

Multiple Air Toxics Exposure Study IV (MATES IV)

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Cleaning the Air That We Breathe...

MATES PROGRAM

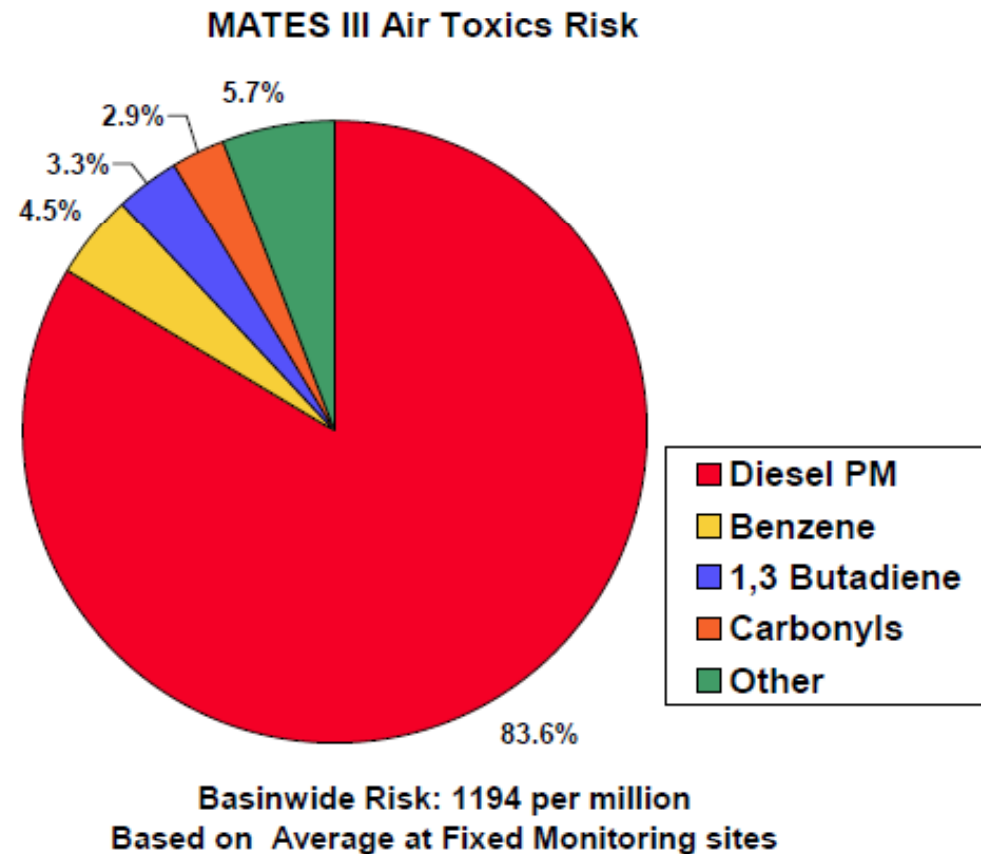
- Periodic air toxics monitoring and evaluation study conducted in the South Coast Air Basin
- Three previous MATES studies:
 - MATES I (1987)
 - MATES II (1998-99)
 - MATES III (2004-2006)
- It includes:
 - A monitoring program
 - An emissions inventory of toxic air contaminants
 - A modeling effort to characterize risk across the Basin
- Focuses primarily on the carcinogenic risk from exposure to air toxics

MATES PROGRAM

- MATES I (1987)
 - Limited measurements; benzene and Cr⁶⁺ impacts
- MATES II (1998-99)
 - Downward trend for certain air toxics
 - Diesel Exhaust - 71% of cancer risks from air toxics
- MATES III (2004-2006)
 - Continuing downward trend other than Diesel PM
 - Higher Diesel PM risk near ports
 - Enhanced Diesel PM quantification methods
 - Observed increased Cr⁶⁺ - traced to emissions from cement plants

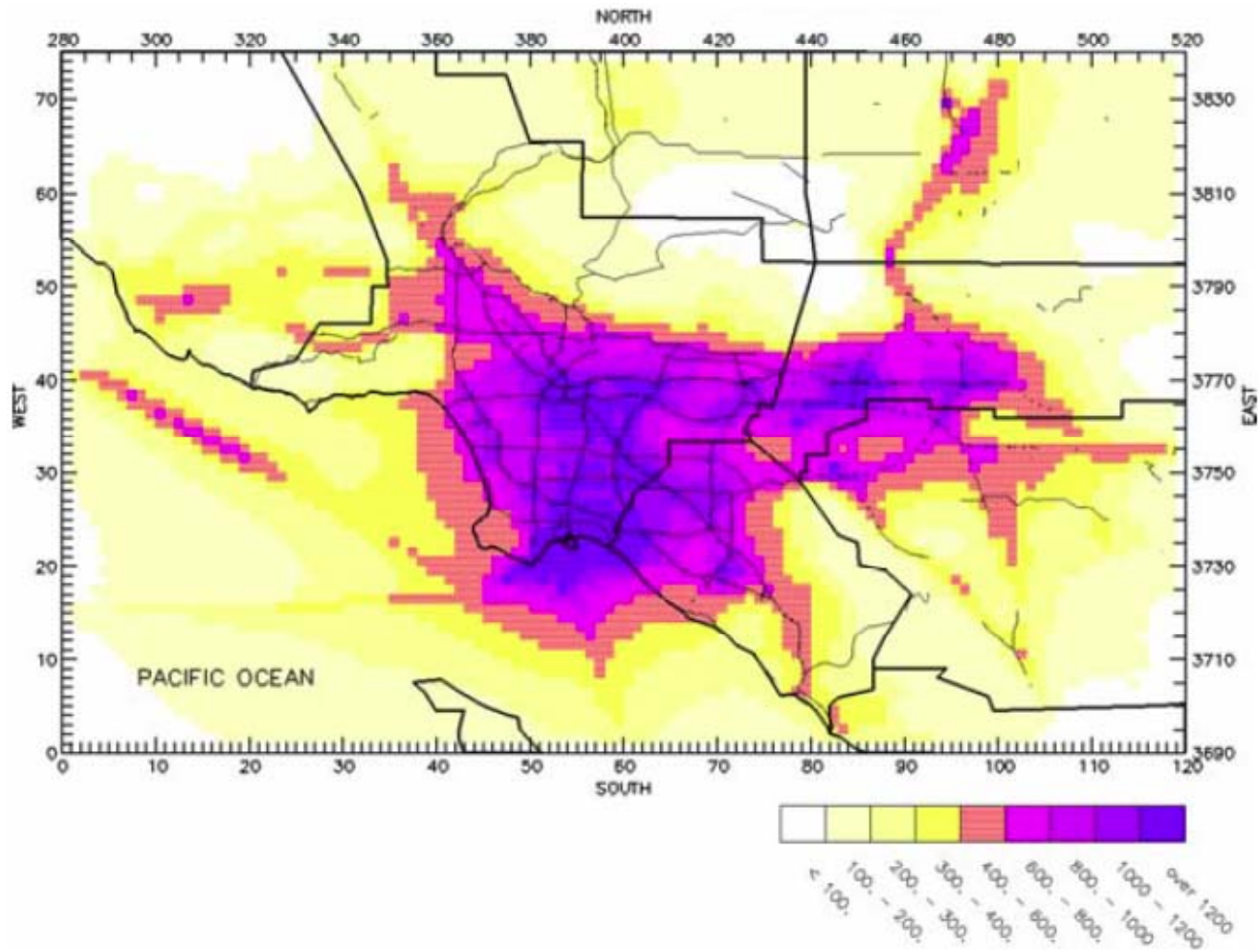
MATES III Main Results

- General downward trend for air toxics
- Estimated Basin-wide lifetime risk 1,200/million
- Mobile source toxics account for 94% of risk
- Diesel accounts for 84% of air toxics risk
- Non-diesel risk lower by 50% from MATES II

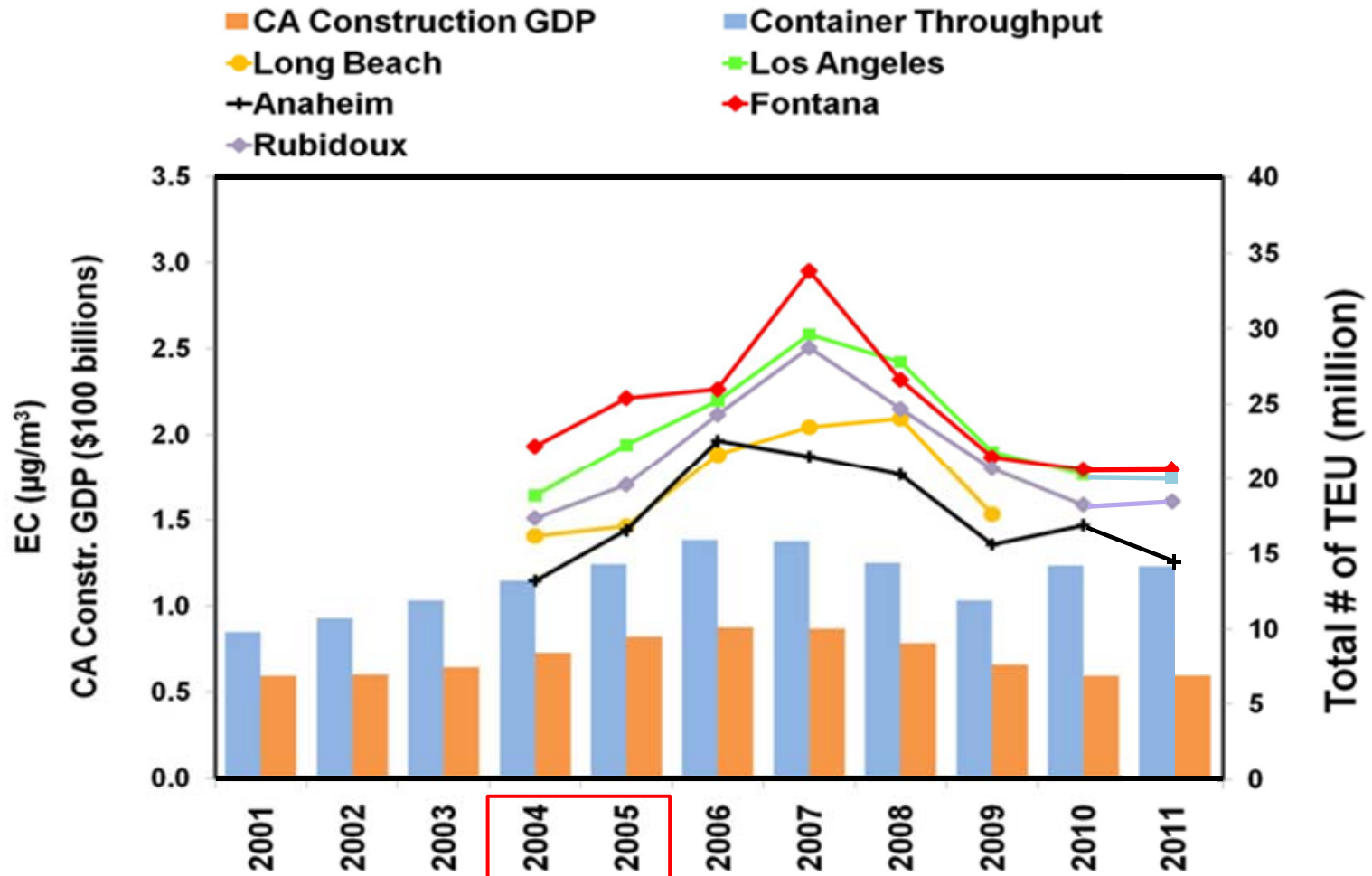


MATES III Main Results

Model Estimated Risk From All Emission Sources



EC Trends



MATES III

MATES IV Overview

- GOALS

- Assess air toxics levels
- Update risk characterization
- Add **ultrafine PM monitoring**
- Add **continuous black carbon monitoring**
- **Determine local mobile source impacts at selected locations**

- COMPONENTS

- Technical advisory group
- Long- and **short-term** ambient measurements
- Emission inventory update
- Regional modeling
- Risk characterization

MATES IV: Long-term Monitoring

- Continuation of MATES III methods for trend analysis
 - Measured species: VOCs, Carbonyls, TSP metals, Cr⁶⁺, Lead, PM_{2.5} speciation (metals, EC, OC), BC, UFP
 - 10 sites, 1-in-6 day, 24-hr integrated sampling, continuous monitoring (BC, UFP)
 - Utilize ongoing toxics monitoring programs
 - Duration: 07/01/2012 – 07/01/2013

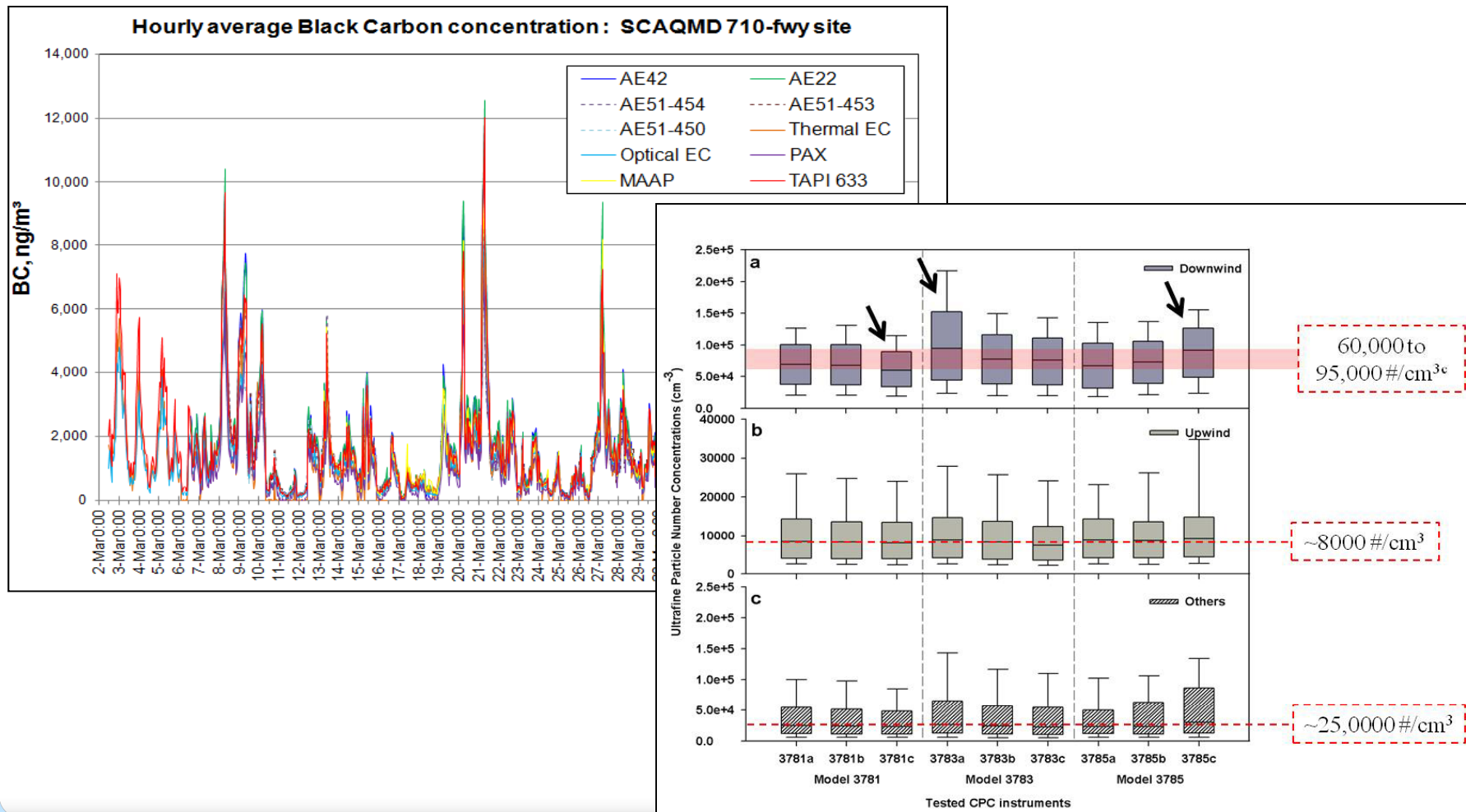


MATES IV: Short-term Local-scale Monitoring

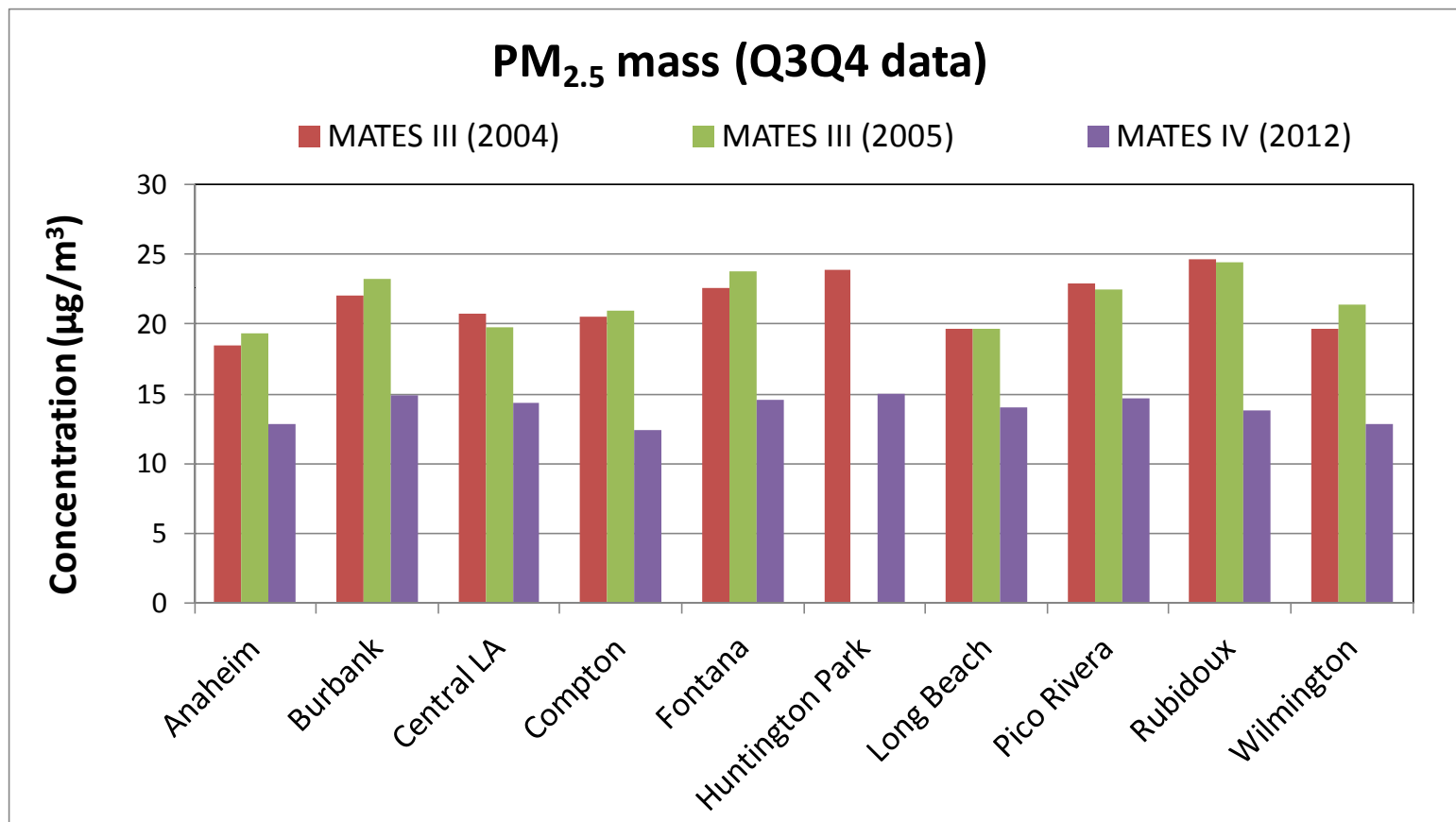
- Mobile source impacts: Ultrafine & Diesel PM
- Mobile monitoring platforms and multiple fixed sites to measure micro-scale gradients
- Short-term deployment (e.g. days to weeks)
- Locations (6-8 total)
 - Freeways (e.g. *I-710*, *CA-110*, *CA-103*)
 - Intersections/Warehouses (e.g. *Mira Loma*)
 - Rail yards (e.g. *ICTF*, *San Bernardino*)
 - Airports (e.g. *LAX* and *Long Beach*)
 - Communities (e.g. *Boyle Heights*)



Pre-MATES IV Instrument Evaluation (Black Carbon and UFP)

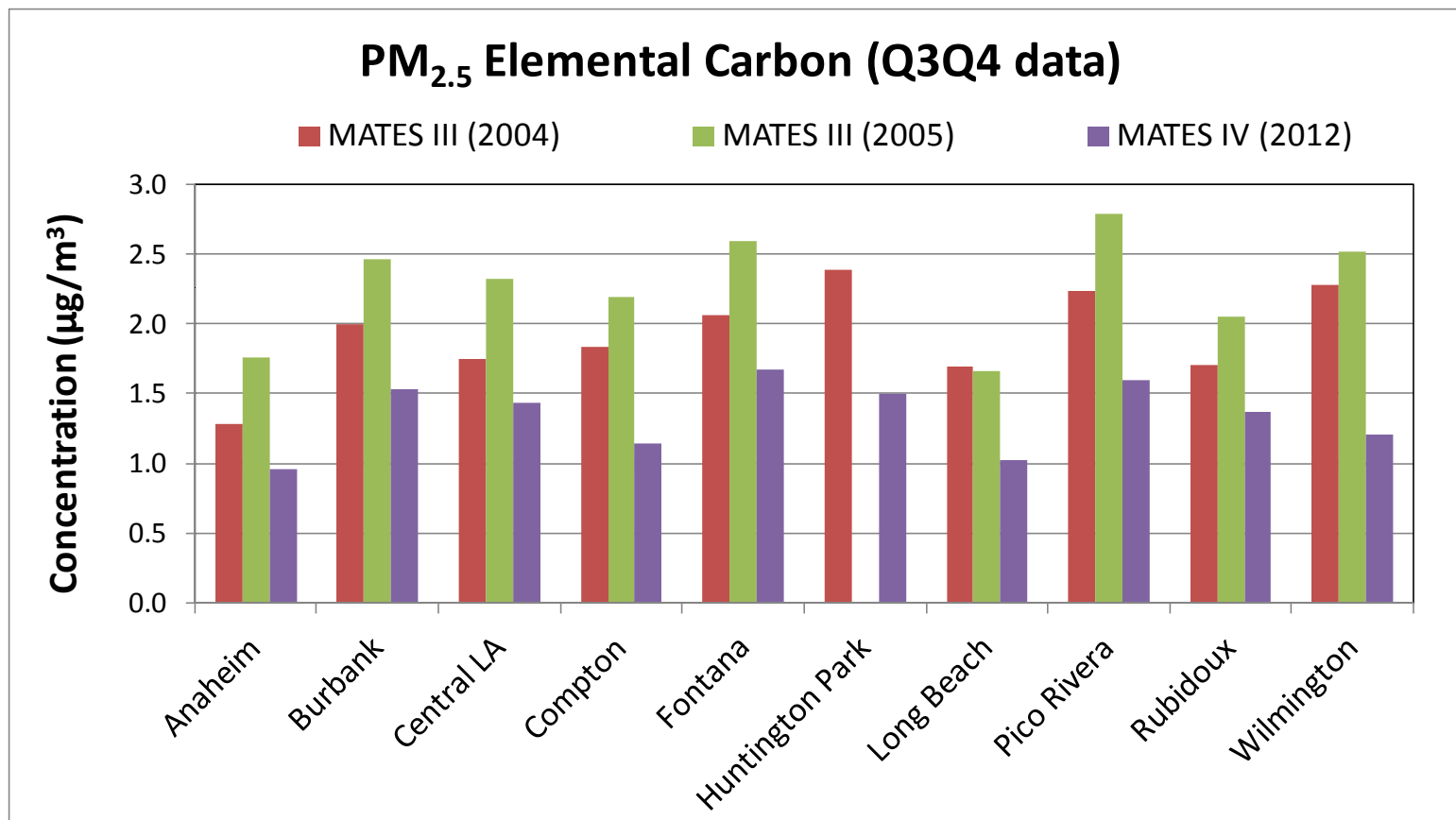


MATES IV: Preliminary Results



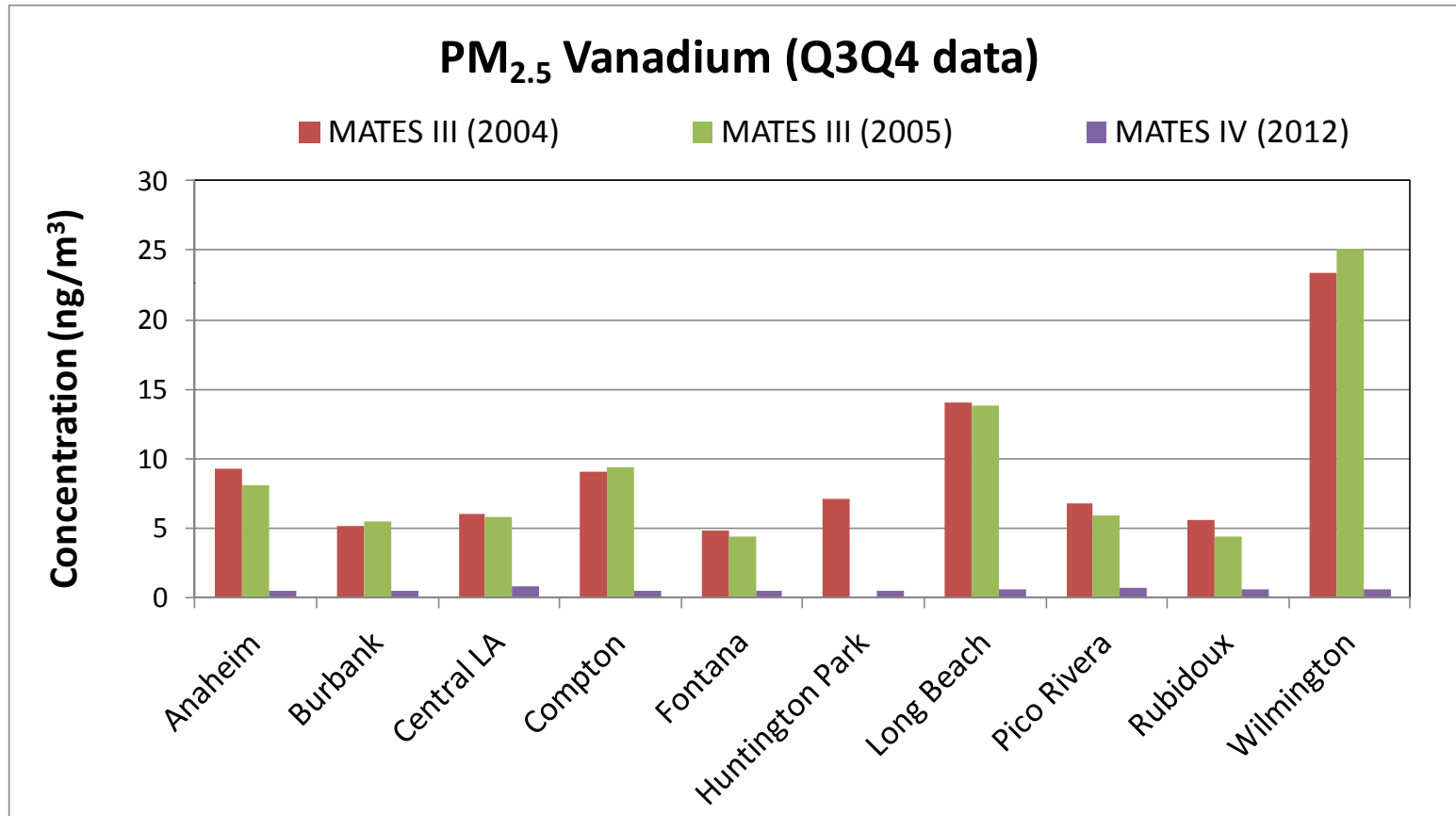
- Mirrors reductions seen in PM_{2.5} network samplers

MATES IV: Preliminary Results



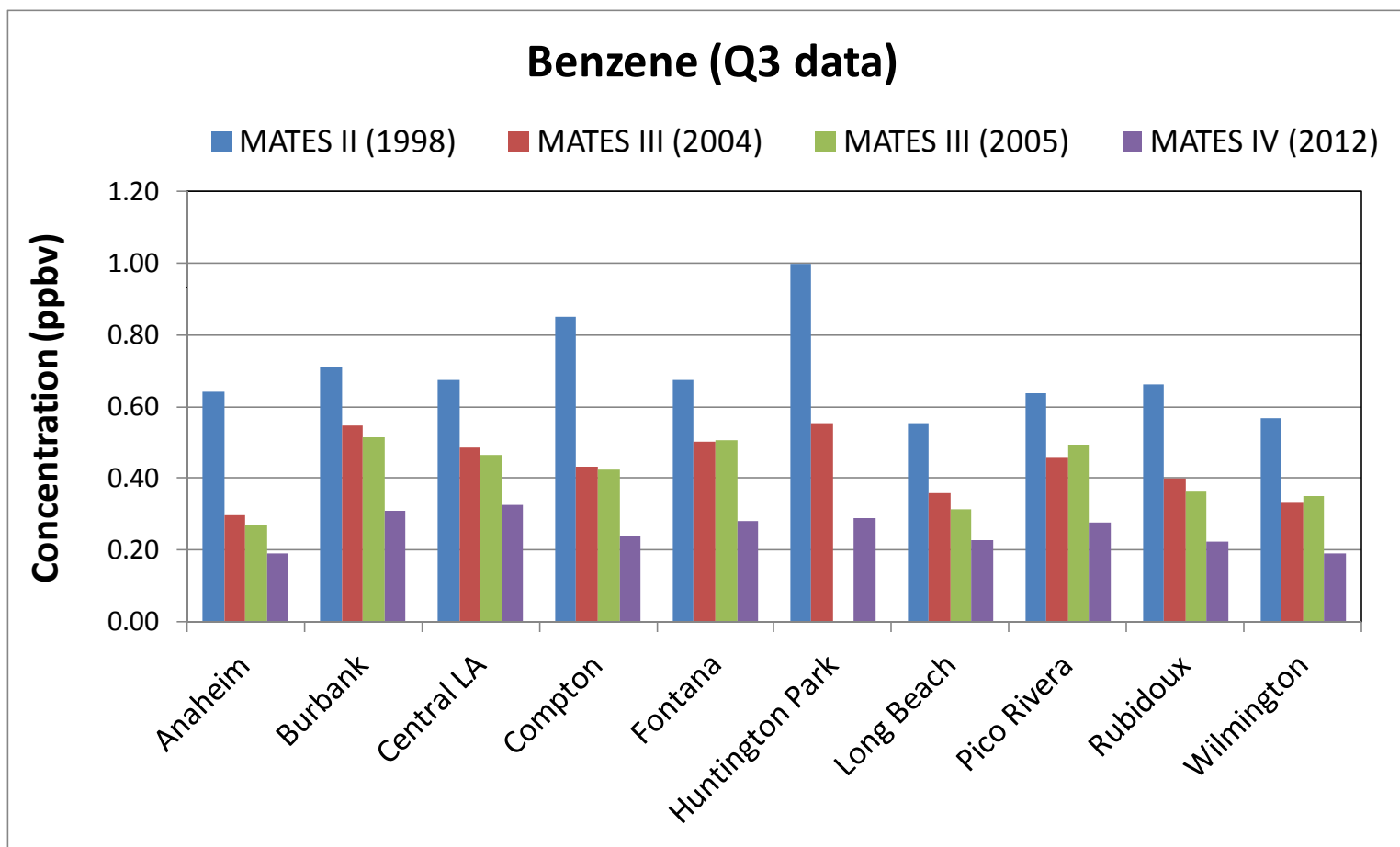
- Indicator of diesel PM
- Significantly lower levels observed

MATES IV: Preliminary Results



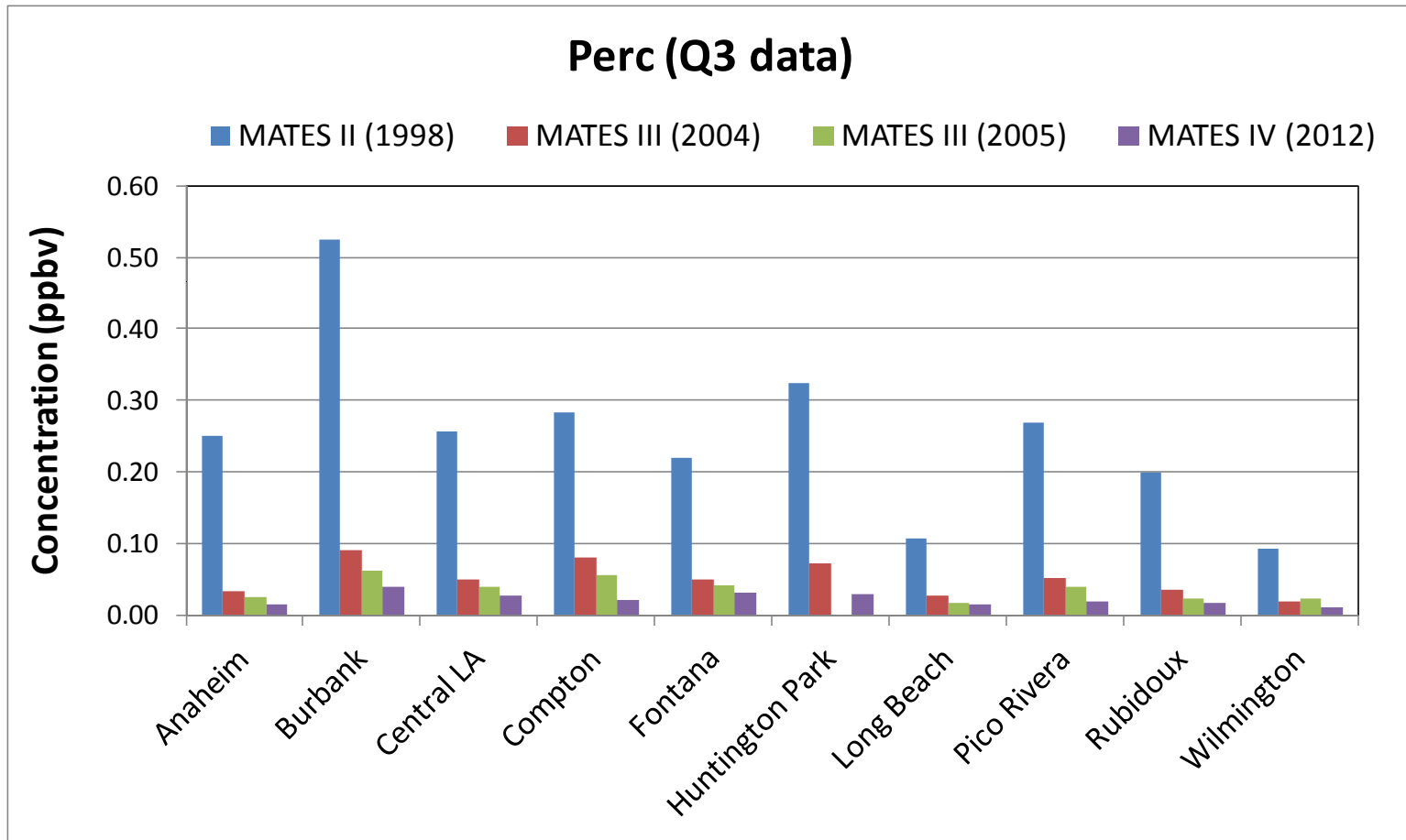
- Indicator of ocean going vessel (OGV) direct PM emissions
- Low-sulfur OGV fuel regulation – 24 miles from coast

MATES IV: Preliminary Results



•Mostly from gasoline vehicles

MATES IV: Preliminary Results



- Continuing phase out of perchloroethylene use by dry cleaners (Rule 1421)

Benefits of the MATES Program

- Risk Assessment: identify the air contaminants (and their sources) responsible for most of the air toxics risk in the SCAB
- Discovery: unexpected results leading to previously unknown local sources of air toxics
- Program Evaluation: tracking the effects of regulations and programs designed to reduce the atmospheric concentration of diesel PM and other air toxic pollutants
- Education and Outreach: public awareness regarding exposure to toxic air contaminants and ways to minimize exposure

