

Harbor Community Monitoring Study

Saturation Monitoring of Air Toxics

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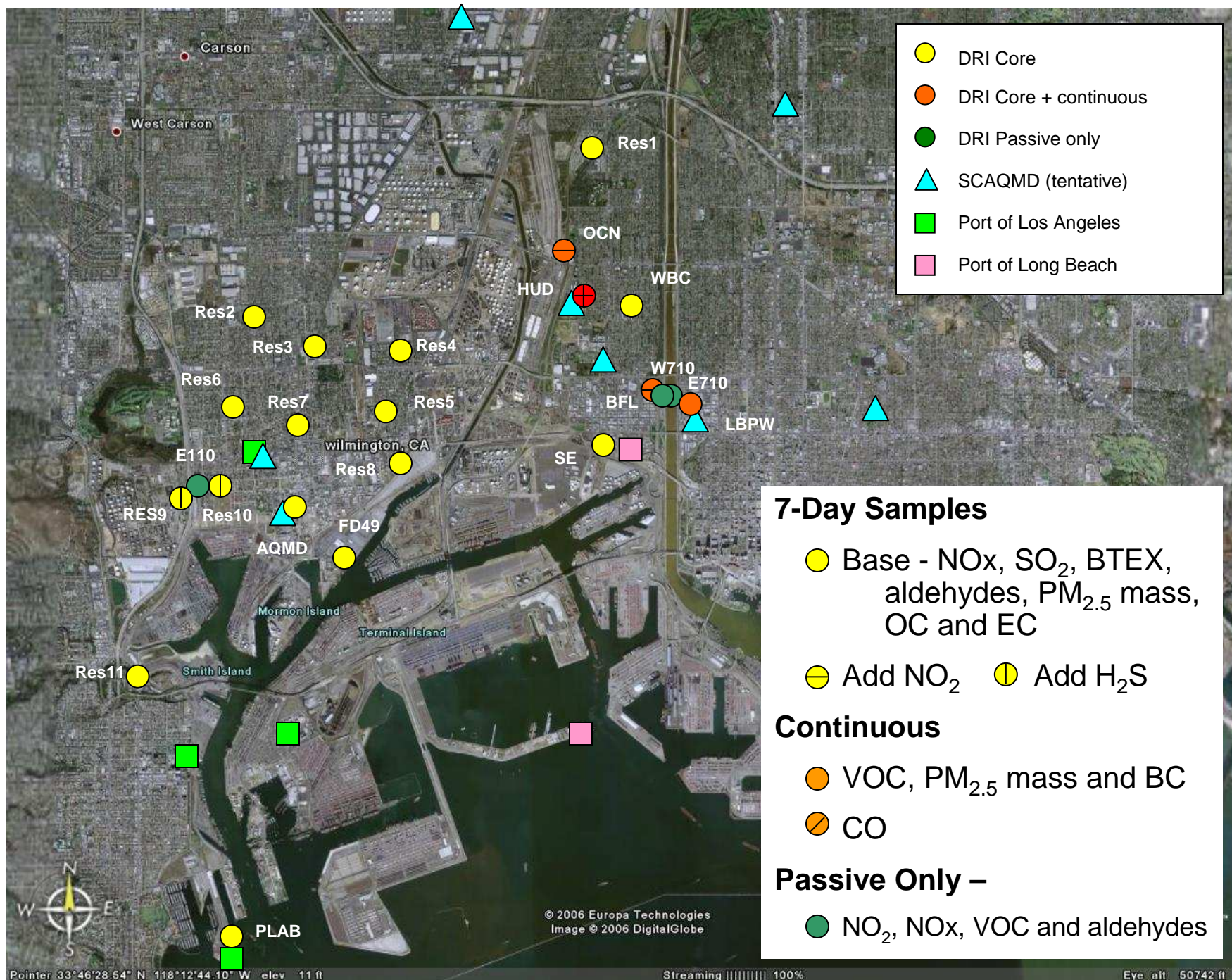
Acknowledgments

- **Sponsors**

- California Air Resources Board
- South Coast Air Quality Management District

- **Support**

- DRI Organic Analytical Laboratory: Barbara Zielinska, Brooks Mason, and Anna Cunningham
- DRI Environmental Analysis Facility: Judith Chow, Steven Kohl, Barbara Hinsvark and Brenda Cristani
- Dr. Pat Arnott, UNR Department of Physics
- Community Volunteers
- Mr. Jesse Marquez
- Mr. John Cross
- South Coast Air Quality Management District
- City of Long Beach
- Port of Los Angeles



- DRI Core
- DRI Core + continuous
- DRI Passive only
- ▲ SCAQMD (tentative)
- Port of Los Angeles
- Port of Long Beach

- ### 7-Day Samples
- Base - NO_x, SO₂, BTEX, aldehydes, PM_{2.5} mass, OC and EC
 - Add NO₂ ● Add H₂S
- ### Continuous
- VOC, PM_{2.5} mass and BC
 - CO
- ### Passive Only –
- NO₂, NO_x, VOC and aldehydes



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Seven-Day Time-Integrated Samplers



AirMetric Minivol Aerosol Sampler
(20" long by 7" in diameter)



Ogawa passive samplers
for NO_x and SO₂
(thumb size in cup shield)

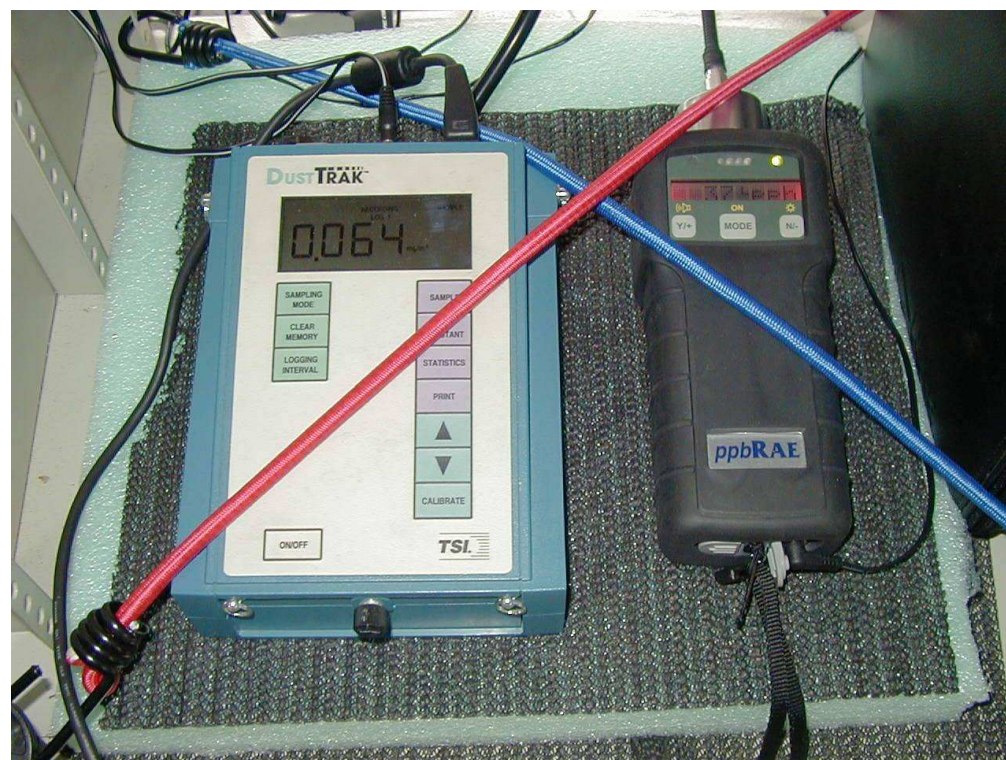


Radiello passive samplers for VOC, aldehydes and H₂S
(size of a roll of pennies)

Continuous Instruments



DRI Photoacoustic
black carbon



TSI DustTrak
PM_{2.5} Mass

RAE System ppbRAE
Portable Photoionization Detector
VOC

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Saturation Monitoring

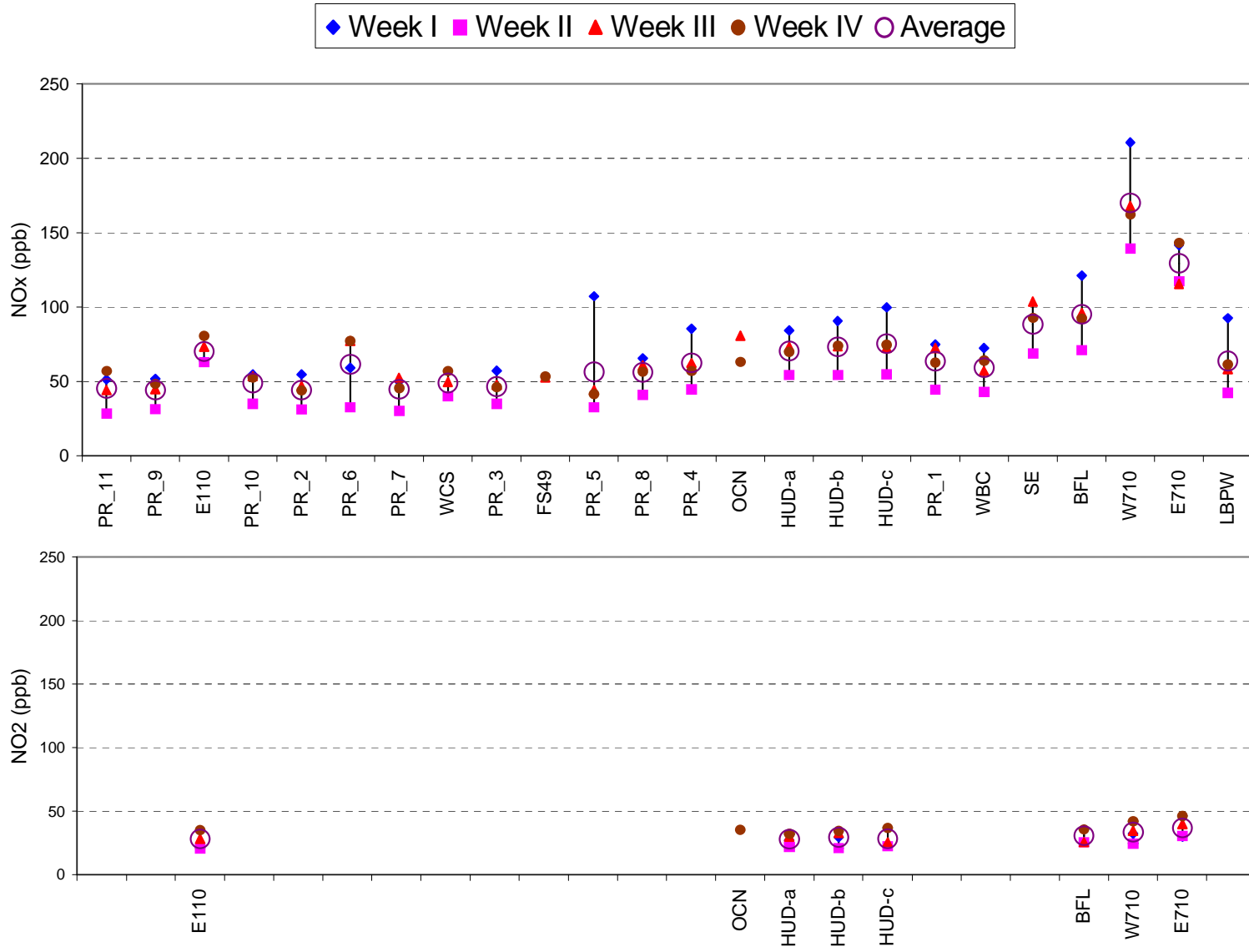
- **Objectives**

- Characterize the spatial gradients in concentrations of air toxics within the community.
- Evaluate adequacy of existing routine air quality monitoring to characterize exposure concentrations within the community.
- Correlate ambient concentrations of black carbon with proximity to truck traffic and day-of-week variations in diesel truck traffic volume.
- Evaluate and compare passive monitoring methods to conventional monitoring methods.

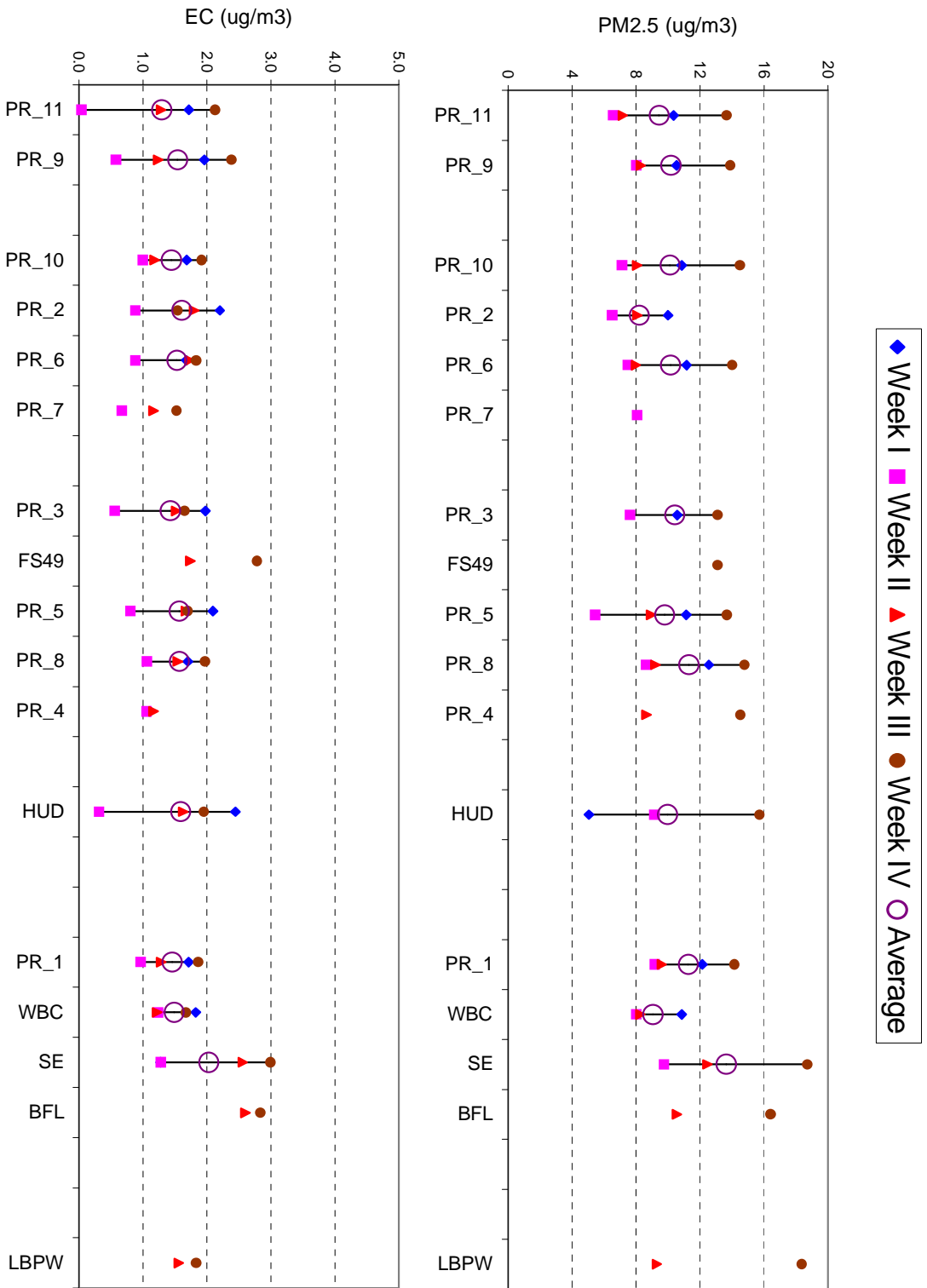
- **Monitoring Periods**

- 2/13/07 to 3/13/07 (winter)
- 5/15/07 to 6/12/07 (spring)
- 7/31/07 to 8/28/07 (summer)
- Nov/Dec, 2007 (fall)

NO_x and NO₂, 2/13/07 to 3/13/07

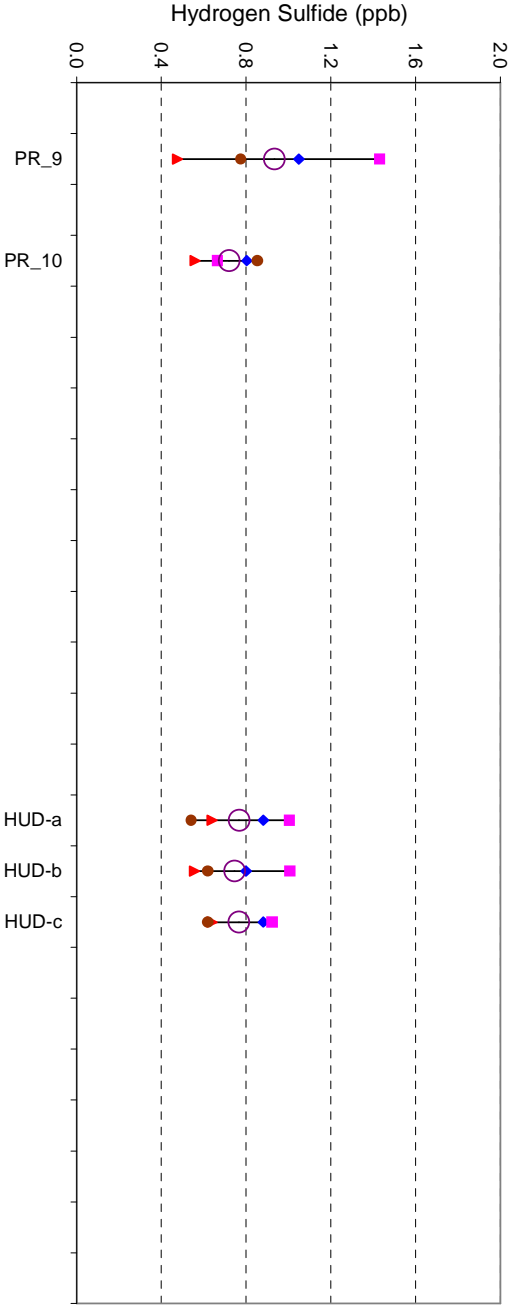
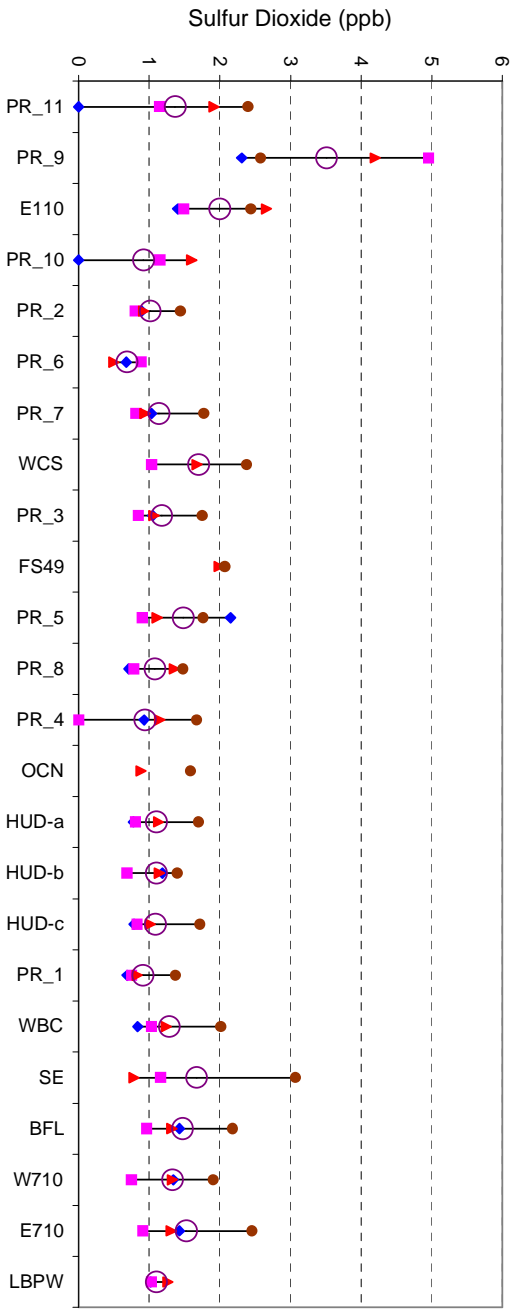


PM_{2.5} and EC, 2/13/07 to 3/13/07

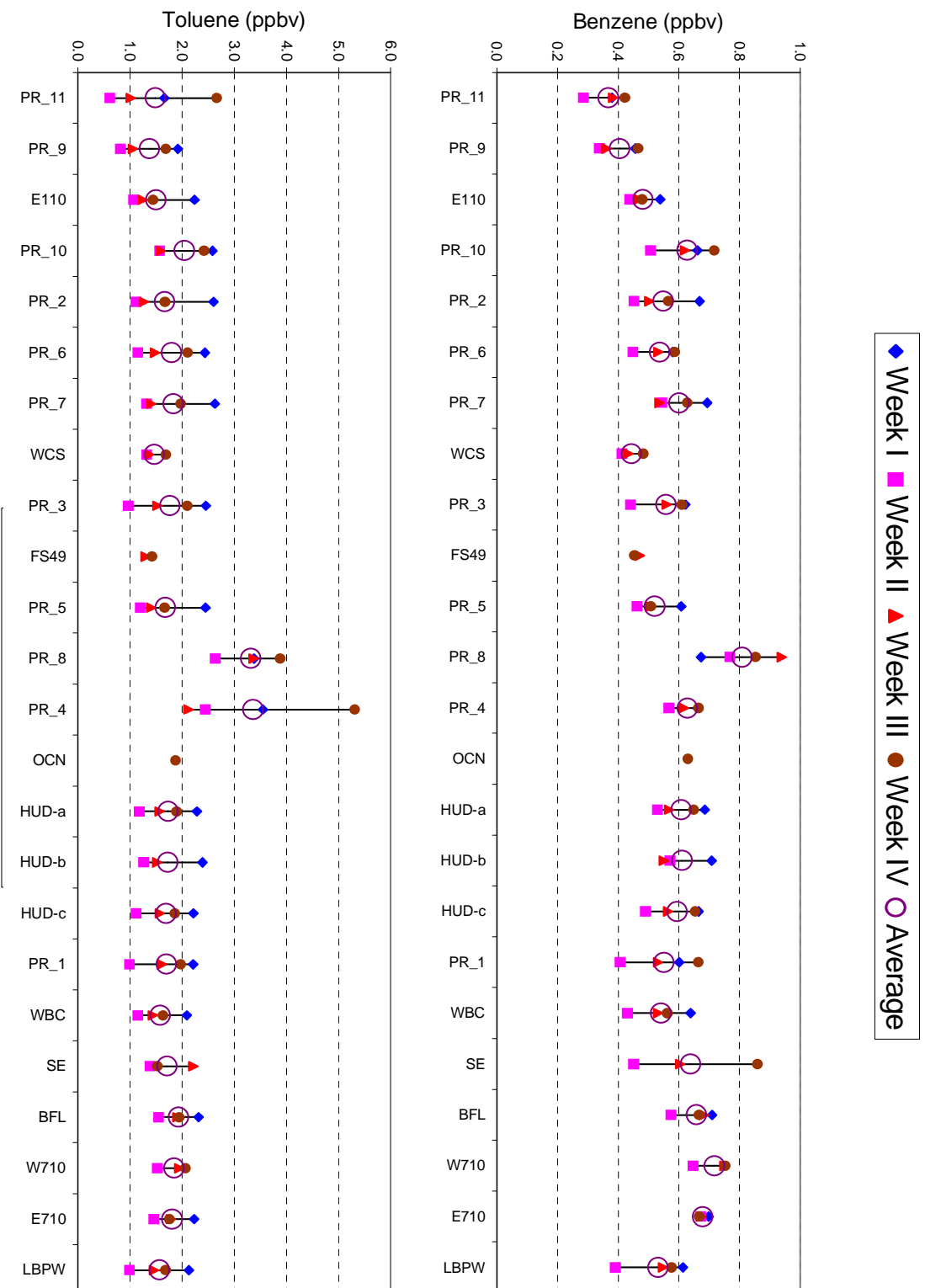


SO₂ and H₂S, 2/13/07 to 3/13/07

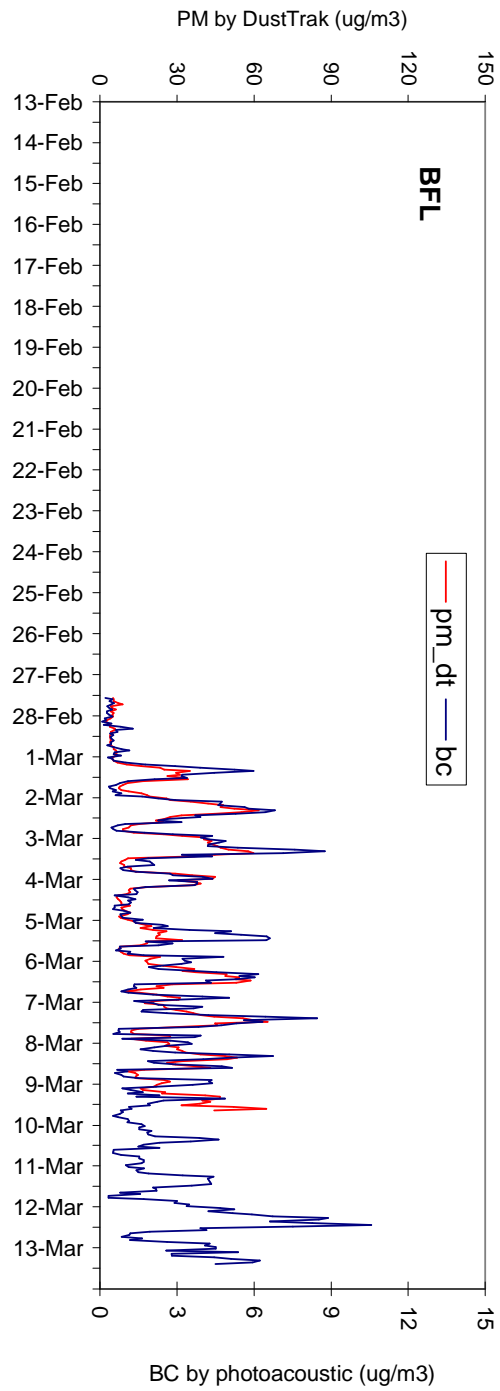
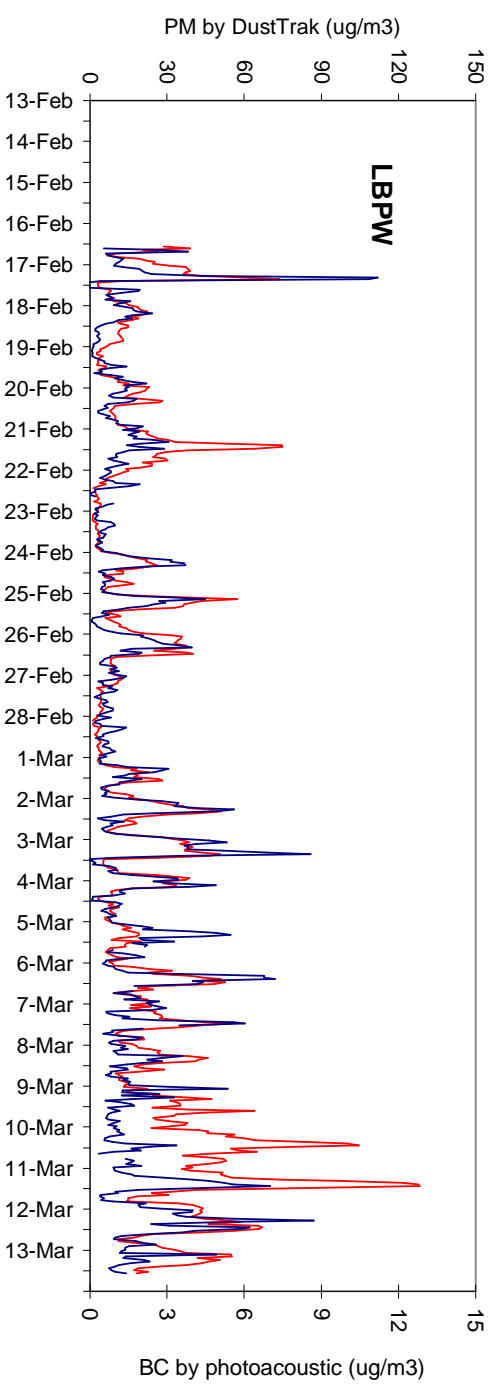
◆ Week I ■ Week II ▲ Week III ● Week IV ○ Average



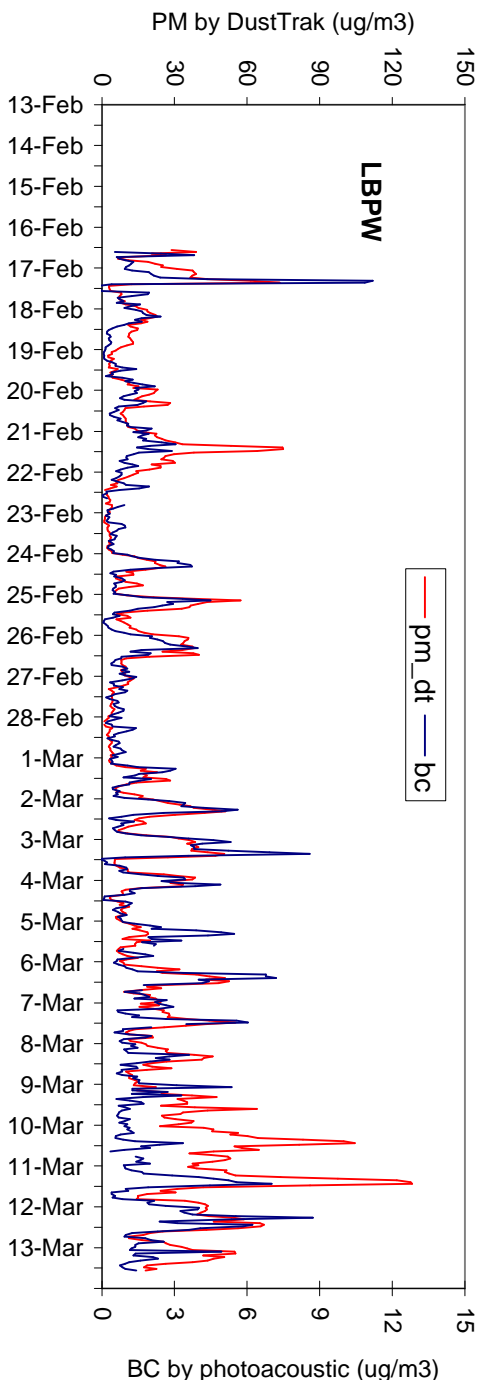
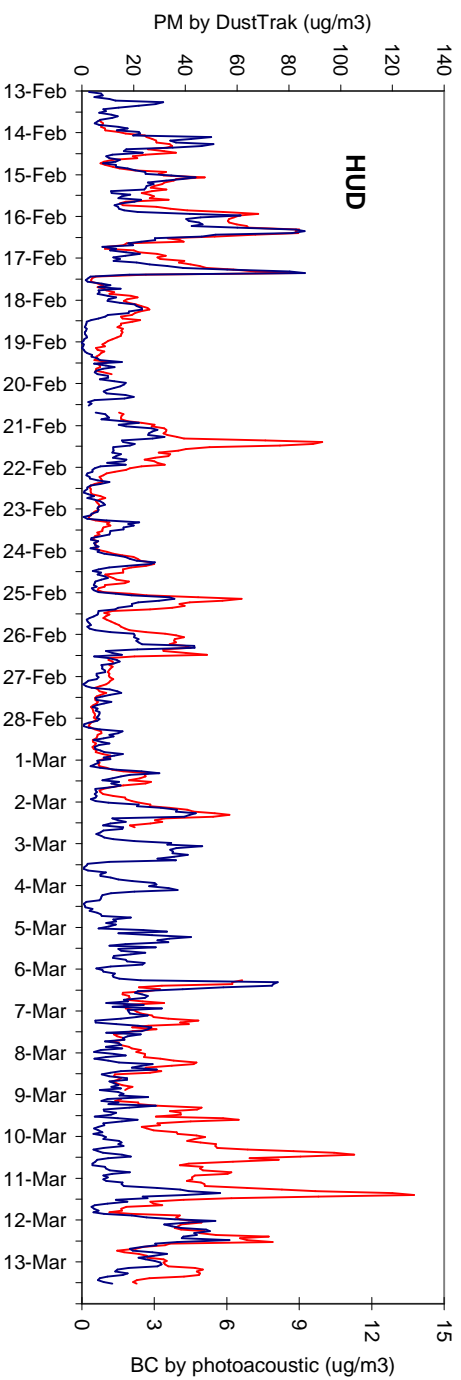
Benzene and Toluene, 2/13/07 to 3/13/07



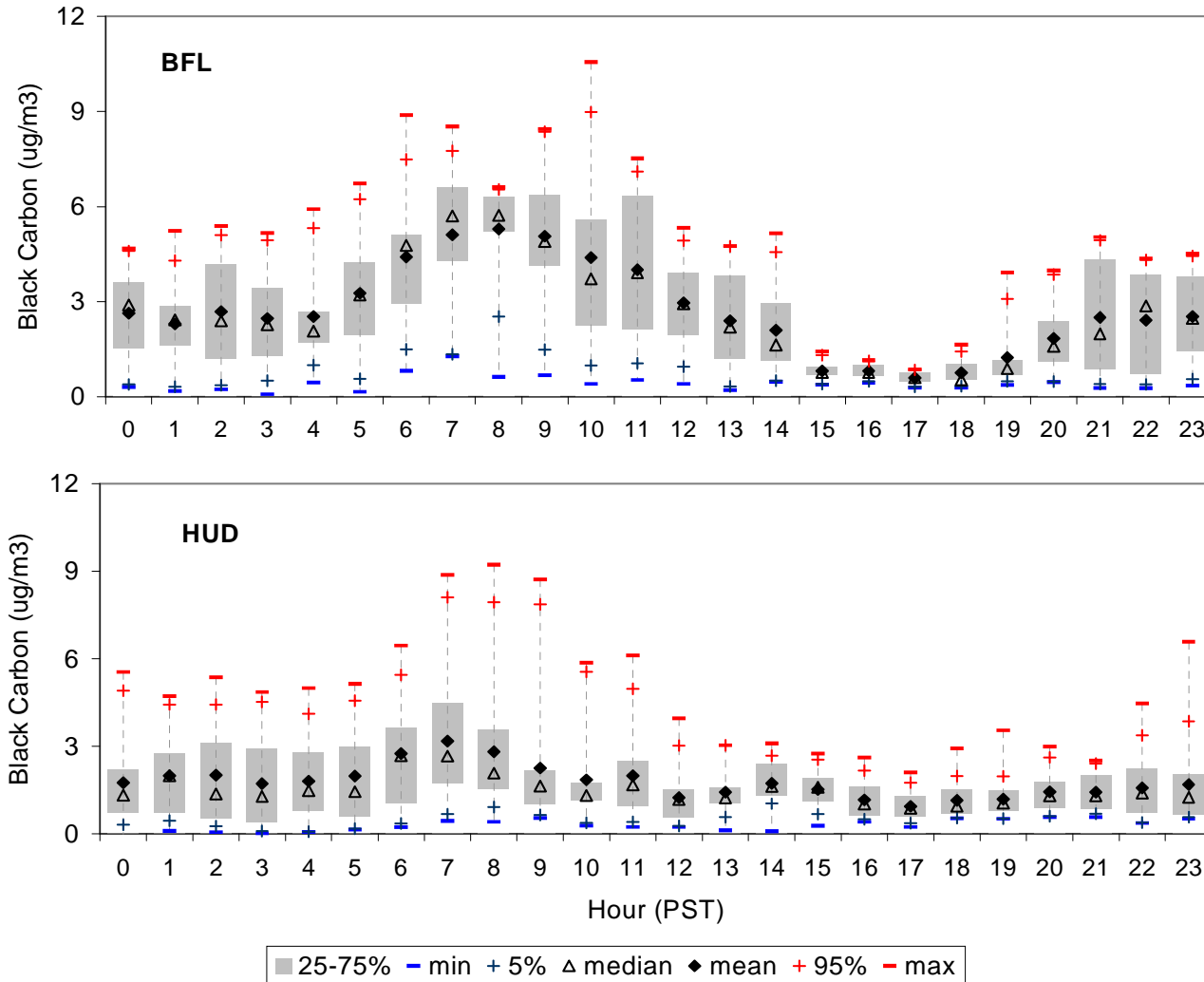
Hourly Average PM_{2.5}* and Black Carbon, 2/13/07 to 3/13/07



Hourly Average PM_{2.5}* and Black Carbon, 2/13/07 to 3/13/07



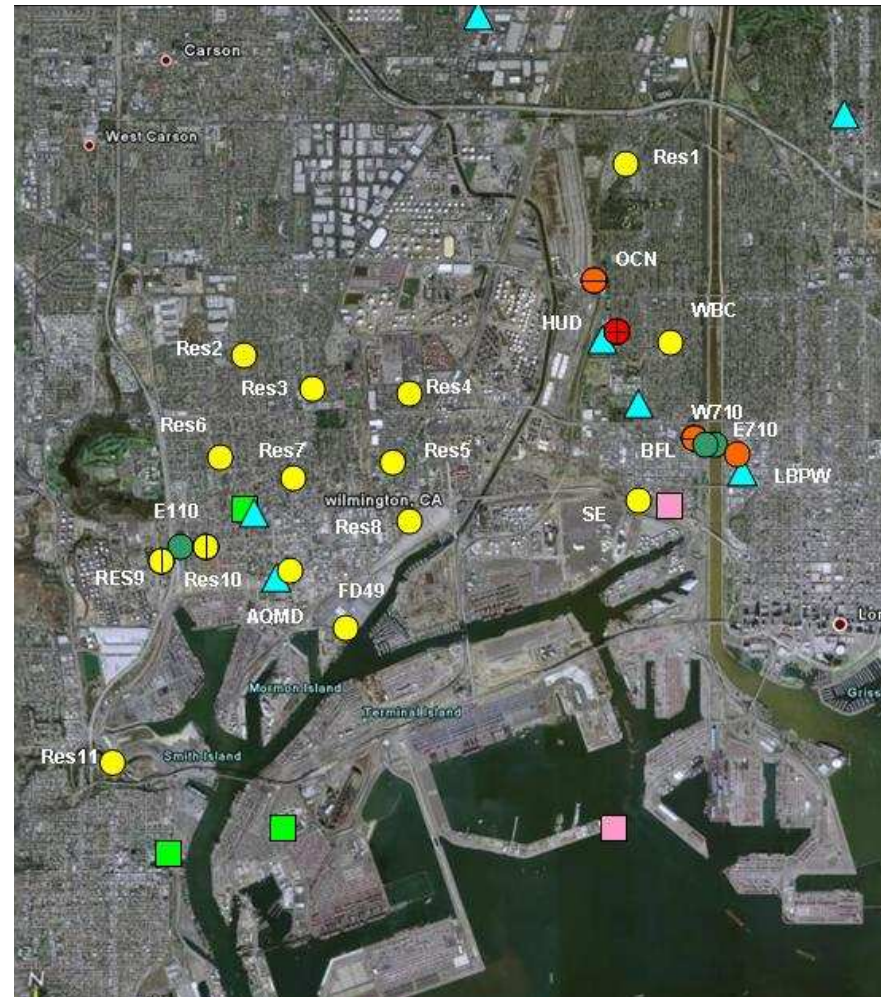
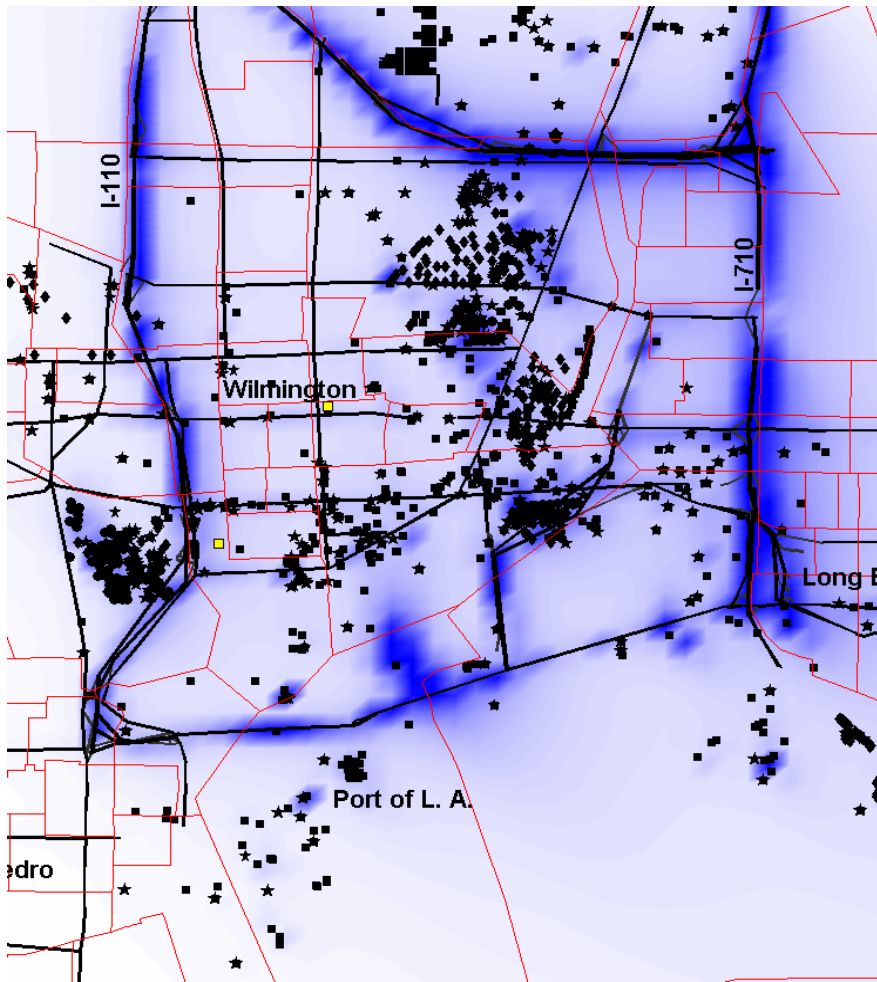
Diurnal Variations in Black Carbon, 2/13/07 to 3/13/07



Preliminary Results

- Higher pollutant concentrations were measured closer to roadways, especially for NO, black carbon and PM.
- SO₂ and H₂S were highest adjacent to the east boundary of the Conoco Refinery. However no corresponding increase in benzene or other aromatic hydrocarbons.
- Higher week-to-week than site-to-site variability in concentrations of most pollutants.
- Episodes of higher PM occurred when regional contributions were apparently significant. Data from the remaining three seasons may provide a more definitive conclusion.

HCMS Sites Versus Spatial Variations of Diesel PM from Modeled Estimates



HCMS Sites Versus Spatial Variations of Benzene from Modeled Estimates

