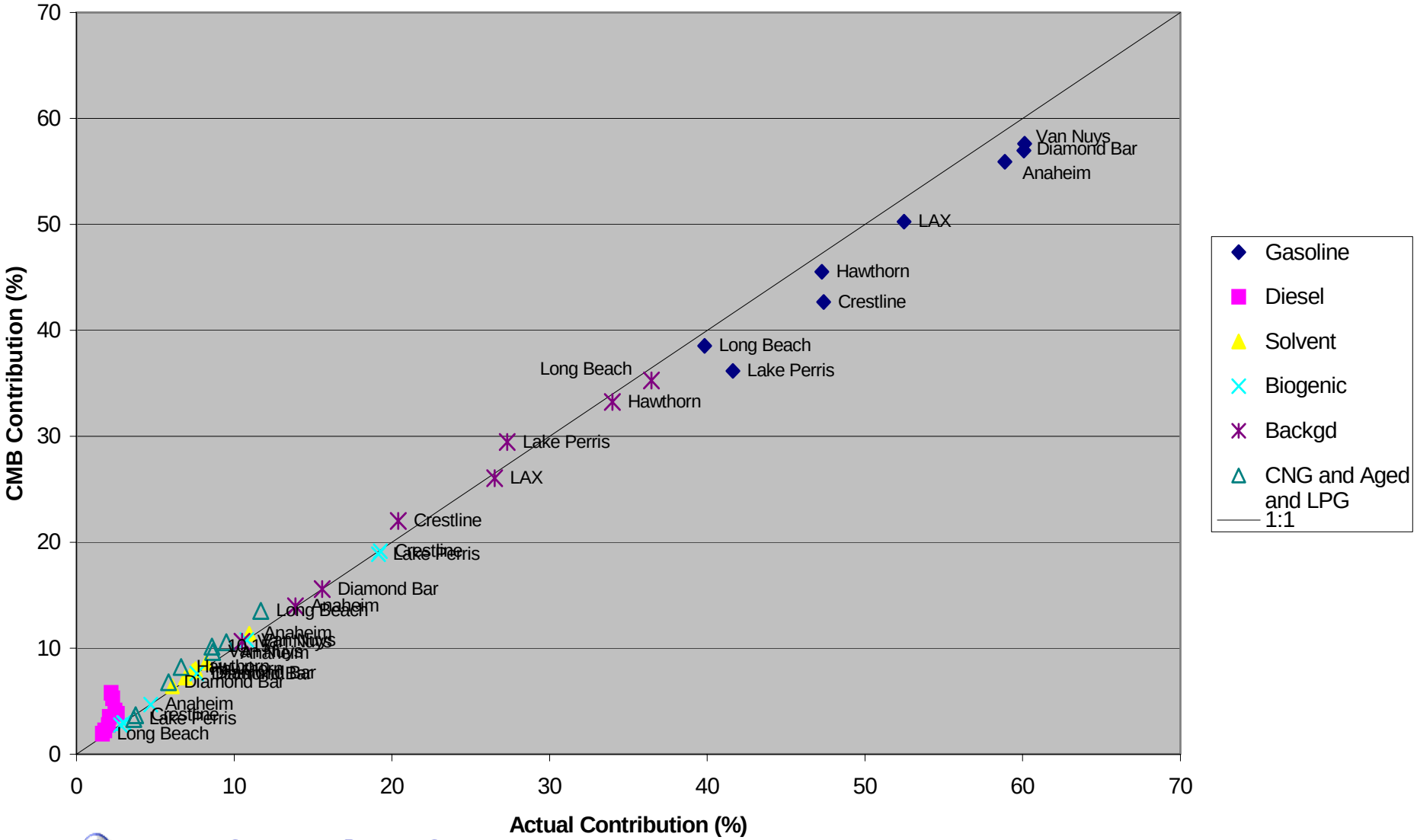
CRC Atmospheric Impacts Committee Projects (cont.)

- A-51 Probing Tools in PMCAMx
- A-54 Trans-continental Transport
- A-55 Trajectory-Grid in CAMx
- A-56 Future Year Inventory Modeling
- A-57 Fine Particulate Matter Patterns
- A-58 Atmospheric Alkane Reactions
- A-59 Secondary Aerosol Modules

A-34 Receptor Model Evaluation

- Objective: Assess accuracy of receptor model (CMB) against predictions of grid model (CAMx)
- Researchers: ENVIRON, Desert Research Institute, and UC Davis
- Status: Final report issued April 2005

Round 3: Experiment 12
CMB vs. Actual Contribution, by Receptor



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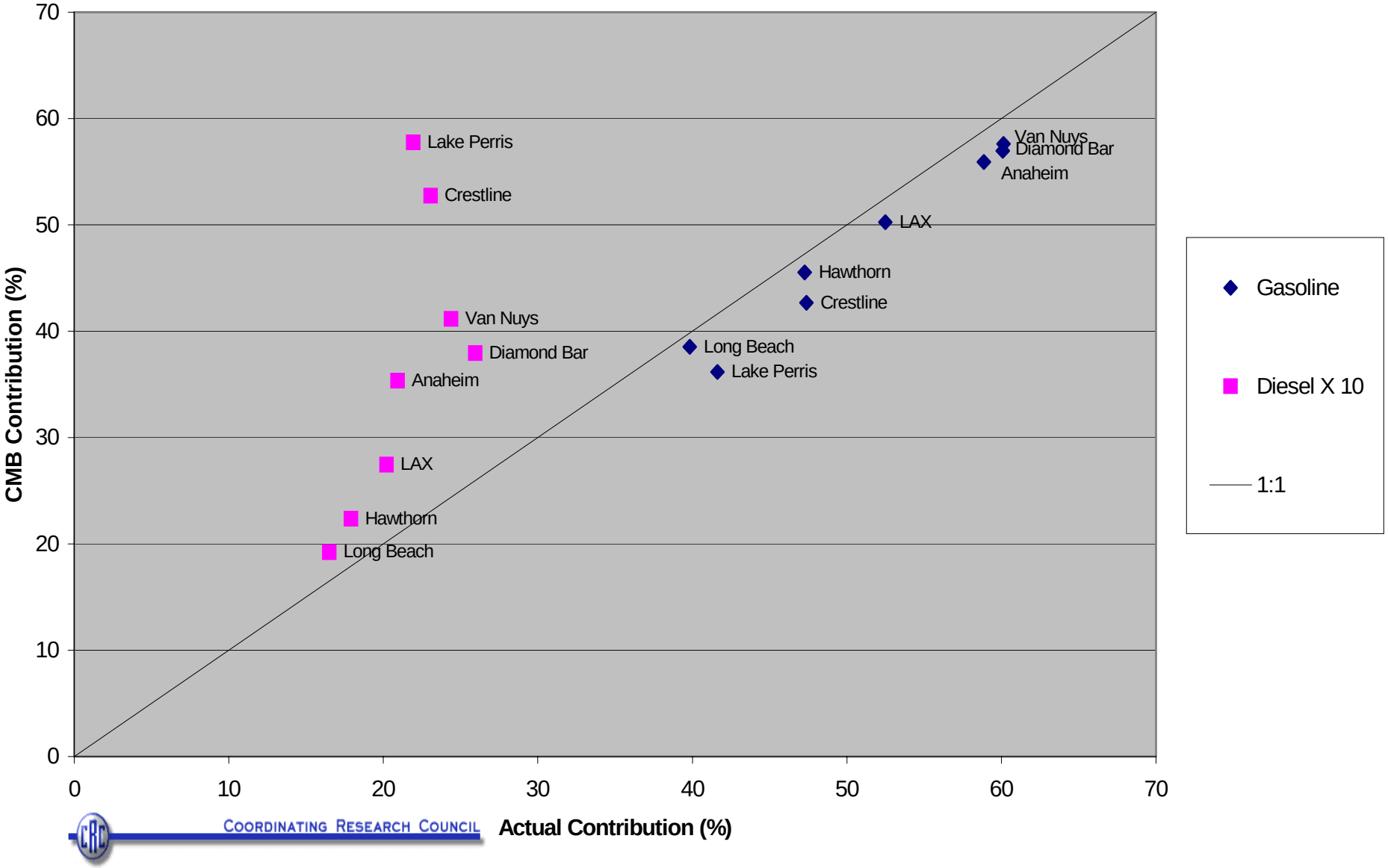
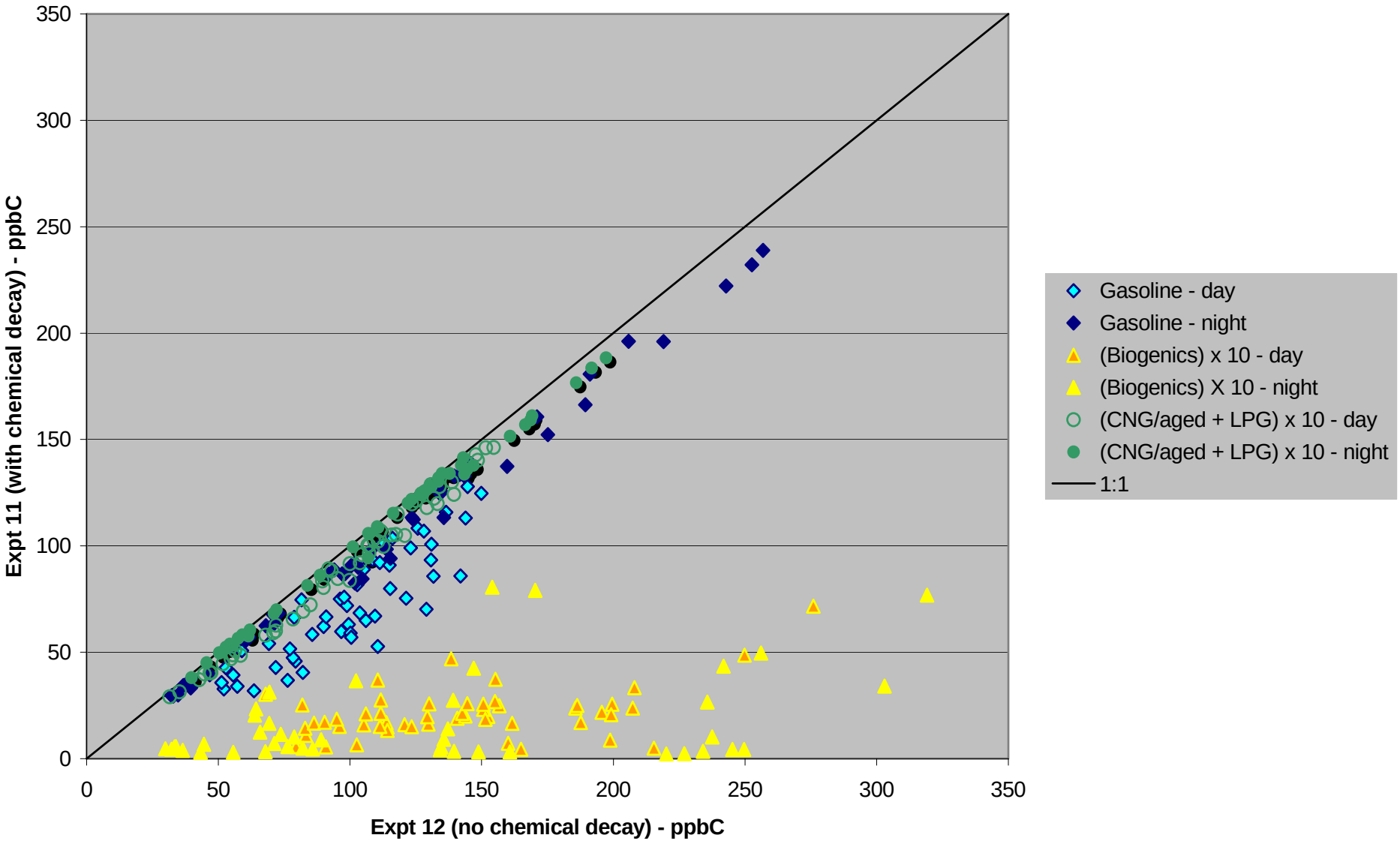


Comparison of Source Contributions at Diamond Bar in Experiments 12 (no chemical decay) and 11 (with chemical decay)



A-34 Conclusions

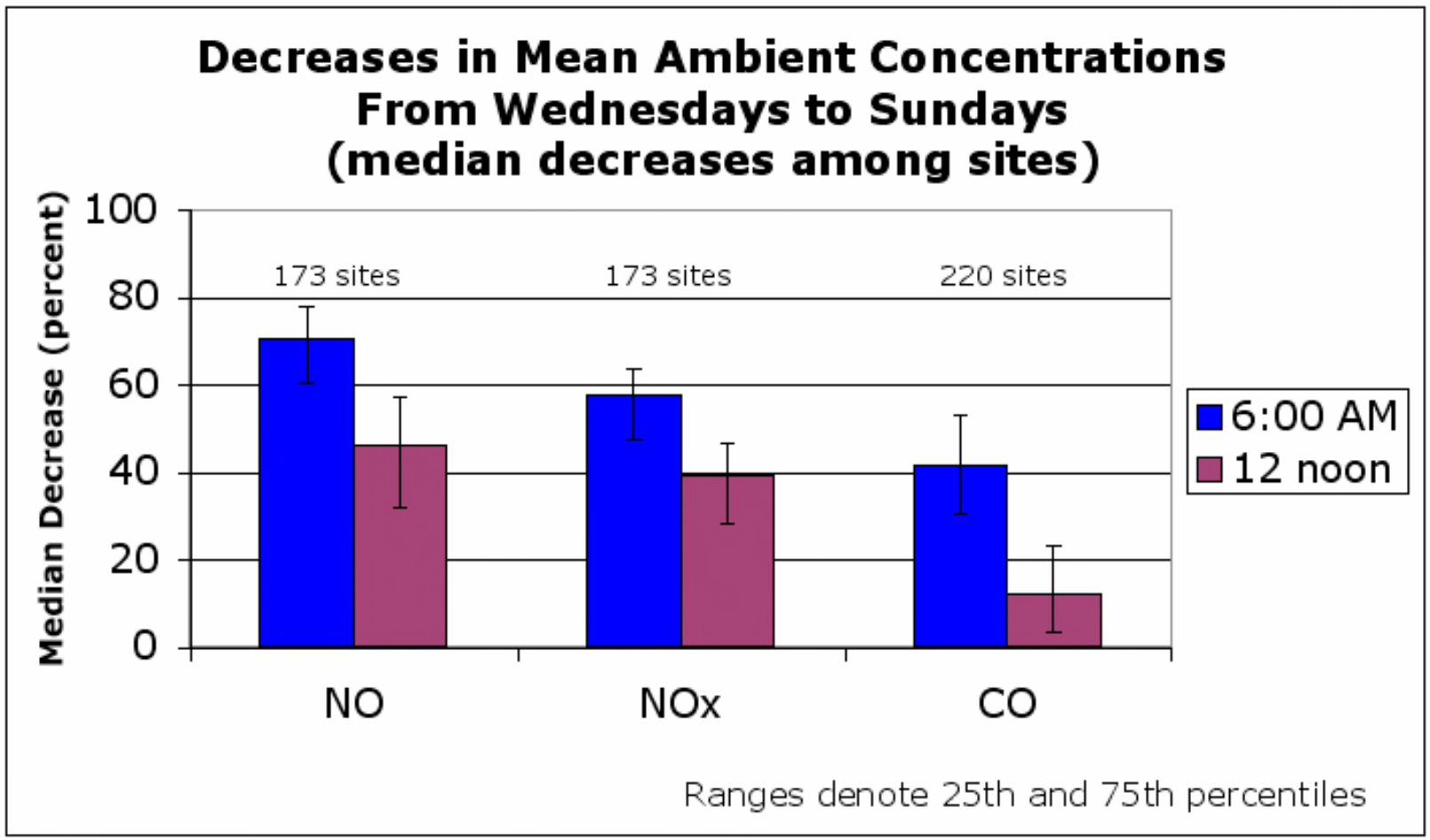
- CMB model sources can be high if all sources not fully characterized
- Diesel and gasoline contributions inaccurate without C9 – C11 data
- Highly reactive sources such as biogenics can be underestimated
- CMB is robust tool with some limitations

A-47 Atlanta Weekend Ozone Effect

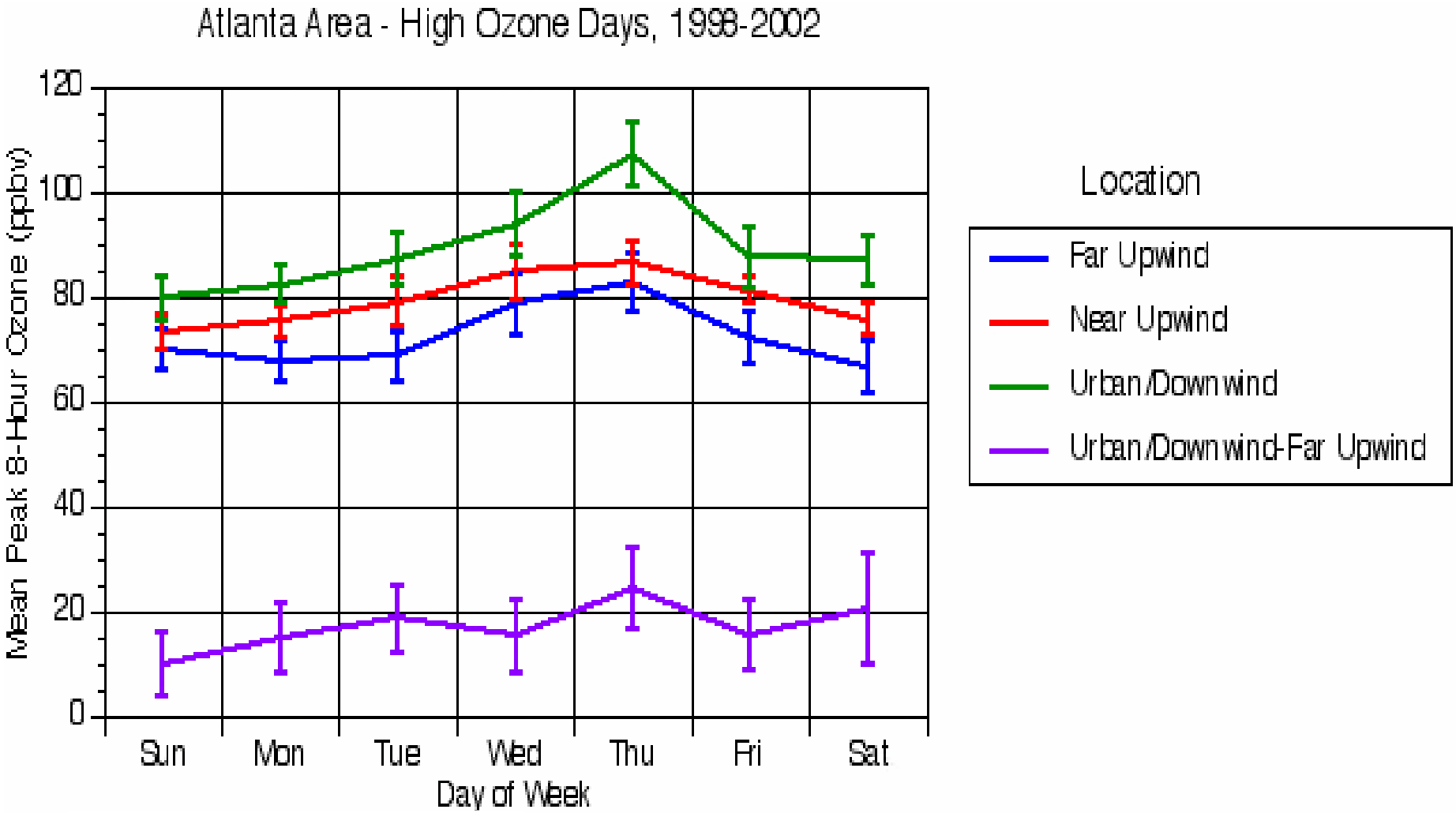
- Objective: Explore air quality changes due to weekend emissions
- Researcher: Envair (companion studies by DOE/NREL and Lake MI Air Directors Consortium)
- Status: Final report February 2005
- Sample of combined results presented

NO, NOx, and CO – *Significant Declines on Weekends*

(combined data from CRC, NREL, & LADCO studies)



Atlanta Area - *Regional Ozone Predominates All Week*



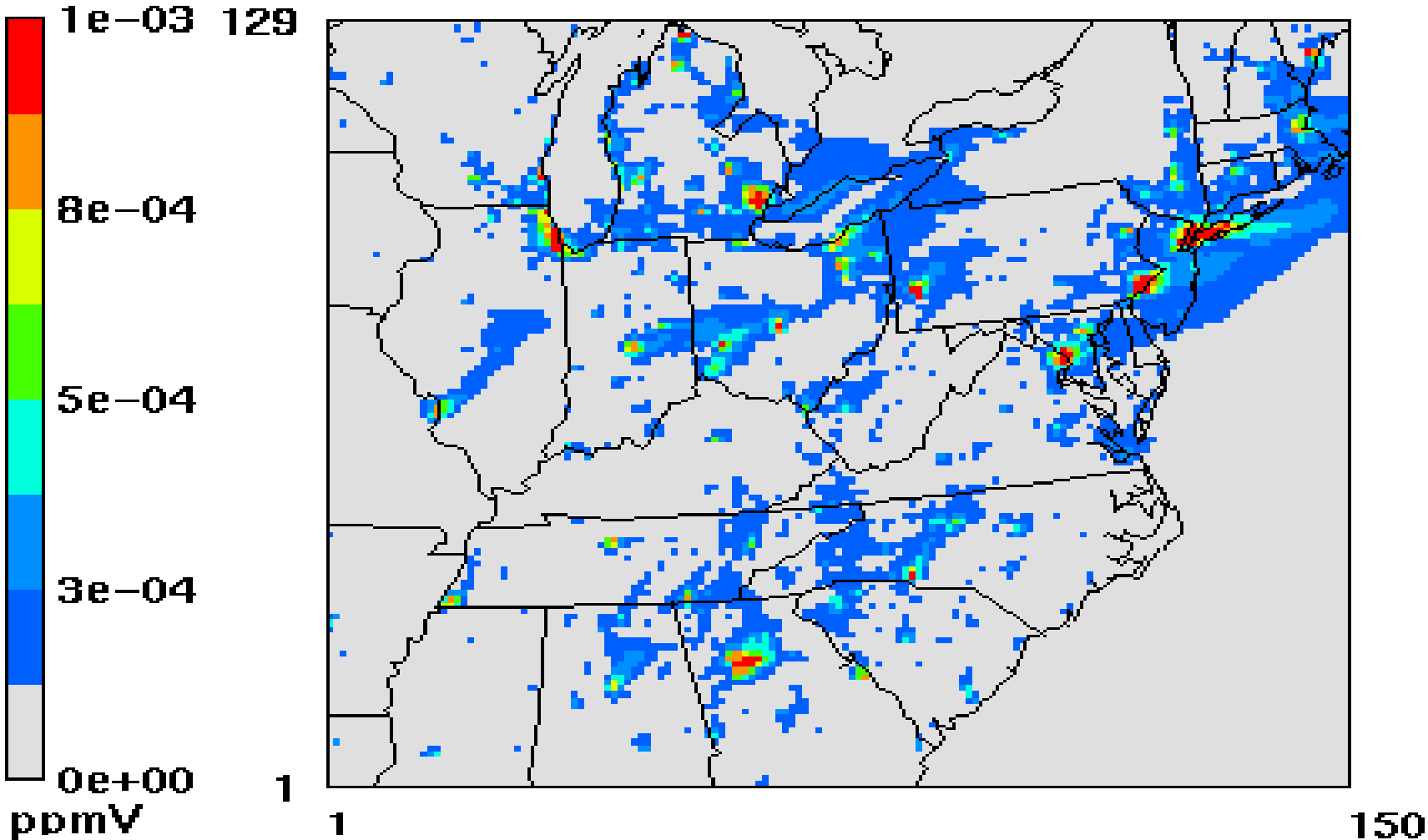
A-47 Conclusions

- Statistically significant reductions in weekend ambient levels in all areas: 71% NO, 58% NOx, 42% CO
- Average peak ozone concentrations did not vary significantly from weekdays to weekends
- Regional ozone transport dominated in 4 areas
- Local ozone began forming earlier on weekends

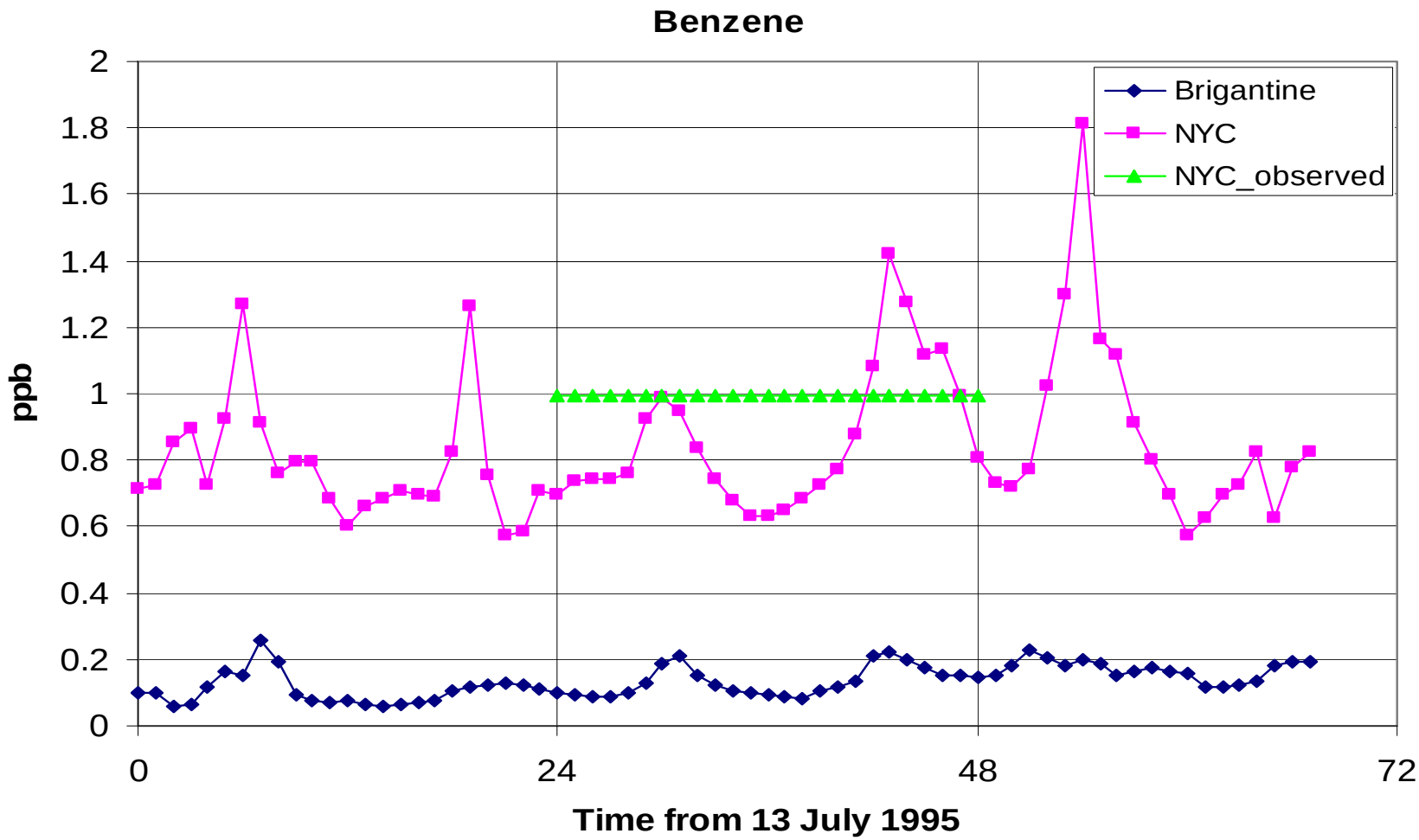
A-49 Fate & Transport of Air Toxics

- Objective: Determine day-of-week variability of ambient concentrations of air toxics using data analysis and modeling
- Researcher: AER
- Status: Modeling status report released February 2005
- Related study A-45, “CRC Mobile Source Air Toxics Workshop” Dec. 04

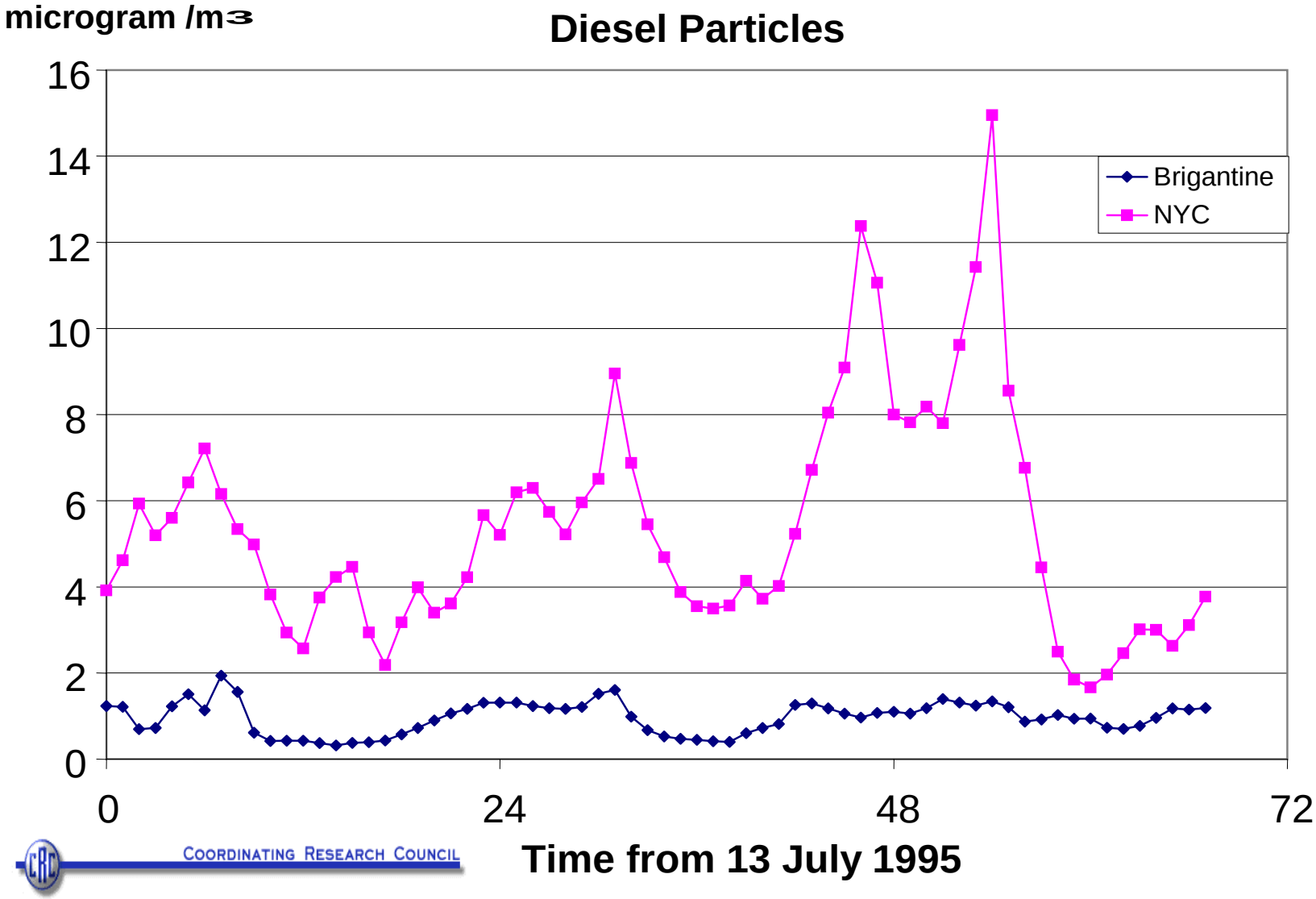
A-47 Simulated benzene, ppm (July 15, 1995, 6am)



A-47 Benzene background can be 20% of urban levels



A-47 Diesel particles: background can be 10-20% of urban levels



A-47 Air Toxics Modeling Needs

- Global, regional, and local input data required
- Combine 3-D grid models and plume models
- Meteorology more demanding for air toxics
- Improved inventories needed for local sources
- Removal process data needed

Emissions Inventory Projects in the CRC Atmospheric Impacts Committee -- Summary

- CRC working with government & industry
- A-34 evaluates inventory applications of receptor modeling
- A-47 evaluates data from the real world experiment of changing daily inventories
- A-49 evaluates tools for understanding air toxics inventories

CRC Website

www.crcao.com